**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. Celso Martini
Plant Manager
Suwannee American Cement, L.L.C.
Post Office Box 410
Branford, FL 32008

**COMPLETE THIS SECTION ON DELIVERY**

A. Received by (Please Print Clearly) A Wiggins
B. Date of Delivery 8/28/03

C. Signature
X A-Wiggins ☐ Agent ☐ Addressee

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. 7001 0320 0001 3692 5399

PS Form 3811, July 1999 Domestic Return Receipt 102595-00-M-0952

---

7001 0320 0001 3692 5399

**U.S. Postal Service**
**CERTIFIED MAIL RECEIPT**
*(Domestic Mail Only; No Insurance Coverage Provided)*

OFFICIAL USE

| | |
|---|---|
| Postage | $ |
| Certified Fee | |
| Return Receipt Fee (Endorsement Required) | |
| Restricted Delivery Fee (Endorsement Required) | |
| **Total Postage & Fees** | $ |

Postmark Here

Sent To Celso Martini
Street, Apt. No.; or PO Box No. PO Box 410
City, State, ZIP+4 Branford, FL 32008

PS Form 3800, January 2001 See Reverse for Instructions

---

7001 0320 0001 3692 5382

**U.S. Postal Service**
**CERTIFIED MAIL RECEIPT**
*(Domestic Mail Only; No Insurance Coverage Provided)*

OFFICIAL USE

| | |
|---|---|
| Postage | $ |
| Certified Fee | |
| Return Receipt Fee (Endorsement Required) | |
| Restricted Delivery Fee (Endorsement Required) | |
| **Total Postage & Fees** | $ |

Postmark Here

Sent To Joe H. Anderson, Jr.
Street, Apt. No.; or PO Box No. Hwy 349 N.
City, State, ZIP+4 Old Town, FL 32680

PS Form 3800, January 2001 See Reverse for Instructions

---

**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. Joe H. Anderson, Jr.
Director
Suwannee American Cement Co.
Highway 349 North
Old Town, FL 32680

**COMPLETE THIS SECTION ON DELIVERY**

A. Received by (Please Print Clearly) S. Carnright
B. Date of Delivery 8/28/03

C. Signature
X S. Carnright ☒ Agent ☐ Addressee

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

OLD TOWN, FL AUG 28 2003 USPS

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. 7001 0320 0001 3692 5382

PS Form 3811, July 1999 Domestic Return Receipt 102595-00-M-0952

Suwannee American Cement
SAC
Branford, Florida, USA

**Suwannee American Cement Co., Inc.**
P.O. Box 410
Branford, FL 32008-0410

CERTIFIED MAIL™

7002 3150 0001 8219 3479

LAKE CITY
AUG 04 '03
FL

U.S. POSTAGE
04.42
METER 440545

Florida Department of Environmental
Protection
2600 Blair Stone Road
MS 5505
Tallahassee, Florida  32399-2400

Attn:  Mr. Greg DeAngelo

Department of
Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

August 26, 2003

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Celso Martini, Plant Manager
Suwannee American Cement, L.L.C.
P.O. Box 410
Branford, FL 32008

Mr. Joe H. Anderson, Jr., Director
Suwannee American Cement Co., Inc.
Highway 349 North
Old Town, FL 32680

Re: Transfer of Ownership, Portland Cement Plant – Branford, Suwannee County, Florida
Facility ID No. 1210465

Dear Mr. Martini and Mr. Anderson:

This letter is to acknowledge receipt of the attached "Application for Transfer of Air Permit" dated May 21, 2003 from Brian P. Schreiber requesting a transfer of ownership of the Portland cement plant in Branford, Suwannee County, Florida from Suwannee American Cement Co., Inc., to Suwannee American Cement, L.L.C. Mr. Schreiber is a registered agent of Suwannee American Cement Co., Inc.

This letter also acknowledges receipt of additional information in the form of two letters from Joe H. Anderson, Jr. (attached). Mr. Anderson is the Director of Suwannee American Cement Co., Inc., and a Managing Member of Suwannee American Cement, L.L.C. Mr. Anderson's letters confirming Celso Martini as an authorized representative and certifying that March 4, 2003, was the date on which the two parties transferred ownership of the facility.

Accordingly, the Department has reasonable assurance that a transfer of ownership is in effect between the two parties. March 4, 2003, is the date that Suwannee American Cement, L.L.C. assumes all permit responsibility, coverage, and liability. The Department has amended its records in the Air Resources Management System to reflect new ownership.

Please advise the Department immediately if any facts stated above are in error. If you have any questions regarding this matter, please call Greg DeAngelo at (850)921-9506.

Sincerely,

Trina L Vielhauer

Trina Vielhauer, Chief
Bureau of Air Regulation

TLV/gpd

Enclosures

Cc: Brian Schreiber, Suwannee American Cement Co., Inc.
Christopher Kirts, DEP NED

Best Available Copy

**Suwannee American Cement Co., Inc.**

P.O. Box 410
Branford, FL 32008-0410
(904) 935-0966 • Fax (904) 935-1155

RECEIVED
MAY 27 2003
BUREAU OF AIR REGULATION

May 21, 2003

Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Attn: Mr. Al Linero

**RE: Application for Transfer of Air Permit No. 1210465-003-AC/PSD-FL-259B**

Dear Mr. Linero:

Please find enclosed a fully executed Application for Transfer of Air Permit No. 1210465-003-AC/PSD-FL-259B made on behalf of Suwannee American Cement Company, Inc. – the current permittee. On March 4, 2003, ownership of the permitted facility was transferred to Suwannee American Cement, L.L.C. and the purpose of this application is to establish the registered permittee as the record owner of the permitted facility.

Also find enclosed a check in the amount of fifty ($50.00) dollars to cover the administrative fees in connection with the permit transfer. Please contact me if I can be of any further assistance at (386) 752-7585 ext. 214.

Sincerely,

**SUWANNEE AMERICAN CEMENT L.L.C.**

Brian P. Schreiber

Brian P. Schreiber
Secretary

# Department of Environmental Protection

RECEIVED
MAY 27 2003
BUREAU OF AIR REGULATION

## Division of Air Resources Management

## APPLICATION FOR TRANSFER OF AIR PERMIT

☐ Title V Permit No.*: 1210465-003-AC, PSD-FL-259B

☐ Non-Title V Permit No(s).: ____________________

### Notification of Sale or Legal Transfer

| | |
|---|---|
| Facility Owner/Company Name *(As Currently Permitted)*: **Suwannee American Cement Company, Inc.** | Facility ID No.: 1210465 |
| Site Name: **Suwannee American Cement Plant – Branford, Florida** | County: **Suwannee** |
| Street Address or Other Locator: **Immediately NE of the intersection of U.S. Highway 27 and CR 49 North, Suwannee County.** | |
| City: **Branford** | Zip Code: **32008** |

I, the undersigned, hereby notify the department of the sale or legal transfer of the facility listed above. Under its current air permit(s), I am the owner or authorized representative of the non-Title V source or the responsible official of the Title V source addressed in this application, whichever is applicable.

Brian P. Schreiber
*(Signature)*

Name: Mr. Brian P. Schreiber

Title: Secretary Date: May 21, 2003

STATE OF FLORIDA
COUNTY OF Columbia

Sworn to (or affirmed) and subscribed before me this 21st day of May 2003

DENISE W. BROOM
Notary Public, State of Florida
My comm. expires Aug. 23, 2003
Comm. No. CC865826
(NOTARY SEAL)

Denise W. Broom
*(Signature of Notary Public – State of Florida)*

Denise W. Broom
*(Name of Notary Typed, Printed, or Stamped)*

Personally Known ✓ OR Produced Identification ____________

Type of Identification Produced ____________________

* Title V Sources Only: Attach a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittee. If there is a change in designated representative at an Acid Rain source, submit a copy of the Certificate of Representation submitted to EPA pursuant to 40 CFR 72, subpart B. A Statement of Compliance (DEP Form 62-213.900(7)) covering the portion of the calendar year up to the date of transfer of responsibility shall be submitted to the Department after the date of transfer, as required by Rule 62-213.440(3)(a)2.b., F.A.C.

## Notification of New Ownership

| | |
|---|---|
| New Facility Owner/Company Name:<br><br>**Suwannee American Cement L.L.C.** | |
| New Site Name: **Suwannee American Cement Plant – Branford, Florida** | County: **Suwannee** |

I, the undersigned, am or will be the new owner or authorized representative* of the non-Title V source or the new responsible official of the Title V source addressed in this application, whichever is applicable. I further state that I have examined the application and documents submitted by the current permittee, the basis on which the above listed permit(s) was/were issued by the Department, and state that they accurately and completely describe the permitted facility. I further state that I am familiar with the permit(s), agree to comply with its/their terms and conditions, and agree to assume the rights and liabilities contained therein. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete. I also agree to promptly notify the Department of any future change in ownership of, or responsibility for, the permitted facility.

*(Signature)*

Name: Mr. Celso Martini

Title: Plant Manager  Date: May 21, 2003

Mailing Address: P.O. Box 410

City: Branford  Zip Code: 32008

Telephone No: (386) 935-5000  Fax No.: (386) 935-5080

Effective Date of Sale or Legal Transfer: ____________

*(If not yet known, leave blank. Once known, date must be provided to the Department to process a change of ownership administrative permit correction in accordance with Rule 62-210.360, F.A.C.)*

STATE OF FLORIDA
COUNTY OF Dixie

Sworn to (or affirmed) and subscribed before me this 21st day of May 2003.

Susan A. Vaughan
*(Signature of Notary Public – State of Florida)*

SUSAN A. VAUGHAN
NOTARY PUBLIC - STATE OF FLORIDA
COMMISSION # DD039922
MY COMMISSION EXPIRES JULY 5, 2005

Susan A. Vaughan
*(Name of Notary Typed, Printed, or Stamped)*

Personally Known ✓ OR Produced Identification ____________

Type of Identification Produced ____________

* Attach letter of authorization if other than owner or corporate officer.

DEP Form No. 62-210.900(7)
Effective: 04/16/01

Suwannee American Cement LLC
SAC
Branford, Florida, USA

**Suwannee American Cement, LLC**
5117 US Hwy. 27
P.O. Box 410
Branford, FL 32008-0410
(386) 935-5000 • Fax (386) 935-5080

RECEIVED
AUG 06 2003
BUREAU OF AIR REGULATION

July 31, 2003

Florida Department of Environmental Protection
2600 Blair Stone Road
MS 5505
Tallahassee, Florida 32399-2400

Attn: Mr. Greg DeAngelo

**RE: Supporting Documentation for the Transfer of Air Permit No. 1210465-003-AC/PSD-FL-259B**

Dear Mr. DeAngelo:

On March 4, 2003 ownership of the permitted facility, as referenced above, was transferred to Suwannee American Cement, L.L.C. This letter serves as written notification that all permit responsibility, coverage and liability transferred over to Suwannee American Cement, L. L. C. on this date.

Sincerely,

**SUWANNEE AMERICAN CEMENT L.L.C.**

Mr. Joe Anderson Jr.
Chairman/Member

**Suwannee American Cement Co., Inc.**
P.O. Box 410
Branford, FL 32008-0410
(904) 935-0966 • Fax (904) 935-1155



June 3, 2003

Florida Department of Environmental Protection
2600 Blair Stone Road
MS 5505
Tallahassee, Florida 32399-2400

Attn: Mr. Greg DeAngelo

**RE: Supporting Documentation for the Transfer of Air Permit No. 1210465-003-AC/PSD-FL-259B**

Dear Mr. DeAngelo:

This letter serves as notification that Mr. Celso Martini, as listed on the Air Permit Transfer Documentation, is a responsible authority for the cement plant with signature capability.

Sincerely,

**SUWANNEE AMERICAN CEMENT L.L.C.**

Mr. Joe Anderson Jr.
Chairman/Member

**SENDER: *COMPLETE THIS SECTION***

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. Celso Martini
Plant Manager
Suwannee American Cement, L.L.C.
Post Office Box 410
Branford, FL 32008

***COMPLETE THIS SECTION ON DELIVERY***

A. Received by (*Please Print Clearly*) A. Wiggins B. Date of Delivery 8/28/03

C. Signature X A. Wiggins ☐ Agent ☐ Addressee

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (*Extra Fee*) ☐ Yes

2. 7001 0320 0001 3692 5399

PS Form 3811, July 1999 Domestic Return Receipt 102595-00-M-0952

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**U.S. Postal Service**
**CERTIFIED MAIL RECEIPT**
***(Domestic Mail Only; No Insurance Coverage Provided)***

7001 0320 0001 3692 5399

OFFICIAL USE

| | |
|---|---|
| Postage | $ |
| Certified Fee | |
| Return Receipt Fee (Endorsement Required) | |
| Restricted Delivery Fee (Endorsement Required) | |
| Total Postage & Fees | $ |

Postmark Here

Sent To Celso Martini
Street, Apt. No.; or PO Box No. PO Box 410
City, State, ZIP+4 Branford, FL 32008

PS Form 3800, January 2001 See Reverse for Instructions

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**U.S. Postal Service**
**CERTIFIED MAIL RECEIPT**
***(Domestic Mail Only; No Insurance Coverage Provided)***

7001 0320 0001 3692 5382

OFFICIAL USE

| | |
|---|---|
| Postage | $ |
| Certified Fee | |
| Return Receipt Fee (Endorsement Required) | |
| Restricted Delivery Fee (Endorsement Required) | |
| Total Postage & Fees | $ |

Postmark Here

Sent To Joe H. Anderson, Jr.
Street, Apt. No.; or PO Box No. Hwy 349 N.
City, State, ZIP+4 Old Town, FL 32680

PS Form 3800, January 2001 See Reverse for Instructions

---

**SENDER: *COMPLETE THIS SECTION***

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. Joe H. Anderson, Jr.
Director
Suwannee American Cement Co.
Highway 349 North
Old Town, FL 32680

***COMPLETE THIS SECTION ON DELIVERY***

A. Received by (*Please Print Clearly*) S. Carnright B. Date of Delivery 8/28/03

C. Signature X S. Carnright ☒ Agent ☐ Addressee

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

OLD TOWN, FL 32680 AUG 28 2003 USPS

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (*Extra Fee*) ☐ Yes

2. 7001 0320 0001 3692 5382

PS Form 3811, July 1999 Domestic Return Receipt 102595-00-M-0952

Suwannee American Cement

Branford, Florida, USA

**Suwannee American Cement Co., Inc.**
P.O. Box 410
Branford, FL 32008-0410

CERTIFIED MAIL™

7002 3150 0001 8219 3479

Florida Department of Environmental
Protection
2600 Blair Stone Road
MS 5505
Tallahassee, Florida 32399-2400

Attn: Mr. Greg DeAngelo

06/22/1999

# Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

In the Matter of an
Application for Permit by:

Joe Anderson, III, President
Suwannee American Cement Company, Inc.
PO Box 410
Branford, Florida 32008

DEP File No. 1210465-001-AC, PSD-FL-259
Branford Plant, Portland Cement Plant
Suwannee County

## NOTICE OF PERMIT DENIAL

The applicant, Suwannee American Cement Company, Inc., applied on November 30, 1998, to the Department for an air construction permit for a proposed plant near Branford, to be located at US Highway 27 at County Road 49, Suwannee County. The application is to construct a new dry process, preheater/precalciner type portland cement plant.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. The Department has determined that an air construction permit is required to construct the facility.

The Department hereby denies the permit for the following reasons:

Rule 62-4.070, F.A.C., establishes the standards which are applicable to the Department's review of the application for the requested permit. The permit applicant must affirmatively provide the Department with reasonable assurance that the construction and operation of the proposed facility "will not discharge, emit, or cause pollution in contravention of Department standards or rules." If, after review of the permit application and all other relevant information, the Department determines that the applicant has not provided reasonable assurance that the construction and operation of the installation will comply with the Department's applicable standards or rules, the Department must deny the permit.

Pursuant to Rule 62-4.070(5), F.A.C., the Department must take into consideration a permit applicant's violation of any Department rules at any installation when determining whether the applicant has provided reasonable assurances that the Department standards will be met. In determining whether the permit applicant has provided such reasonable assurance, the Department may also consider the compliance history of the permit applicant's related entities, including Anderson Columbia Co., Inc. Since 1987, Anderson Columbia Co., Inc. and many other companies run by Anderson Columbia principals have either paid civil penalties for environmental violations or have active cases against them. Based upon its review of this compliance history, the Department has determined that the permit applicant has failed to provide reasonable assurance that the proposed installation will be constructed and operated in compliance with the Department's applicable standards. Accordingly, the Department must deny the requested permit.

A person whose substantial interests are affected by the Department's permit denial may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this Notice of Permit Denial. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of receipt of this Notice of Permit Denial. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that 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 such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

This Notice constitutes final agency action unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition which conforms to Rule 62-110.106, F.A.C. Upon timely filing of a petition or a request for an extension of time this Notice will not be effective until further order of the Department.

If either a petition for administrative hearing or a request for extension of time is not timely filed with the Department, then this Notice shall constitute final agency action. Any party to this order would then have the right to seek judicial review 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 of Environmental Protection in the Office of General Counsel, Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000; 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 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida.

David B. Struhs
Secretary
Department of Environmental Protection

## CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Permit Denial and all copies were sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 6-22-99 to the person(s) listed:

Mr. Joe Anderson, III *
Mr. Frank Darabi, P.E.
Mr. Steve Cullen, P.E.
Mr. Ernest E. Frye, Director, NE District
Mr. Gregg Worley, EPA
Mr. John Bunyak, NPS
Mr. Jim Stevenson, DEP
Mr. Tom Workman, DEP
Mr. Mark Latch, DEP
Mr. Craig Pittman, St. Petersburg Times
Ms. December McSherry *
Mr. Svenn Lindskold *
Mr. Tom Greenhalgh *
Mr. Al Mueller *
Mr. Dave Bruderly *
Mr. Chris Bird, Alachua Co. DER *
Mr. John Mousa, Alachua Co. DER *
Mr. Chuck Clemons, Chairman, Alachua Co. Board of Co. Commissioners *
Mr. J. Calvin Gaddy *
Ms. Patrice Boyes, Esq. *
Ms. Kathy Cantwell *
Mr. Ralph Ashodian *
Ms. Virginia Seacrist *
Dr. Bob and Lynn Milner *
Ms. Linda Pollini *

Clerk Stamp

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

Kim Tober 6-22-99
(Clerk) (Date)

Is your RETURN ADDRESS completed on the reverse side?

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. Ralph Ashodian
Route 2, Box 5751
Santa Fe Road
Fort White, FL 32038

4a. Article Number
Z 333 618 178

4b. Service Type
☐ Registered ☑ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
6/24/99

5. Received By: *(Print Name)*

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X R. Ashodian

PS Form **3811,** December 1994 102595-98-B-0229 Domestic Return Receipt

Thank you for using Return Receipt Service.

Z 333 618 178

US Postal Service
**Receipt for Certified Mail**
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Mr. Ralph Ashodian
Route 2, Box 5751
Santa Fe Road
Fort White, FL 32038

| | |
|---|---|
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| **TOTAL** Postage & Fees | $ |
| Postmark or Date<br>6-22-99 | |

PS Form **3800**, April 1995

Is your RETURN ADDRESS completed on the reverse side?

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Joe Anderson, III
President
Suwannee American Cement
PO Box 410
Branford, Fl 32008

4a. Article Number
Z 333 618 181

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
6-26-99

5. Received By: *(Print Name)*

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X

Thank you for using Return Receipt Service.

PS Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

Z 333 618 181

US Postal Service
**Receipt for Certified Mail**
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

| | |
|---|---|
| Sent to Joe Anderson | |
| Street & Number Suwannee American | |
| Post Office, State, & ZIP Code Branford Fl | |
| Postage | $ |
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| **TOTAL** Postage & Fees | $ |
| Postmark or Date 6-22-99 1210465-001-AC PSD-Fl-259 | |

PS Form **3800**, April 1995

Z 333 618 179

US Postal Service
**Receipt for Certified Mail**
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Ms. Virginia Seacrist
1029 Northwest 39th Drive
Gainesville, FL 32605

| | |
|---|---|
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| **TOTAL** Postage & Fees | $ |
| Postmark or Date 6-22-99 | |

PS Form **3800**, April 1995

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Chris Bird/John Mousa
Director of Alachua Co. Department
Of Environmental Regulation
226 S. Main Street
Gainesville, FL 32601

4a. Article Number
Z 333 618 173

4b. Service Type
☐ Registered ☑ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
6-24-99

5. Received By: *(Print Name)*
[signature]

6. Signature: *(Addressee or Agent)*
X [signature]

8. Addressee's Address *(Only if requested and fee is paid)*

PS Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

Thank you for using Return Receipt Service.

Is your RETURN ADDRESS completed on the reverse side?

---

Z 333 618 173

US Postal Service
## Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Chris Bird/John Mousa
Director of Alachua Co. Department
Of Environmental Regulation
226 S. Main Street
Gainesville, FL 32601

| | |
|---|---|
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| **TOTAL** Postage & Fees | $ |
| Postmark or Date 6-23-99 | |

PS Form **3800**, April 1995

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Z 333 618 195

US Postal Service
## Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Ms. Linda Pollini
P O Box 423
Archer, FL 32618

| | |
|---|---|
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| **TOTAL** Postage & Fees | $ |
| Postmark or Date 6-23-99 | |

PS Form **3800**, April 1995

---

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Ms. Linda Pollini
P O Box 423
Archer, FL 32618

4a. Article Number
Z 333 618 195

4b. Service Type
☐ Registered ☑ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
6-26-99

5. Received By: *(Print Name)*

6. Signature: *(Addressee or Agent)*
X [signature]

8. Addressee's Address *(Only if requested and fee is paid)*

PS Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

Thank you for using Return Receipt Service.

Is your RETURN ADDRESS completed on the reverse side?

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. J. Calvin Gaddy
Post Office Box 147
St. James City, FL 33956

4a. Article Number
Z 333 618 175

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
6-24-99

5. Received By: *(Print Name)*

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X

PS Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

Thank you for using Return Receipt Service.

Is your RETURN ADDRESS completed on the reverse side?

Z 333 618 175

US Postal Service
**Receipt for Certified Mail**
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Mr. J. Calvin Gaddy
Post Office Box 147
St. James City, FL 33956

| | |
|---|---|
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| **TOTAL** Postage & Fees | $ |
| Postmark or Date<br>6-22-99 | |

PS Form **3800**, April 1995

Z 333 618 168

US Postal Service
**Receipt for Certified Mail**
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Mr. Svenn Lindskold
Save Our Suwannee
Post Office Box 669
Bell, FL 32619

| | |
|---|---|
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| **TOTAL** Postage & Fees | $ |
| Postmark or Date<br>6-22-99 | |

PS Form **3800**, April 1995

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. Svenn Lindskold
Save our Suwannee
Post Office Box 669
Bell, FL 32619

4a. Article Number
2 333 618 168

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
6-25-99

5. Received By: *(Print Name)*
Svenn Lindskold

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X

PS Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

Thank you for using Return Receipt Service.

RETURN ADDRESS completed on the reverse side?

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Dr. R.A. + Lynn Milner
716 Stewart St.
Englewood, Fl
34223

4a. Article Number
2 333 618 194

4b. Service Type
☐ Registered ☑ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
6-24-99

5. Received By: *(Print Name)*

6. Signature: *(Addressee or Agent)*
X

8. Addressee's Address *(Only if requested and fee is paid)*

PS Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

Z 333 618 194

US Postal Service
**Receipt for Certified Mail**
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

| | |
|---|---|
| Sent to | Dr. R.A. + Lynn Milner |
| Street & Number | 116 Stewart St. |
| Post Office, State, & ZIP Code | Englewood Fl |
| Postage | $ |
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| **TOTAL** Postage & Fees | $ |
| Postmark or Date | 6-22-99 |

PS Form **3800**, April 1995

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Ms. December McSherry
Post Office Box 679
Archer, FL 32618

4a. Article Number
2 333 618 167

4b. Service Type
☐ Registered ☑ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
6.28

5. Received By: *(Print Name)*
David Lee McSherry

6. Signature: *(Addressee or Agent)*
X

8. Addressee's Address *(Only if requested and fee is paid)*

PS Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

Z 333 618 167

US Postal Service
**Receipt for Certified Mail**
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Ms. December McSherry
Post Office Box 679
Archer, FL 32618

| | |
|---|---|
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| **TOTAL** Postage & Fees | $ |
| Postmark or Date | 6-22-99 |

PS Form **3800**, April 1995

Thank you for using Return Receipt Service.

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "*Return Receipt Requested*" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Ms. Kathy Cantwell
1701 Southwest 117 Street
Gainesville, FL 32607

4a. Article Number
Z 333 618 177

4b. Service Type
☐ Registered ☑ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
6/30/99

5. Received By: (*Print Name*)

6. Signature: (*Addressee or Agent*)
X Kathy Cantwell

8. Addressee's Address (*Only if requested and fee is paid*)

PS Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

Is your RETURN AD... on the reverse side?

Z 333 618 177

US Postal Service
**Receipt for Certified Mail**
No Insurance Coverage Provided.
Do not use for International Mail (*See reverse*)

Ms. Kathy Cantwell
1701 Southwest 117 Street
Gainesville, FL 32607

| | |
|---|---|
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| TOTAL Postage & Fees | $ |
| Postmark or Date 6-22-99 | |

PS Form **3800**, April 1995

Z 333 618 172

US Postal Service
**Receipt for Certified Mail**
No Insurance Coverage Provided.
Do not use for International Mail (*See reverse*)

| | |
|---|---|
| Sent to Al Mueller | |
| Street & Number DER | |
| Post Office, State, & ZIP Code West Palm Bch | |
| Postage | $ |
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| TOTAL Postage & Fees | $ |
| Postmark or Date 6-22-99 | |

PS Form **3800**, April 1995

Thank you for using Return Receipt Service.

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "*Return Receipt Requested*" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. Al Mueller
Dept-of Env. Regulation
PO Box 15425
West Palm Bch, Fl
33416

4a. Article Number
2 333 618 172

4b. Service Type
☐ Registered ☑ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
6/26

5. Received By: (*Print Name*)

6. Signature: (*Addressee or Agent*)
X

8. Addressee's Address (*Only if requested and fee is paid*)

PS Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

...URN ADDRESS completed on the reverse side?

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "*Return Receipt Requested*" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Ms. Patrice Boyes, Esq.
Boyes & Association, PA
Post Office Box 1424
Gainesville, FL 32602

4a. Article Number
Z 333 618 176

4b. Service Type
☐ Registered ☑ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
6/25/99

5. Received By: (*Print Name*)
[illegible signature]

6. Signature: (*Addressee or Agent*)
X [illegible signature]

8. Addressee's Address (*Only if requested and fee is paid*)

PS Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

Z 333 618 176

US Postal Service
**Receipt for Certified Mail**
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Ms. Patrice Boyes, Esq.
Boyes & Association, PA
Post Office Box 1424
Gainesville, FL 32602

| | |
|---|---|
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| **TOTAL** Postage & Fees | $ |
| Postmark or Date 6-22-99 | |

PS Form **3800**, April 1995

Z 333 618 174

US Postal Service
**Receipt for Certified Mail**
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Mr. Chuck Clemons, Chairman
Alachua Co. Board of Co. Commissioners
Post Office Box 2877
Gainesville, FL 32602

| | |
|---|---|
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| **TOTAL** Postage & Fees | $ |
| Postmark or Date 6-22-99 | |

PS Form **3800**, April 1995

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "*Return Receipt Requested*" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. Chuck Clemons, Chairman
Alachua Co. Board of Co. Commissioners
Post Office Box 2877
Gainesville, FL 32602

4a. Article Number
Z 333 618 174

4b. Service Type
☐ Registered ☑ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
6/25/99

5. Received By: (*Print Name*)

6. Signature: (*Addressee or Agent*)
X Ralph Day

8. Addressee's Address (*Only if requested and fee is paid*)

PS Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

Z 333 618 171

US Postal Service

**Receipt for Certified Mail**

No Insurance Coverage Provided.

Do not use for International Mail *(See reverse)*

Mr. Tom Greenhalgh
1211 Paul Russell Road
Tallahassee, FL 32301-7102

| | |
|---|---|
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| **TOTAL** Postage & Fees | $ |
| Postmark or Date | 6-22-99 |

PS Form **3800**, April 1995

**SENDER:**

- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. Tom Greenhalgh
1211 Paul Russell Road
Tallahassee, FL 32301-7102

4a. Article Number Z 333 618 171

4b. Service Type
☐ Registered ☑ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery

TALLAHASSEE FL JUN 24 M.P.O.

5. Received By: *(Print Name)*

6. Signature: *(Addressee or Agent)*
X T. Greenhalgh

8. Addressee's Address *(Only if requested and fee is paid)*

PS Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

Thank you for using Return Receipt Service.

Is your RETURN ADDRESS completed on the reverse side?

Z 333 618 170

US Postal Service

**Receipt for Certified Mail**

No Insurance Coverage Provided.

Do not use for International Mail *(See reverse)*

| | |
|---|---|
| Sent to | Dave Bruderly |
| Street & Number | 1826 NW 57th Ter. |
| Post Office, State, & ZIP Code | Gainesville Fl |
| Postage | $ |
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| **TOTAL** Postage & Fees | $ |
| Postmark or Date | 6-22-99 |

PS Form **3800**, April 1995

**SENDER:**

- ~~Complete items 1 and/or 2 for additional services.~~
- Complete items 3, ~~4a~~, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. DAVE Bruderly
1826 NW 57th Terrace
Gainesville, Fl
32605

4a. Article Number Z 333 618 170

4b. Service Type
☐ Registered ☑ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery 6-24-99

5. Received By: *(Print Name)*

6. Signature: *(Addressee or Agent)*
X

8. Addressee's Address *(Only if requested and fee is paid)*

Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

Thank you for using Return Receipt Service.

Is your RETURN ADDRESS completed on the reverse side?

| Post-it® Fax Note 7671 | Date 6/25/99 | # of pages ▶ 2 |
| --- | --- | --- |
| To SEGUNDO FERNANDEZ | From JOE KAHN | |
| Co./Dept. | Co. DEP | |
| Phone # 521-0700 | Phone # 921-9519 | |
| Fax # 521-0720 | Fax # 922-6979 | |

FORM No. 9

PER YOUR REQUEST. FROM DRAFT OGC NOTICE MANUAL. —JOE K.

PUBLIC NOTICE OF INTENT TO DENY
(Solid Waste Only)

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF INTENT TO DENY

The Department of Environmental Regulation gives notice of its intent to deny a permit to [name and address of applicant] to [brief description of project].

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. 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, Florida Statutes.

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 application 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 Offic of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver o in 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 presidin officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The application is available for public inspection during normal business hours. 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at [name and address of office]

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 ▪ FAX/377-7158



KA 624-98-01

June 22, 1999

Mr. Joe Kahn
Florida Department of
Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Suwannee American Cement Company
Suwannee County, Florida
Particulate Matter Control Efficiency
Guarantees for Kiln and Cooler ESPs

Dear Joe:

In response to your recent verbal request for clarification on matters related to the performance guarantees for particulate matter control on the kiln and cooler ESPs, I have contacted both Polysius and Environmental Elements and have received the attached correspondence from Environmental Elements related to the performance guarantees. The attached correspondence dated June 17,1999, confirms a particulate matter concentration guarantee in the gas stream discharged from the cement kiln ESP while operating in both directing compound modes of 0.007 grains per actual cubic foot. The correspondence also upgrades the guarantee on the clinker cooler ESP to 0.007 grains of particulate matter per actual cubic foot. The original guarantees from Environmental Elements dated December 16, 1998, which have been provided to you, guaranteed the performance of the kiln ESP at 0.007 grains per actual cubic foot but guaranteed the performance of the clinker cooler at only 0.01 grains per actual cubic foot. These guaranteed discharge concentration limits, when combined with the associated design stack gas flow rates, were consistent with the particulate matter limits proposed as BACT by Suwannee American Cement at that time (0.17 lb PM10/ton dry preheater feed for the kiln and 0.09 lb PM10/ton dry preheater feed for the cooler).

In correspondence to the Department in February 1999 and in response to a Department suggestion, Suwannee American Cement reduced the BACT PM10 emission limits for the kiln and raw mill to 0.11 pounds per ton of preheater feed and from the cooler to 0.06 pounds per ton of preheater feed. The reduced emission limit for the clinker cooler, representing Suwannee American Cement's proposal for BACT, required the updated guarantee from Environmental Elements for the cooler ESP. The guarantee provided by Environmental Elements in December 1998, and confirmed in the attached correspondence, is consistent with the reduced particulate matter emission limit proposed by Suwannee American Cement for the kiln and raw mill. See attached summary sheet confirming the consistency between BACT limits and ESP guarantees.

If there are further questions regarding this matter, please do not hesitate to contact me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:wa
Enc.

c: Mr. Frank Darabi

**PROPOSED PM BACT EMISSION LIMITS AND ESP GUARANTEES**

**SUWANNEE AMERICAN CEMENT SUWANNEE COUNTY, FLORIDA**

KILN/RAW MILL

| | | |
|---|---|---|
| Proposed BACT PM10 limit | = | 0.11 lb/ton feed |
| Preheater feed | = | 163 tph |
| PM10 Emission Limit | = | 0.11 lb/ton x 163 tph |
| | = | 16.3 lb/hr |

Guarantee @ 0.007 gr/acf

Compound Mode:

| | | |
|---|---|---|
| Gas flow | = | 194,000 acfm |
| PM Emissions | = | 11.6 lb/hr |

Direct Mode:

| | | |
|---|---|---|
| Gas flow | = | 200,000 acfm |
| PM Emissions | = | 12.0 lb/hr |

COOLER

| | | |
|---|---|---|
| Proposed BACT PM10 limit | = | 0.06 lb/ton feed |
| Preheater feed | = | 163 tph |
| PM10 Emission Limit | = | 0.06 lb/ton x 163 tph |
| | = | 9.8 lb/hr |

Guarantee @ 0.007 gr/acf

| | | |
|---|---|---|
| Gas flow | = | 160,000 acfm |
| PM Emissions | = | 9.60 lb/hr |

**ENVIRONMENTAL ELEMENTS CORPORATION**

SINCE 1946

3700 KOPPERS STREET · BALTIMORE, MARYLAND 21227 · TELEPHONE 410-368-7000

Hamilton G. Walker, Jr.
Director, National Account Sales
Email: hgwalker@eec1.com
Telephone: 410 368 7046
Fax: 410 368 6721

VIA TELEFAX
770 955 8789

June 17, 1999

Mr. Joerg Teichert
Polysius Corporation
180 Interstate North Parkway, NW
Atlanta, Georgia 30339-2194

Reference: EEC Proposal 98-12-16428-R2110E-FA
Suwannee American Cement

Dear Mr. Teichert

Confirming our telephone conversation today, Environmental Elements Corporation hereby amends its proposal referenced above as follows:

- Page 4:1 We confirm that the guaranteed outlet particulate residual is 0.007 gr/ACF in both direct and compound service as shown in the proposal.
- Page 4:2 For the clinker cooler, the guaranteed outlet particulate residual is changed to 0.007 gr/ACF.

All other terms and conditions of the original proposal remain unchanged.

Please call if we can be of further service. We look forward to working with you on this project.

Sincerely,

Hamilton G. Walker, Jr.
Director, National Account Sales

cc:
Mr. Jack Locke – Energy & Environmental Technologies, Inc.
Don Hug
Bob Brown

EEC Listed NYSE

Suwannee American Cement Co. Inc.
P.O. Box 38
Old Town, FL 32680
Phone: 352 542-7942 FAX: 352 542-3417

XC: CLAIR
JOE K
6/21

June 15, 1999

State of Florida
Department of Environmental Protection
Mail Station 5500
2600 Blair Stone Road
Tallahassee, FL 32399-2400
Attention: Mr. Howard L. Rhodes

RECEIVED
JUN 21 1999
DIVISION OF AIR
RESOURCES MANAGEMENT

RECEIVED
JUN 21 1999
BUREAU OF
AIR REGULATION

Dear Mr. Rhodes:

As you know, our letter of 10 June included the following:

1. Resumes of Chuck Yagel and myself.
2. Draft Organizational Chart for the plant.
3. Key position job descriptions.
4. Listing of Plant Consultants.

Upon further review of these documents, we nave realized that certain further modifications and clarifications are in order.

As we assured you during our meeting last week, Chuck Yagel and I are providing the primary expertise and direction for this new state-of-the-art facility. In light of recent events, we now realize that this may not provide you with adequate assurance of the continued proper operation and maintenance of the plant. Consequently, the Anderson family has decided to relinquish all direction of Suwannee American Cement.

We would like to advise you that I am now the President of Suwannee American Cement, and Chuck Yagel is the Vice President of Operations. We have been tasked only with the direction of Suwannee American Cement, and have no prior history in any function with the Anderson Family. We are fully and solely committed to the efficient and environmentally responsible operation of Suwannee American Cement.

Throughout our careers in the cement industry, we have maintained good reputations for environmentally responsible operations, and it is our firm personal commitment to maintain that record. In order to fulfill that goal, we will staff our company with only the most qualified personnel who share our vision of environmental excellence.

As you know, we are not yet able to assign names to any of the positions we have defined in our organization. As we progress farther in our project, we will recruit the most competent personnel available in the cement industry to fill all critical positions. As a matter of fact, even the Organizational Chart is only preliminary, since in may change significantly in order to best avail ourselves of special talents various people within the industry could bring us.

We have modified our Draft Organizational Chart to reflect our new structure. A copy of this revised document is attached.

Additionally, I have modified my resume to better describe the job duties of the positions I have held.

In reviewing our previous submittal, I realize we failed to properly address the duties of the Environmental Compliance Officer. Considering the sensitivity and importance of this position, we have elaborated on the position in our Key Job positions submittal. A revised copy is attached.

We remain highly sensitive to the need to protect the pristine nature of the Ichetucknee River. While we are fully confident that our plant will not adversely affect this wonderful natural resource, we realize many people may remain apprehensive. Accordingly, we will initiate and maintain a public liaison office that will respond to all public queries and concerns in a timely manner. Further, we will list the telephone number of at least one responsible contact individual within Suwannee American Cement, who will be available at any time to respond to public concerns.

We trust this additional information will provide further reassurance that Suwannee American Cement will be a good neighbor dedicated to preserving the environment with all its natural beauty.

Should you have any further questions, please don't hesitate to call either Chuck Yagel or me.

Sincerely,

Signed by Chuck Yagel for
Fred W. Koester
President
Suwannee American Cement

Enclosures

# KEY POSITION JOB DESCRIPTIONS

## PLANT MANAGER

Has the responsibility for plant operations and maintenance. Has the authority to expend funds and take any necessary actions to assure a safe, efficient and environmentally responsible plant operation.

## PRODUCTION MANAGER / ENVIRONMENTAL COMPLIANCE OFFICER

Reports directly to the plant manager. Is responsible for the day to day operation of the plant. Has operational authority over all plant equipment and is the Environmental Compliance Officer.

The Environmental Compliance Officer, in conjunction with the Plant Process Engineer-has responsibilities and duties as follows:

- Has complete responsibility for plant compliance with all emissions permit requirements
- Directs and is responsible for calibration of all plant emissions monitoring equipment and instruments
- Directs and is responsible for acquisition of all data required for environmental monitoring and emissions control performance reporting
- Directs maintenance of equipment for remote real-time monitoring of plant emissions data.
- Has the authority to expend necessary funds for emissions compliance related issues.
- Provides liaison with DEP on all compliance-related matters.

## MAINTENANCE MANAGER

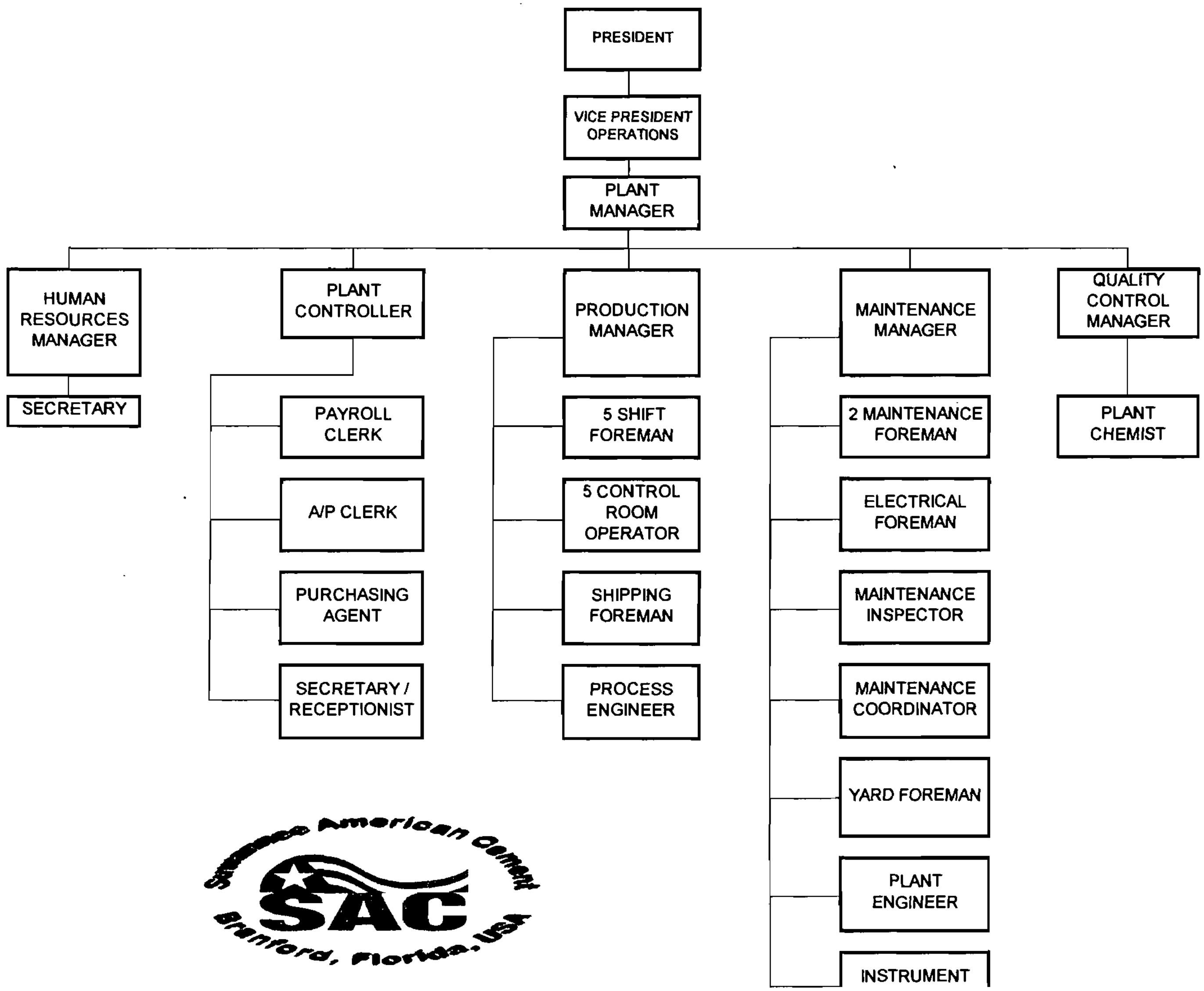
Reports directly to the plant manager. Is responsible for the short and long term equipment maintenance as well as plant cleanliness. Has the authority to expend funds necessary to assure equipment integrity and maintain an adequate spare parts inventory.

## QUALITY CONTROL MANAGER

Reports directly to the plant manager. Is responsible for product quality to assure compliance with cement specifications. Has the authority for material control and release of product for shipment.

# Suwannee American Cement

DRAFT ORGANIZATIONAL CHART




Suwannee American Cement
SAC
Branford, Florida, USA

**FRED W. KOESTER** **PRESIDENT**

- Retired and Consultant to Lafarge Corporation, Great Lakes Region, July 1994

- **Lafarge Corporation, Great Lakes Region:** President and Senior Vice President, Lafarge Corporation, May 1992

  Operations/Marketing/Profit & Loss responsibility for six cement plants with annual revenues of $400,000,000.

- **Lafarge Corporation, Southern Region:** President and Senior Vice President, Lafarge Corporation,, February 1987

  Operations/Marketing/Profit & Loss responsibility for six cement plants with annual revenues of $350,000,000.

- **General Portland Inc.**: Executive Vice President., April 1985

  Full responsibility for 5 of 9 operating divisions of the company

- **General Portland Inc.**: Senior Vice President., August 1984

  Full responsibility for 4 of 9 operating divisions of the company

- **General Portland Inc.**: Senior Vice President-Operations, April 1982

- **General Portland Inc.**: Vice President and General Manager, Trinity North Division, May 1981

- **General Portland Inc.**: Director-Preheater Plants Projects, June 1977

- **General Portland Inc.**: Director-Maintenance Planning, January 1977

- **General Portland Inc.**: Operations Manager, Trinity Division, 1975

- **General Portland Inc.**: Plant Manager, Fort Worth, 1973

- **General Portland Inc.**: Assistant Plant Manager, Houston, 1972

- After 11 years in various cement industry operations positions, joined General Portland as Maintenance Manager, Paulding Plant, in 1970

BSME, Marquette University

Copies Joe K - 6/21/99 - C.g.A.

Claire dw Howard 6/21

LAW OFFICES

OERTEL, HOFFMAN, FERNANDEZ & COLE, P.A.

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TIMOTHY P. ATKINSON
M. CHRISTOPHER BRYANT
C. ANTHONY CLEVELAND
TERRY COLE
SEGUNDO J. FERNANDEZ
DANIEL W. HARTMAN
KENNETH F. HOFFMAN
KENNETH G. OERTEL
PATRICIA A. RENOVITCH

June 17, 1999

RECEIVED
JUN 18 1999
DIVISION OF AIR
RESOURCES MANAGEMENT

Howard L. Rhodes, Director
Air Resources Management
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2600

RE: Suwannee American Cement Company, Inc.
Permit Application No. 1210465-001-AC

Dear Mr. Rhodes:

Recently I met with Perry Odom and Kirby Green regarding the above-referenced application. They indicated the Department believed the deadline for issuing a Notice of Intent was rapidly approaching. I have not calculated on my own what the actual deadline is, but in order to relieve any doubt, I have been authorized by my client to agree to a 30-day extension from any deadline to make sure the Department is satisfied it has available time to adequately explore permit conditions with Suwannee American.

I believe it would be fruitful for the applicant to meet with the Department to discuss areas where the Department has questions regarding Suwannee American's commitment to protecting the surrounding environment from any discharges which would originate from the facility. As you know, we have proposed to install additional monitoring equipment and post a surety bond to guarantee compliance. My brief meeting with Kirby Green and Perry Odom makes me believe it would be worthwhile for us to discuss this in more detail. In order to do that and not run the risk of a deadline inadvertently passing, I have been authorized to waive any permit deadline, including those that appear in s. 120.60, F.S., for a period of 30 days beginning on June 21, 1999. This waiver will extend until July 21, 1999, and should be interpreted as tolling the running of any deadline that might expire during this period.

Yours truly,

Kenneth G. Oertel

c: Kirby Green
Perry Odom
Fred Koester
Jim Eaton
John Koogler

F:\document\KGO\LTR\Rhodes6-17SuwAm.wpd

RECEIVED
JUN 21 1999
BUREAU OF
AIR REGULATION

EPA
United States
Environmental Protection
Agency

# facsimile TRANSMITTAL

EPA Region 4

Mississippi, Tennessee, Alabama, Georgia, Florida, Kentucky, South Carolina, North Carolina

**To:** Joseph Kahn
FDEP
850/921-9519

**Fax #:** 850/922-6979

**Subject:** Cement Plants - North Florida, Letter from Dave Bruderly

**From:** Stan Kukier **Phone#:** 404/562-9140

**Date:** 6/15/99

**Pages:** 7, including this cover sheet.

**COMMENTS:**

(FYI)

Do you have or received any additional information? We are in the process of preparing a response for RA's signature.

Thanks,

EPA United States Environmental Protection Agency
Air & Radiation Technology Branch
U.S. Environmental Protection Agency
61 Forsyth Street, SW, 12th Floor
Atlanta, Georgia 30303

404-562-9105
Fax: 404-562-9095

CB #01 to AH 6/22/99

BRUDERLY ENGINEERING ASSOCIATES, INC.

31 May, 1999

Mr. John Hankinson
Regional Administrator
US Environmental Protection Agency
The Federal Center
100 Alabama Street SW
Atlanta GA 30303

Dear John,

I am writing to ask for USEPA help to protect ecosystems, not to mention air and water quality, from significant degradation throughout North Florida. Alachua County and tens or thousands of concerned citizens are fighting a holding action against efforts by the cement industry to use every procedural opportunity to side step the intent of the National Environmental Policy Act (NEPA), the Clean Air Act, and the Clean Water Act.

Specifically, I'm asking for the following assistance:

- Technical support to help Alachua County and Florida Rock Industries (FRI) find innovative ways to retrofit and reduce criteria air pollution (fine particulate and nitrogen oxides) from their new Alachua County cement plant.
- Technical support to help Suwannee American Cement Company (SAC) find a new site for their proposed Suwannee County cement plant — a site that does not threaten the Ichetucknee State Park and the Ichetucknee, Santa Fe, and Suwannee Rivers.
- Technical support to help FRI and SAC design, build, and operate the cleanest and most efficient cement plant(s) in the world in Hernando and Suwannee counties.
- Technical review of the impacts from Greenhouse Gas (GHG) emissions from all cement plants in Florida.

North Florida is on track to become a major production center for Portland cement. Yet amazingly, the protections normally offered by NEPA have been ignored. Nobody knows the cumulative environmental impacts this new industry will have on the culture and economy of local communities, on ambient air or water resources, on sensitive ecosystems, or on human health and welfare.

Three new green field facilities are under construction or planned in this region:

1. In Alachua County, FRI plans to place a 700,000 ton per year kiln in operation later this year -- assuming the company obtains their Title V permits;
2. In Suwannee County, SAC has submitted permit applications to construct a larger kiln -- directly adjacent to the Ichetucknee Springs State Park; and
3. In Hernando County, FRI recently announced plans for a second kiln near Brooksville that will repeat all the same planning and design mistakes.

1826 N.W. 57th Terrace • Gainesville, Florida 32605 • 352-377-0932 • FAX 352-378-6326 • E-mail: bruderly@aol.com

**Three Major New Sources of Pollution are Planned for North Florida.**
Combined nitrogen oxide emissions from these three plants will exceed 5,000 tons per year. In addition, emissions from off-road equipment and truck traffic created by these plants will be nearly as large -- unfortunately these emissions have not been evaluated. These new stationary and mobile sources of air pollution will have a significant impact on ambient concentrations of ozone and fine particulate throughout North Florida. These pollutants -- plus noise, light, and other emissions from these facilities threaten the ambiance and the overall quality of life in several rural communities.

**Environmental Impacts are Unknown**
Unfortunately, the impacts of the emissions from these three new facilities are unknown. No comprehensive environmental assessments have been conducted. Even effects on local and regional air quality -- especially ozone, toxics, and fine particulate -- are unknown. Impact assessments prepared by the companies have been ***de minimis*** and based solely on literature review and simplistic and poorly documented assumptions.

For example, in spite of repeated public concerns and requests for factual, site-specific data and impact assessment, site specific impact assessments have not been conducted. There have been no health effects studies, no emission budgets, no fate and effects assessment of mercury, dioxins, nor other combustion-derived toxics.

**Site Specific Ambient Air Quality Data is Not Available**
Pre-construction baseline ambient air quality monitoring has not been required by FDEP nor submitted for either the Alachua and Suwannee County PSD permit applications. The companies claimed exemption from ambient air quality monitoring requirements under the ***de minimis*** volatile organic compound (VOC) thresholds. The FDEP granted this exemption in spite of the fact that it is well established that nitrogen oxides are the limiting reactant in the formation of ozone in this region.

In effect, the companies claimed exemption from baseline ambient ozone and fine particulate monitoring because there is no explicit requirement under Florida law to do so. As a result, major new sources of air pollution are proposed without the benefit of an adequate database of pre-construction and pre-operation air quality data for ozone and fine particulate.

**No Site-Specific Health Effects or Ecological Impact Analysis Has Been Done**
This ***de minimis*** behavior has been consistent throughout the PSD permitting process. FRI and SAC each claim that emissions from their plants will not cause harm to the community. They have used simplistic assumptions and models to support their claims that emissions will not degrade ambient air quality in North Florida. But they have not provided hard evidence to substantiate these claims. The companies are using the legal controversy over the new National Ambient Air Quality Standards (NAAQS) to avoid rigorous analysis of both baseline air quality and impacts. No site-specific database of ambient fine particulate or ozone air quality measurements exists. For this reason,

emission impacts on ambient fine particulate and ozone levels have never been rigorously evaluated against the current or proposed NAAQS.

The failure of the FDEP to require collection of site-specific ambient air quality data has effectively neutralized attempts by the public to obtain answers to legitimate public concerns. Since site-specific local data is not available, the companies have been able to use general data and simplistic assumptions to model air quality impacts and justify conclusions that there are no adverse impacts.

Last month, FDEP stated that they intend to approve the plant proposed for Suwannee County. We encounter here the same problem faced by Alachua County. Impacts have not been evaluated and the technology proposed is not the cleanest and most efficient available. Dilution is the solution to the pollution created by these new sources.

**The PSD Permit Process has Not Protected Alachua County**

The Alachua County Commission believes that FRI may have mislead the public and local planning officials in early public disclosures about the size of the project and its impacts on the local community. FRI easily obtained local land use approvals because the company understated the quantities of emissions from their proposed facility when it applied for a Special Use Permit. At the time, the County deferred judgement on air quality issues to the FDEP and USEPA.

FRI subsequently applied for -- and received -- permission to emit significantly higher emissions in the PSD air quality permit application submitted to the FDEP. The FDEP issued an air construction permit allowing FRI much higher emissions, contradicting its earlier promise to Alachua County. The FRI facility is scheduled for operation later this year. The Commission can provide you with precise dates and emission estimates that were made.

**Alachua County wants the Cement Industry to Use State-of-the-Art Technologies**

The Alachua County Commission has asked FRI to comply with the low emission estimates originally submitted to the County with the Site Plan Application. In part because FRI failed to evaluate accurately impacts from the higher emissions granted in the PSD permit, the Commission believes requiring FRI to conform to its original estimates is necessary to protect the health, safety, and welfare of the community. The pollutants of critical concern are fine particulate, nitrogen oxides, and products of incomplete combustion. FRI claims that it is not technically and economically feasible for their kiln in Alachua County to meet the lower emission levels.

However, I have learned that innovative combustion process and technologies have been developed that create much lower emissions. If used, these readily available technologies could significantly reduce emissions from the manufacture of cement. One technology in particular, the use of pure oxygen to replace combustion air, offers significant reductions of nitrogen oxide and particulate emissions. Had the FRI kiln been designed from the outset to use pure oxygen, I believe that it would be possible for FRI to meet the emission levels initially proposed to the County.

**Industrial Ecology and Brownfield Concepts Must be Used to Reduce Pollution**
Other opportunities to reduce or prevent pollution from new cement kilns derive from the use of concepts from the emerging science of industrial ecology. For example, cement kilns located adjacent to steel mini-mills, can reduce energy consumption and emissions significantly due to the synergistic reuse of waste materials, such as slag and fly ash, and energy recovery. Co-location also has the beneficial effect of concentrating heavy industry in appropriate brownfield locations rather than greenfield sites in sensitive communities.

Unfortunately, innovative management approaches, scientific site selection, and use of advanced process and production technologies have been rejected by FRI and SAC and the State of Florida. The companies claim that use of state-of-the-art technologies is simply not economically feasible in the United States cement industry.

**The Public Suffers While FRI and SAC Learn How to Make Cement**
Neither FRI nor SAC have experience in the manufacture of cement. As a result, the companies have no demonstrated record of performance. Public disclosures have not assured the public that they know how to control emissions or understand the impacts their facilities will have on the health, safety, and welfare of the people who are their neighbors. Nor do the companies understand or appreciate the sensitivity and value of the pristine water resources and ecosystems that are unique to North Florida.

Neither FRI, SAC, nor their agents have shown the willingness to design and build facilities that use the most efficient and cleanest available technologies. As a result, the citizens and ecosystems of North Florida will suffer unknown impacts while these neophyte companies learn how to make cement with inadequate or obsolete technologies. These policies are unacceptable.

**A Cluster of Three Obsolete Cement Plants is a National Problem**
The Alachua County Commission is standing alone in an attempt to hold FRI to the emission limits pledged when it first applied for a Special Use Permit. The Suwannee County Commission has been overwhelmed by perceived economic benefits from this plant and has already given SAC approval to build their kiln next to the Ichetucknee State Park. Neither Alachua nor Suwannee counties has had the authority, expertise, nor resources required to adequately regulate emissions that will protect local health and welfare or establish appropriate emission standards for the entire cement industry.

We need help. Local citizens, companies, and counties need immediate regulatory and technical assistance to prevent our air quality from additional degradation. We need assistance to accurately identify, evaluate, and quantify environmental threats so that cement plant emissions can be reduced to acceptable levels.

We need federal support -- including the use of the NEPA Process -- to assure the public that the plant sites and manufacturing processes do not interfere with the health, welfare, and happiness of the existing residential, agricultural, and eco-tourist based community.

Florida Rock Industries, Alachua County, Suwannee American Cement Company, and Suwannee County must have access to the resources of the USEPA to resolve this impending crisis.

In Alachua County help is needed to identify, design, evaluate, test, demonstrate, and use innovative technologies that will reduce emissions from the FRI plant to the original estimated levels. This effort should include targeted research and development to identify and deploy innovative technologies that will reduce emissions to acceptable levels.

In Suwannee County help is needed to protect the Ichetucknee Springs, the Santa Fe River, and the Suwannee River. Throughout North Florida, help is needed to adequately measure and evaluate the cumulative impacts of emissions from three new cement plants and other sources on the health, safety, welfare of humans and ecosystems.

We solicit your intervention in this permitting process and welcome your advice and expertise in planning for sane development of our sensitive North Florida counties.

Thank you.

Sincerely,

Dave Bruderly

David E. Bruderly, PE

BRUDERLY ENGINEERING ASSOCIATES
1826 N.W. 57th Terrace
Gainesville, Florida 32605

RA

Mr. John Hankinson, Regional Administrator
US Environmental Protection Agency
The Federal Center
100 Alabama Street SW
Atlanta GA 30303

# INTEROFFICE MEMORANDUM

**Date:** 15-Jun-1999 01:47pm
**From:** Joseph Kahn TAL
KAHN_J
**Dept:** Air Resources Management
**Tel No:** 850/921-9519

**To:** Cindy Phillips TAL ( PHILLIPS_C )

**Subject:** Re: 40 CFR 63 Subpart LLL - Portland Cement Manufacturing Industry

Thanks. I'll revise the permitting note to reference the expected effective date of October 1st for adoption by reference.

# INTEROFFICE MEMORANDUM

**Sensitivity:** COMPANY CONFIDENTIAL

**Date:** 15-Jun-1999 01:32pm
**From:** Cindy Phillips TAL
PHILLIPS_C
**Dept:** Air Resources Management
**Tel No:** 850/921-9534

**To:** Larry George TAL ( GEORGE_L )
**CC:** Joseph Kahn TAL ( KAHN_J )

**Subject:** Re: 40 CFR 63 Subpart LLL - Portland Cement Manufacturing Industry

Thanks Larry. Joe has already included the subpart conditions in the permit. We just want to make sure we tie-up the loose ends by following through with the rule adoption.

# INTEROFFICE MEMORANDUM

**Sensitivity:** COMPANY CONFIDENTIAL

**Date:** 15-Jun-1999 01:29pm
**From:** Cindy Phillips TAL
PHILLIPS_C
**Dept:** Air Resources Management
**Tel No:** 850/921-9534

**To:** Joseph Kahn TAL ( KAHN_J )

**Subject:** FWD: Re: 40 CFR 63 Subpart LLL - Portland Cement Manufacturing Industry

FYI Joe. Is there anything else you need Larry to do?

# INTEROFFICE MEMORANDUM

**Date:** 15-Jun-1999 10:26am
**From:** Larry George TAL
GEORGE_L
**Dept:** Air Resources Management
**Tel No:** 850/921-9555

**Subject:** Re: 40 CFR 63 Subpart LLL - Portland Cement Manufacturing Industry

>Subpart LLL was promulgated in the federal register yesterday, June 14, 1999.
>Could you please adopt this subpart by reference as soon as possible? This is
>the subpart that Joe Kahn is including in the permit for the Suwannee plant.

Cindy, The schedule we are on is to publish a fast-track notice of adoption for all second quarter (April-June) NSPS/NESHAP in late July, to be adopted in early September with an effective date of October 1. Since the company has to comply with the subpart whether we adopt it or not, I assume the permit can go forward in the meantime. Let me know if we need to do something different in this case. (Note, it takes a minimum of 9-10 weeks to adopt anything by reference.) Larry

# INTEROFFICE MEMORANDUM

**Sensitivity:** COMPANY CONFIDENTIAL

**Date:** 14-Jun-1999 04:05pm
**From:** Cindy Phillips TAL
PHILLIPS_C
**Dept:** Air Resources Management
**Tel No:** 850/921-9534

| | | |
|---|---|---|
| **To:** | Joseph Kahn TAL | ( KAHN_J ) |
| **CC:** | Alvaro Linero TAL | ( LINERO_A ) |
| **CC:** | Clair Fancy TAL | ( FANCY_C ) |
| **CC:** | Howard Rhodes TAL | ( RHODES_H ) |

**Subject:** 40 CFR 63 Subpart LLL - Portland Cement Manufacturing Industry

FYI - Subpart LLL was promulgated today, June 14, in the Federal Register. Here is the completed compliance date section:

Sec. 63.1351 Compliance dates.

(a) The compliance date for an owner or operator of an existing affected source subject to the provisions of this subpart is June 10, 2002.

(b) The compliance date for an owner or operator of an affected source subject to the provisions of this subpart that commences new construction or reconstruction after March 24, 1998 is June 9, 1999 or immediately upon startup of operations, whichever is later.

Joe
- FYI
I edited this part
of subpart LLL
some more.
- Cindy 6/1

EMISSION STANDARDS AND OPERATING LIMITS

**§63.1342 Standards: General.**

(a) [See attached 40 CFR part 63, subpart A, general provisions, indicating the applicability of the general provisions requirements to subpart LLL.]

(b) Table 1 of this section provides a summary of emission limits and operating limits of this subpart.

**Table 1 to §63.1342. Emission Limits and Operating Limits.**

| Affected Source | Pollutant or Opacity | Emission and Operating Limit |
|---|---|---|
| All kilns and in-line kiln/raw mills at major sources (including alkali bypass) | PM | 0.15 kg/Mg of feed (dry basis) |
| | Opacity | 20 percent |
| All kilns and in-line kiln/raw mills at major and area sources (including alkali bypass) | D/F | 0.20 ng TEQ/dscm<br>or<br>0.40 ng TEQ/dscm when the average of the performance test run average particulate matter control device (PMCD) inlet temperatures is 204° C or less.<br>[Corrected to 7 percent oxygen]<br><br>Operate such that the three-hour rolling average PMCD inlet temperature is no greater than the temperature established at performance test.<br>If activated carbon injection is used: |

LAW OFFICES

OERTEL, HOFFMAN, FERNANDEZ & COLE, P.A.

TIMOTHY P. ATKINSON
M. CHRISTOPHER BRYANT
C. ANTHONY CLEVELAND
TERRY COLE
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301 SOUTH BRONOUGH STREET
SUITE 500
TALLAHASSEE, FLORIDA 32301

(850) 521-0700
FAX (850) 521-0720

MAILING ADDRESS:
POST OFFICE BOX 1110
TALLAHASSEE, FLORIDA 32302-1110

http://www.ohfc.com

xc: Joe K
from: HLR
6/14

June 14, 1999

RECEIVED
JUN 14 1999
DIVISION OF AIR
RESOURCES MANAGEMENT

The Honorable Jeb Bush
PL 05 The Capitol
Tallahassee, FL 32399-0001

Dear Governor Bush:

I represent Suwannee American Cement Co., Inc., which has applied for permits to construct and operate a cement manufacturing plant in Branford, Florida. Among the permits which are required for such a facility is an air quality permit from the Florida Department of Environmental Protection.

That permit application is presently being reviewed by the Department of Environmental Protection. Suwannee American has put a great deal of effort into the design of this proposed plant and has engaged leading consultants to assist it in demonstrating to DEP that the facility will be operated in strict compliance with all state and federal requirements.

DEP is expected to act on this application in the very near future. Suwannee American has responded to all DEP's questions in a complete and thorough manner. It is our understanding that DEP is satisfied the proposed plant will operate in conformity with all standards. The entire Suwannee County Commission, and the great majority of Suwannee County strongly support this project. It will bring industry and jobs to the area, and greatly enhance the tax base.

We have learned that members of the public, who are seeking to have the permit application denied, have contacted your office. The opposition contend the plant will violate environmental regulations and that Suwannee American will be a "bad actor" because some of its principals are also owners of Anderson Columbia Co., Inc., a road building contractor. Suwannee American is a totally separate and independent company from Anderson Columbia.

Anderson Columbia, it is contended, is a violator of state environmental statutes. There have been numerous articles written about Anderson Columbia, most by the Pensacola News Journal, which have portrayed the company and its owners in a most unfavorable light.

Anyone, whether a natural person or a corporation, is in a difficult position to defend themselves when they become a popular target. I cannot list all the distortions and false statements written about Anderson Columbia, but I must mention a few. As recently as June 11, 1999, the Tallahassee Democrat, in an article about the proposed plant stated:

> The Lake City company announced this week that it was selling an asphalt plant in Santa Rosa County that has fouled the Blackwater River. A company plant also is blamed for polluting groundwater in Dixie County.

I am very familiar with the Santa Rosa County facility. Prior to Anderson Columbia purchasing it, the site was an abandoned pre-stressed concrete plant. It was a mess, with uncontrolled runoff going directly into the Blackwater River. Anderson Columbia made it a cleaner place. The Blackwater River has not been "fouled" at all.

Anderson Columbia has never operated any facility in Dixie County. The published report which states that it did so is false. I also enclose a letter I received from the DEP General Counsel which describes where the Pensacola News Journal "misquoted" a Marine Patrol Officer regarding Anderson Columbia.

These articles are typical of the charges the media has published concerning Anderson Columbia. It has been difficult for the company to tell its side of these stories. In fact, Anderson Columbia attempted to respond to the numerous articles about it in the Pensacola News Journal. At its own expense, it sought to have the Pensacola News Journal print its response to these stories. The News Journal refused to sell Anderson Columbia space in its paper for that purpose.

Thus, the newspaper which has published a series of critical articles about my client would not even sell it space to tell its side of the story. Anderson Columbia has been in business for approximately 40 years. It operates over 10 asphalt plants in the state. As far as we can determine, none of these plants has ever been cited for an air quality violation.

Despite the chagrin Anderson Columbia feels regarding its public image, it is not the applicant for this permit. However its association with Suwannee American has resulted in this application receiving heightened scrutiny from DEP. Suwannee American has already agreed to a level of compliance for this plant which is above any existing plant in the state. The Company does not wish to put any public official in the position of having to defend its application unless it completely demonstrates entitlement to the permit.

In that context, in addition to providing assurances of compliance to DEP required of all applicants, Suwannee American will offer to post a bond as a surety that it will operate the plant in full conformity with all applicable rules. Suwannee American has previously agreed it will install monitoring equipment at this plant which will be directly connected to DEP's office. Thus, if an air quality violation were to occur at the plant, DEP would know of it immediately.

Suwannee American stands ready to fulfill its obligations to the state for this permit to be issued. Its application and commitment to protecting the state is a promise that can be depended upon. We hope you will direct the Department to make its decision based on the criteria applicable to this type of project, and ensure that the standards used are those that have been applied to other similar facilities.

Yours truly,

Kenneth G. Oertel

cc: David Struhs, Secretary DEP
Perry Odom, General Counsel DEP
Howard Rhodes

KGO/ldm
F:\document\KGO\LTR\Bush6-14.ltr.wpd

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Department of Environmental Protection

Jeb Bush
Governor

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

David B. Struhs
Secretary

February ~~12~~ 26, 1999

RECEIVED
MAR 04 1999
OERTEL, HOFFMAN, FERNANDEZ & COLE, P.A.

Ken Oertel, Esquire
Oertel, Hoffman, Fernandez & Cole, P.A.
P.O. Box 1110
Tallahassee, Florida 32302-1110

RE: Anderson Columbia Co. and Panhandle Land & Timber Co. v. DEP and BTIITF

Dear ~~Mr. Oertel~~ Ken:

This letter is written in response to your letter dated December 18, 1998, regarding statements allegedly made by a Florida Marine Patrol Officer, as reported in the Pensacola News Journal of December 15, 1998. At my request, my staff investigated the allegations in your letter. Lieutenant Williams admitted that he made a statement similar to that reported; however, the statement was taken out of context by the newspaper.

Lieutenant Williams spoke with the reporter for approximately 15 minutes about general environmental issues in the area. In the course of that conversation, Lieutenant Williams commented that in the public's opinion, major companies like Monsanto, Cyanamid, Champion or Anderson Columbia have the resources to hire lobbyists and other specialists to "get their way." Lieutenant Williams advised that he did not mean to be derogatory in any way. In fact, he said many things in Anderson Columbia's benefit. However, none of these statements were included in the news article.

Lieutenant Williams admits that he has no first-hand knowledge about Anderson Columbia's road building activities in Florida. Indeed, he made no comments regarding that issue, and the article in no way infers that he had any particular knowledge on that issue.

I'm afraid the situation you complain of was created by the reporter who appears to have paraphrased Lieutenant Williams' statement to "make a better story." If you have any questions regarding this matter, please contact me or David Thulman at (850) 488-9314.

Sincerely,

Perry

F. Perry Odom
General Counsel

cc: Bobby Cooley, NWD, DEP
Cliff Rohlke, NWD, DEP
David Thulman, OGC, DEP

*"Protect, Conserve and Manage Florida's Environment and Natural Resources"*

*Printed on recycled paper.*

Suwannee American Cement Co. Inc.
P.O. Box 38
Old Town, FL 32680
Phone: 352 542-7942 FAX: 352 542-3417

To: Joe K
FROM: HOWARD
6/14

June 10, 1999

State of Florida
Department of Environmental Protection
Mail Station 5500
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RECEIVED
JUN 14 1999
DIVISION OF AIR
RESOURCES MANAGEMENT

Attention: Mr. Howard L. Rhodes

Dear Mr. Rhodes:

In response to your recent request, I am enclosing the following information regarding the proposed Suwannee American Cement Plant at Branford, Florida:

1. Resumes of Chuck Yagel and me.
2. Draft Organizational Chart for the plant.
3. Key position job descriptions.
4. Listing of Plant Consultants.

Thank you again for meeting with us on Wednesday. If further information is required, please do not hesitate to contact us.

Sincerely,

Fred W. Koester

Fred W. Koester
Project Director

Enclosures

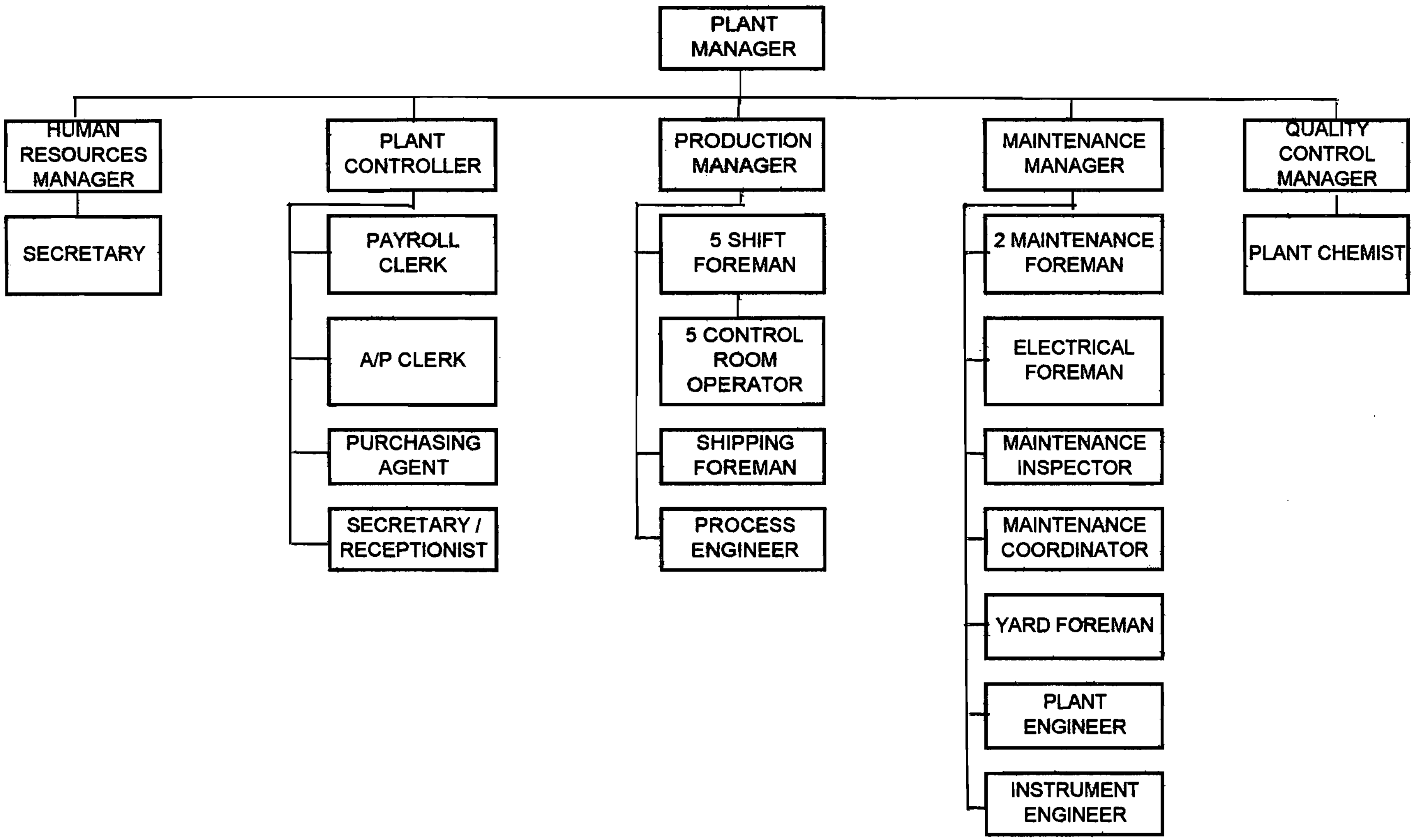
**FRED W. KOESTER** **PROJECT DIRECTOR**

- After 11 years in various cement industry operations positions, joined General Portland as Maintenance Manager, Paulding Plant, in 1970
- Assistant Plant Manager, Houston, 1972
- Plant Manager, Fort Worth, 1973
- Operations Manager, Trinity Division, 1975
- Director-Maintenance Planning, January 1977
- Director-Preheater Plants Projects, June 1977
- Vice President and General Manager, Trinity North Division, May 1981
- Senior Vice President-Operations, April 1982
- Senior Vice President, August 1984
- Executive Vice President of General Portland Inc., April 1985
- President of Lafarge Corporation. Southern Region, and Senior Vice President, Lafarge Corporation, February 1987
- President of Lafarge Corporation, Great Lakes Region, and Senior Vice President, Lafarge Corporation, May 1992
- Retired and Consultant to Lafarge Corporation, Great Lakes Region, July 1994
- Retired January 1996

BSME, Marquette University

# Suwannee American Cement

## DRAFT ORGANIZATIONAL CHART



# KEY POSITION JOB DESCRIPTIONS

## PLANT MANAGER

Has the responsibility for plant operations and maintenance. Has the authority to expend funds and take any necessary actions to assure a safe, efficient and environmentally responsible plant operation.

## PRODUCTION MANAGER

Reports directly to the plant manager. Is responsible for the day to day operation of the plant. Has operational authority over all plant equipment and is the environmental compliance officer.

## MAINTENANCE MANAGER

Reports directly to the plant manager. Is responsible for the short and long term equipment maintenance as well as plant cleanliness. Has the authority to expend funds necessary to assure equipment integrity and maintain an adequate spare parts inventory.

## QUALITY CONTROL MANAGER

Reports directly to the plant manager. Is responsible for product quality to assure compliance with cement specifications. Has the authority for material control and release of product for shipment.

**Charles W. Yagel** **Vice President of Operations**

During twenty-six years in the Cement Industry, Mr. Yagel has managed cement plant maintenance and operations in two plants of differing technology. He has also coordinated the design, supply, construction, and start-up of numerous complete plants throughout the world.

**Prior Experience**

**Roberts & Schaefer Company**: Director of Cement Operations
Responsible for all cement industry related company activities. This included provision of technical, marketing, and industry specific guidance and liaison between customers and the Engineering office.

**Humboldt Wedag Inc.**: Contract Manager
Duties included Project Management of all phases of Cement Plant supply, including direct liaison with customers world wide.

**Polysius Corporation:** Contract Manager
Duties included Project Management of all phases of Cement Plant supply, including direct liaison with customers world wide.

**National Cement Copany:** Plant Engineer

**Santee Portland Cement Co.** Plant Engineer

# PLANT CONSULTANTS

ENVIRONMENTAL

DARABI AND ASSOCIATES, INC.
Suite A
730 North Waldo Road
Gainesville, FL 32601

KOOGLER AND ASSOCIATES
4014 NW 13th Street
Gainesville, FL 32609

LABORATORY

CONSTRUCTION TECHNOLOGY LABORATORIES, INC.
5420 Old Orchard Road
Skokie, IL 60077-1030

PROCESS

KRUPP POLYSIUS CORP.
180 Interstate North
Atlanta, GA 30339-2194

# INTEROFFICE MEMORANDUM

**Sensitivity:** COMPANY CONFIDENTIAL

**Date:** 09-Jun-1999 01:40pm
**From:** Mark Latch TAL
LATCH_M@a1.epic6.dep.state.fl.us
**Dept:**
**Tel No:**

**To:** Joseph Kahn TAL ( KAHN_J@A1 )
**CC:** Thomas Workman GNSV ( WORKMAN_T@a1.epic6.dep.state.fl.us )

**Subject:** FWD: Re: FWD: Letter to Suwannee American Cement

Can we do anything about adding this?  they look like pretty good suggestions.

ml
06/09

# INTEROFFICE MEMORANDUM

**Date:** 21-May-1999 09:23am
**From:** Thomas Workman GNSV
WORKMAN_T@al.epic6.dep.state.fl.us
**Dept:**
**Tel No:**

**Subject:** Re: FWD: Letter to Suwannee American Cement

At the minimum we should request an air monitoring station at the park. This should comply with EPA standards and be compatible with the new air quality monitoring stations that the Alachua County Environmental Protection Department recently brought into operation. We should request that this monitoring station be brought online immediately following the issuing of any air permit by DEP. This way we may collect some pre-cement plant data, as it will likely take a year to build the plant.

It would also be to our benefit to request that a monitoring program be established to test the quality of rainfall deposition. This is different that air monitoring and is more of a water quality issue. I suggest that several times per year, perhaps quarterly, that rainfall samples be analyzed for chemical components.

It would be beneficial if a comprehensive water quality analysis be performed on the river every 2 to 3 years. By comprehensive I mean a sample from every spring and from points throughout the Ichetucknee Trace.

Thank you for the chance to respond.

TW

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 ▪ FAX/377-7158

**MEMORANDUM**



**TO:** Cleve Holladay

**FROM:** Steve Cullen

**DATE:** June 8, 1999

**SUBJECT:** Suwannee American Cement

---

Per your request, enclosed are three disks containing the ISC output files for the subject facility.

If you have any questions, please do not hesitate to contact me.

# INTEROFFICE MEMORANDUM

**Date:** 07-Jun-1999 09:56am
**From:** John Peterson TAL
PETERSON_J@a1.epic6.dep.state.fl.us
**Dept:**
**Tel No:**

**To:** Joseph Kahn TAL ( KAHN_J@A1 )

**Subject:** - no subject (01JC45H673TC9ANFYC) -

FYI- The Governor's Office forwarded a card/letter form Arlene and James Walsh to Governor Jebb Bush regarding the construction of the cement plant near the Ichetucknee. The directions are handle appropriately. I am putting it in the mail to you today. Thanks.

# INTEROFFICE MEMORANDUM

**Sensitivity:** COMPANY CONFIDENTIAL

**Date:** 04-Jun-1999 08:48am
**From:** Dennis Tober TAL
TOBER_D
**Dept:** Air Resources Management
**Tel No:** 850/488-6140

**To:** Joseph Kahn TAL ( KAHN_J )
**CC:** Howard Rhodes TAL ( RHODES_H )
**CC:** Clair Fancy TAL ( FANCY_C )
**CC:** Jim Pennington TAL ( PENNINGTON_J )

**Subject:** AC Compliance History

Attached is what I found regarding AC's record at DOT

**Case File: Anderson Columbia Co.**
**Compliance History Interview**
**of**
**Fla. Dept. of Transportation**

Date: 5/26/99
Contact: Roger Wood, Environmental Attorney, DOT
Phone #: 414 5384

Conducted telephone interview to discuss compliance history of AC. Mr. Wood stated that DOT's relationship with AC involved contracts for road paving related projects. Mr. Wood referred me to Andy Moore, DOT Tampa office, to discuss the only environmental related involvement of AC he was aware of i.e., Asphalt Pavers in Hernando County.

Date: 5/26/99
Contact: Andy Moore, DOT Tampa office
Phone: 813- 7446100 ext 381

Conducted telephone interview with Mr. Moore. Mr. Moore stated that AC presently served as a payed consultant to Asphalt Pavers located in Hernando County which was an asphalt and soil treatment company. They quit treating soil in the late 1980's (land leased from Florida Rock) and left contaminated soil and is thereby being sued by Florida Rock. Mr. Moore's involvement is to assess the amount of soil in question and any associated damage. Mr. Moore stated that AC's role is that of a hired consultant only and referred me to Greg Zanders of DOT for road contract information regarding AC.

Date: 5/26/99
Contact: Greg Zanders, DOT
Phone: 414 5203

Conducted telephone interview with Mr. Zanders. Mr. Zanders stated that the relationship between DOT and AC was contractual involving road paving projects around the state. Mr. Zanders stated that this relationship sometimes involved contract disputes between the two parties for the work being done. I asked what was known regarding any other types of problems, especially those involving matters of an environmental nature. Mr. Zanders stated that he did not know of any specifics but he would check with his two district offices for specifics. Mr. Zanders scheduled a return call to me the week of June 1.

Date: 6/1/99
Contact: Greg Zanders, DOT

Left phone message for Mr. Zanders requesting that I would like more information regarding the specific type of contract problems DOT normally experienced with AC. I informed him that I was interested in the relationship of the party's record on work contracts as related to the potential to meet our permitting conditions.

Date: 6/3/99
Contact: Greg Zanders, DOT

Mr. Zanders contacted me by phone and stated that the responses he received from his district personnel indicated that AC's record reflected no particular past pattern and nothing on a recent basic regarding negative environmental compliance. He stated that the primary area of DOT overview involved NPDES, the National Pollution Discharge Elimination System. This involves those items typical of silting pens, hay bailing and other controls for controlling runoff and was normal for the industry.

Regarding the matter of contract compliance, he stated that general problems involving contract disputes are standard within the industry for the type of work contracted i.e., if a particular company contracts significant amounts of work, then one could expect to see significant amounts of contract problems and disputes. AC's record in this matter is what one would expect from the amount of work that they contract with DOT.

# INTEROFFICE MEMORANDUM

**Date:** 02-Jun-1999 01:07pm
**From:** Sardina, Melanie
sardina_m@srwmd.state.fl.us
**Dept:**
**Tel No:**

**To:** 'joseph.kahn@dep.state.fl.us' ( KAHN_J@A1 )

**Subject:** Anderson Columbia

Hi Mr. Kahn -- The attached is a general list of some the dealings SRWMD has had with Anderson Columbia. Feel free to contact me if you have any questions.

Thanks,
Melanie Sardina

## Suwannee River Water Management District
## Data for
## Anderson Columbia Company

### Permit Information

| PERMIT # | PROJECT NAME | COUNTY |
|---|---|---|
| 4-93-00103 | ANDERSON COLUMBIA CO., INC. | COLUMBIA |
| 4-93-00153 | HILL BORROW PIT | HAMILTON |
| ERP96-0350 | ANDERSON/COLUMBIA ROAD IMPROVEMENTS | DIXIE |
| ERP97-0107 | NEW HOPE ASPHALT PLANT | HAMILTON |
| ERP97-0115 | UPLAND BORROW PIT - 0312220 5/27/97 | HAMILTON |
| ERP97-0147 | I-75 BORROW PIT | SUWANNEE |
| ERP97-0159 | CONNELL ROAD PLANT | TAYLOR |
| ERP97-0230 | ANDERSON COLUMBIA/JACKSON ASPHALT PLANT | LAFAYETTE |
| ERP97-0240 | ANDERSON COLUMBIA CONCRETE PLANT | MADISON |
| ERP97-0250 | MARCANO BORROW PIT | MADISON |
| ERP97-0322 | ANDERSON ASPHALT PLANT STORAGE AREA | COLUMBIA |
| ERP98-0056 | ANDERSON COLUMBIA RADIO TOWER | COLUMBIA |
| ERP98-0066 | OLD TOWN COMMUNICATIONS TOWER--101313 | DIXIE |
| ERP98-0155 | HUDSON BORROW PIT | COLUMBIA |
| ERP98-0243 | DIXIE COUNTY ASPHALT PLANT | DIXIE |
| ERP98-0258 | THOMAS BORROW PIT | COLUMBIA |
| ERP98-0330 | HARRISON BORROW PIT | COLUMBIA |
| ERP99-0043 | MAHONY BORROW PIT | COLUMBIA |
| ERP99-0194 | SEAGO BORROW PIT | MADISON |
| ERP99-0208 | CASON BORROW PIT | MADISON |
| ERP99-0214 | BOOTS BORROW PIT | MADISON |
| ERP99-0237 | DEES BORROW PIT | LAFAYETTE |
| ERP99-0245 | FRANKLIN BORROW PITS | MADISON |
| ERP99-0246 | SMOAK BORROW PIT | MADISON |
| ERP99-0247 | DRIGGERS BORROW PIT | MADISON |
| ERP99-0248 | THOMPSON BORROW PIT | MADISON |

### Complaint Information

| | |
|---|---|
| Complaint # | CMP98-0175 |
| Date Recv'd | 4/7/98 |
| Complaint | Possible dumping of industrial waste in mining pit |
| Action | This was actually referred to us by DEP. DEP had already been out on site. Sally Heuer at DEP-Jax sent the following message via e-mail: the bag house waste was actually the dust from uncontaminated limestone aggregate which was being spread over clay to stabilize the roadway between 2 limestone pits. Neal Newton (air section) and Rob Lear (industrial waste) actually inspected the site and saw no violations. |

| | |
|---|---|
| Complaint # | CMP99-0074 |
| Date Recv'd | 4/30/99 |
| Complaint | Anderson Columbia filling pre-existing hole with construction waste |
| Action | Forwarded to Don Jensen (SRWMD DEP rep.) who states that DEP will be taking this to enforcement |

### Enforcement Information

| | |
|---|---|
| Enforcement # | CE97-0036 |
| Date Enforced | 11/7/97 |
| Violation | 2.10 acres of wetlands disturbed with fill in an isolated wetland. This is in conjunction with ERP permit # ERP97-0322, Anderson Asphalt Plant Storage Area in Columbia County |
| Action | This is being handled in-house. Mitigation is required. We are presently waiting on a finalized plan. |

Note:
SRWMD possibly could have another enforcement action starting against a member of Anderson Columbia for some activity near I-75 in Columbia County.

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 ▪ FAX/377-7158

RECEIVED

JUN 04 1999

BUREAU OF
AIR REGULATION

June 3, 1999

Mr. Joseph Kahn, PE
New Source Review Section
Department of Environmental
Protection
2600 Blair Stone Road, MS 5505
Tallahassee, Florida 32399-2400

**Subject:** Suwannee American Cement Company
DEP File No. 1210465-001-AC (PSD-FL-259)
Regional Haze Analyses Utilizing MESOPUFF for Class I Areas

Dear Mr. Kahn:

This letter shall transmit 2 copies of the regional haze analyses for the 3 Class I areas, and 2 copies of a disk containing the MESOPUFF dispersion modeling that was used to predict concentrations at the Class I areas.

The refined modeling and analyses clearly show that the proposed plant's contribution to regional haze is minimal at the Class I areas.

This information is being provided to you for transmittal to the National Park Service.

If you require any further information, please do not hesitate to contact me.

Sincerely,

Steven C. Cullen, PE
Koogler & Associates

copy (w/o disk) to: Frank Darabi, PE

## Discussion of Input Parameters

Pollutant Concentrations ($\mu g/m^3$)

Pollutant concentrations were modeled for this response using the MESOPUFF long-range transport dispersion model. 24-hour average concentrations were used.[1]

The generally observed sulfate compound is ammonium sulfate {$(NH_4)_2SO_4$}, although ammonium bisulfate and un-neutralized sulfuric acid particles have also been measured. Particles composed of nitrate compounds usually take the form of ammonium nitrate {$NH_4NO_3$}. These compounds are generally not directly emitted from air pollutant sources, but are formed through a series of chemical reactions in the atmosphere. The air pollutants, which contribute to the formation of these particles, are gaseous emissions of oxides of sulfur and nitrogen ($SO_X$ and $NO_X$), which eventually oxidize to form SO and nitric acid ($HNO_3$), as well as other compounds, and ultimately react with natural and anthropogenic emissions of ammonia. The formation of $NH_4NO_3$ is dependent on the concentrations of ammonia gas ($NH_3$) and nitric acid ($HNO_3$) as well as the concentration of SO. SO competes with $HNO_3$ for the available $NH_3$. Thus, in the presence of both SO and $HNO_3$, $(NH_4)_2SO_4$ will be formed preferentially to $NH_4NO_3$. Essentially, $NH_4NO_3$ will only be formed when there is an excess of $NH_3$ available, relative to SO. The MESOPUFF-II modeling system accounts for the balance between SO, $HNO_3$ and $NH_3$. Therefore, emissions of both $SO_2$ and $NO_X$ were modeled in the same run to account for this balance.[2]

---

[1] Guidance from John Notar (NPS), March 1995.
[2] IWAQM

Data were reviewed from the Interagency Monitoring of Protected Visual Environments (IMPROVE) program and from the Florida DEP ALLSUM/AIRS information.. These data clearly confirmed that the atmosphere in the area of study is "ammonia-limited", and the sulfate particles are formed to the exclusion of the nitrate particles. Ambient data show NOx present at concentrations approximately 4 times greater than SO2. However, IMPROVE aerosol samplers at Chassahowitzka NWA and Okefenokee NWA show sulfate particles at concentrations approximately 10 times greater than nitrate particles. The data also show that, while 40-85% of ambient SO2 is neutralized to ammonium sulfate, only 1-2% of ambient NOx is neutralized to ammonium nitrate.

Relative Humidity (%)

Hourly relative humidity values are available for each of the three Class I areas:

- St. Marks NWA: Tallahassee Airport
- Okefenokee NWA: Cecil Field Naval Air Station
- Chassahowitzka NWA: Tampa International Airport

As 24-hour average concentrations were used, it is consistent with the IWAQM method to use the 24-hour average relative humidity for each of the days with the highest concentrations. For this response, however, the highest recorded hourly relative humidity is used for the day with the highest concentrations.

The relative humidity values are used when calculating the extinction coefficients, as some particles accumulate water and become more efficient at scattering light.[3] The relative humidity is used to determine the relative humidity factor. The sulfate and nitrate concentrations are multiplied by the relative humidity factor, the particulate concentrations are not.

[3] Visibility Protection Brochure, IMPROVE program, August 1994.

**Chassahowitzka NWA -- Regional Haze Analysis**

The maximum 24-hour average $SO_4$ concentration was calculated to be 0.0015 $\mu g/m^3$ November 4, 1986. Maximum hourly RH = 97%, f(RH) = 14.5

The PM10 concentration at the same location and date was calculated to be 0.0061 $\mu g/m^3$ and the $NO_3$ concentration was calculated to be 0.0 $\mu g/m^3$.

**Multiply the mass concentration of $SO_4$ by 1.375 to obtain $(NH_4)_2SO_4$**

0.0015 $\mu g/m^3$ x 1.375 = 0.0021 $\mu g/m^3$

Multiply the mass concentration of $NO_3$ by 1.29 to obtain $NH_4NO_3$
0.0 $\mu g/m^3$ x 1.29 = 0.0000 $\mu g/m^3$

**Calculate the extinction by the following equation:**

$b_{ext} = 0.003 \text{ x } concentration \text{ x } f(RH)$

$$\begin{array}{llll} & \mathbf{(NH_4)_2SO_4} & \mathbf{NH_4NO_3} & \mathbf{PM10} \\ = & [\,0.003 \text{ x } 0.0021 \text{ x } 14.5] + & [\,0.003 \text{ x } 0 \text{ x } 14.5] + & [\,0.003 \text{ x } 0.0061 \text{ x } 1.0] \end{array}$$

= 0.00009 + 0.00 + 0.00002 = 0.00011

Calculate change in deciviews (dv) by the following equation:

$\Delta dv = \ln(1 + b_{ext}/b_{bgd}) \text{ x } 10 = \ln(1 + 0.00011/0.0602) \text{ x } 10 =$ 0.02 dv Change

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

**Okefenokee NWA -- Regional Haze Analysis**

The maximum 24-hour average $SO_4$ concentration was calculated to be 0.0036 $\mu g/m^3$ January 23, 1986. Maximum hourly RH = 90%, f(RH) = 6

The PM10 concentration at the same location and date was calculated to be 0.023 $\mu g/m^3$ and the $NO_3$ concentration was calculated to be 0.0 $\mu g/m^3$.

**Multiply the mass concentration of $SO_4$ by 1.375 to obtain $(NH_4)_2SO_4$**

$0.0036\ \mu g/m^3 \times 1.375 = 0.0050\ \mu g/m^3$

Multiply the mass concentration of $NO_3$ by 1.29 to obtain $NH_4NO_3$
$0.0\ \mu g/m^3 \times 1.29 = 0.0000\ \mu g/m^3$

**Calculate the extinction by the following equation:**

$b_{ext} = 0.003 \times concentration \times f(RH)$

| $(NH_4)_2SO_4$ | $NH_4NO_3$ | PM10 |
|---|---|---|

$= [\ 0.003 \times 0.0050 \times 6] + [\ 0.003 \times 0 \times 6] + [\ 0.003 \times 0.023 \times 1.0]$

$= 0.00009 + 0.00 + 0.00007 = 0.00016$

Calculate change in deciviews (dv) by the following equation:

$\Delta dv = \ln(1 + b_{ext}/b_{bgd}) \times 10 = \ln(1 + 0.00016/0.0602) \times 10 =$ 0.03 dv Change

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

## St. Marks NWA -- Regional Haze Analysis

The maximum 24-hour average $SO_4$ concentration was calculated to be 0.0040 μg/m$^3$ December 2, 1986. Maximum hourly RH = 100%, f(RH) = 19.2

The PM10 concentration at the same location and date was calculated to be 0.011 μg/m$^3$ and the $NO_3$ concentration was calculated to be 0.0 μg/m$^3$.

**Multiply the mass concentration of $SO_4$ by 1.375 to obtain $(NH_4)_2SO_4$**

0.0040 μg/m$^3$ x 1.375 = 0.0055 μg/m$^3$

Multiply the mass concentration of $NO_3$ by 1.29 to obtain $NH_4NO_3$
0.0 μg/m$^3$ x 1.29 = 0.0000 μg/m$^3$

**Calculate the extinction by the following equation:**

$b_{ext} = 0.003 \text{ x concentration x } f(RH)$

$$\begin{array}{ccc} (NH_4)_2SO_4 & NH_4NO_3 & PM10 \\ = [\ 0.003 \text{ x } 0.0055 \text{ x } 19.2] & + [\ 0.003 \text{ x } 0 \text{ x } 19.2] & + [\ 0.003 \text{ x } 0.011 \text{ x } 1.0] \end{array}$$

= 0.00032 + 0.00 + 0.00003 = 0.00035

Calculate change in deciviews (dv) by the following equation:

$\Delta dv = \ln(1 + b_{ext}/b_{bgd}) \text{ x } 10 = \ln(1 + 0.00035/0.0602) \text{ x } 10 =$ <u>0.06 dv Change</u>

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

THIS DISK CONTAINS MESOPUFF CLASS 1 VISUAL IMPACT ANALYSIS FILES FOR THE CHASSAHOWITZKA NWR, OKEFENOKEE NWR AND ST. MARKS NWR. THESE FILES ARE IN A SELF EXTRACTING ARCHIVE FORMAT. THE FOLLOWING ARE INPUT, OUTPUT AND METEOROLOGICAL FILES FOR THE PROPOSED SUWANNEE AMERICAN CEMENT PLANT IN BRANFORD, FLORIDA.

| | | | | |
|---|---|---|---|---|
| CHZ-PAC | EXE | 311,060 | 06-02-99 | CHASSAHOWITZKA MESOPAC |
| NRTH-PAC | EXE | 308,806 | 06-02-99 | OKEFENOKEE & ST. MARKS MESOPAC |
| PUF-INP | EXE | 18,745 | 06-02-99 | MESOPUFF INPUT FILES |
| CHZ-FIL | EXE | 70,008 | 06-02-99 | CHASSAHOWITZKA MESOFILE |
| OKY-FIL | EXE | 111,920 | 06-02-99 | OKEFENOKEE MESOFILE |
| STM-FIL | EXE | 110,253 | 06-02-99 | ST. MARKS MESOFILE |

AND

| | | | | |
|---|---|---|---|---|
| READ | ME | 5,311 | 06-02-99 | THIS FILE |

TO UNARCHIVE THESE FILES COPY THEM TO A HARD DISK DRIVE AND TYPE THE FILE NAME. FOR EXAMPLE, TO UNARCHIVE THE MESOFILE METEOROLOGICAL AND RUN FILES FOR CHASSAHOWITZKA, TYPE "CHZ-PAC" AND PRESS ENTER. THE FILES WILL AUTOMATICALLY UNARCHIVE TO THE HARD DISK DRIVE. THESE ARCHIVED FILES CONTAIN THE MODELING FILES DESCRIBED AS FOLLOWS;

"CHZ-PAC" MESOPAC FILES FOR CHASSAHOWITZKA NWR:

| | | | | |
|---|---|---|---|---|
| CD1 | DAT | 713,448 | 05-12-95 | TAMPA SURFACE DATA |
| CD2 | DAT | 713,448 | 05-11-95 | GAINESVILLE SURFACE DATA |
| UP1 | DAT | 357,274 | 05-11-95 | RUSKIN UPPER AIR DATA |
| PAC | INP | 569 | 03-31-99 | MESOPAC INPUT CARDS |
| PAC | LST | 12,356 | 03-31-99 | MESOPAC OUTPUT FILE (1) |
| PAC | BAT | 102 | 05-10-95 | MESOPAC BATCH FILE |

"NRTH-PAC" MESOPAC FILES FOR OKEFENOKEE & ST. MARKS MESOPAC:

| | | | | |
|---|---|---|---|---|
| CD1 | DAT | 713,448 | 05-12-95 | GAINESVILLE SURFACE DATA |
| CD2 | DAT | 713,448 | 03-26-99 | TALLAHASSEE SURFACE DATA |
| UP1 | DAT | 345,843 | 05-11-95 | WAYCROSS UPPER AIR DATA |
| PAC | BAT | 102 | 05-10-95 | MESOPAC INPUT CARDS |
| PAC | INP | 621 | 03-26-99 | MESOPAC BATCH FILE |

(1) NOTE: THE PACOUT.DAT FILE IS OMITTED DUE TO SIZE. THE PACOUT.DAT FILE IS THE BINARY METEOROLOGICAL INPUT TO MESOPUFF AND REQUIRES ABOUT 30 MEGABYTES OF DISK STORAGE SPACE.

"PUF-INP" MESOPUFF INPUT FILES:

| | | | | |
|---|---|---|---|---|
| CHZ-PUF | INP | 1,151 | 03-31-99 | CHASSAHOWITZKA MESOPUFF FOR NO3 & SO4 |
| CHZPF-PM | INP | 1,151 | 03-31-99 | CHASSAHOWITZKA MESOPUFF FOR PM |
| OKY-PUF | INP | 1,761 | 04-01-99 | OKEFENOKEE MESOPUFF FOR NO3 & SO4 |
| OKYPFPM | INP | 1,764 | 04-01-99 | OKEFENOKEE MESOPUFF FOR PM |
| STM-PUF | INP | 2,229 | 03-31-99 | ST. MARKS MESOPUFF FOR NO3 & SO4 |
| STMPF-PM | INP | 2,232 | 03-31-99 | ST. MARKS MESOPUFF FOR PM |

(2) NOTE: THE INFILE1.DAT AND PUFF.LST FILES ARE OMITTED DUE TO SIZE. INFILE1.DAT IS NAMED "PUFFOUT.DAT" BY THE MESOPUFF MODEL. IT MUST BE MANUALLY RENAMED "INFILE1.DAT" FOR INPUT TO MESOFILE.

"CHZ-FIL" MESOFILE FILES FOR CHASSAHOWITZKA:

| | | | |
|---|---|---|---|
| FIL24NO3 CHZ | 344 | 03-31-99 | INPUT FOR NO3 (3) |
| FIL24PM CHZ | 343 | 03-31-99 | INPUT FOR PM |
| FIL24SO4 CHZ | 344 | 03-31-99 | INPUT FOR SO4 |
| CHZ24NO3 LST | 284,187 | 03-31-99 | OUTPUT FOR NO3 (4) |
| CHZ24PM LST | 284,187 | 03-31-99 | OUTPUT FOR PM |
| CHZ24SO4 LST | 284,187 | 03-31-99 | OUTPUT FOR SO4 |
| CHZ24NO3 PRN | 13,470 | 04-01-99 | SPREADSHEET INPUT FOR NO3 |
| CHZ24PM PRN | 13,900 | 04-01-99 | SPREADSHEET INPUT FOR PM |
| CHZ24SO4 PRN | 14,198 | 04-01-99 | SPREADSHEET INPUT FOR SO4 |
| CHZ-MAX WQ1 | 52,518 | 04-01-99 | MAXIMUM 24-HOUR AVERAGE SPREADSHEET IN QUATTRO FORMAT |

(3) NOTE: THESE INPUT FILES MUST BE MANUALLY RENAMED "FILE.INP" BEFORE RUNNING THE MESOFILE POST PROCESSOR.

(4) NOTE: THE MESOFILE OUTPUT FILES ARE NAMED "FILE.LST" BY THE MESOFILE POST PROCESSOR. THEY WERE MANUALLY RENAMED.

"OKY-FIL" MESOFILE FILES FOR OKEFENOKEE:

| | | | |
|---|---|---|---|
| FIL24-PM OKY | 339 | 03-31-99 | INPUT FOR NO3 |
| FIL24NO3 OKY | 340 | 03-31-99 | INPUT FOR PM |
| FIL24SO4 OKY | 340 | 03-31-99 | INPUT FOR SO4 |
| OKY24NO3 LST | 403,721 | 04-01-99 | OUTPUT FOR NO3 |
| OKY24PM LST | 403,721 | 04-01-99 | OUTPUT FOR PM |
| OKY24SO4 LST | 403,721 | 03-31-99 | OUTPUT FOR SO4 |
| OKY24NO3 PRN | 14,196 | 04-01-99 | SPREADSHEET INPUT FOR NO3 |
| OKY24PM PRN | 14,198 | 04-01-99 | SPREADSHEET INPUT FOR PM |
| OKY24SO4 PRN | 14,269 | 04-01-99 | SPREADSHEET INPUT FOR SO4 |
| OKY-MX WQ1 | 53,693 | 04-01-99 | MAXIMUM 24-HOUR AVERAGE SPREADSHEET IN QUATTRO FORMAT |

"STM-FIL" MESOFILE FILES FOR ST. MARKS:

| | | | |
|---|---|---|---|
| FIL24-PM STM | 338 | 03-31-99 | INPUT FOR NO3 |
| FIL24NO3 STM | 339 | 03-31-99 | INPUT FOR PM |
| FIL24SO4 STM | 339 | 03-31-99 | INPUT FOR SO4 |
| STM24NO3 LST | 534,165 | 03-31-99 | OUTPUT FOR NO3 |
| STM24PM LST | 534,165 | 04-01-99 | OUTPUT FOR PM |
| STM24SO4 LST | 534,165 | 03-31-99 | OUTPUT FOR SO4 |
| STM24NO3 PRN | 14,234 | 04-01-99 | SPREADSHEET INPUT FOR NO3 |
| STM24PM PRN | 14,254 | 04-01-99 | SPREADSHEET INPUT FOR PM |
| STM24SO4 PRN | 14,196 | 04-01-99 | SPREADSHEET INPUT FOR SO4 |
| STM-MAX WQ1 | 52,774 | 04-01-99 | MAXIMUM 24-HOUR AVERAGE SPREADSHEET IN QUATTRO FORMAT |

IF FURTHER CLARIFICATION CAN BE PROVIDED OR IF ADDITIONAL FILES ARE REQUIRED PLEASE CONTACT ME.

MARK KOLETZKE
KOOGLER AND ASSOCIATES
(352) 377-5822
KOOGLER@WORLDNET.ATT.NET

# INTEROFFICE MEMORANDUM

**Date:** 01-Jun-1999 01:03pm
**From:** Joseph Kahn TAL
KAHN_J
**Dept:** Air Resources Management
**Tel No:** 850/921-9519

**To:** Cleve Holladay TAL ( HOLLADAY_C )

**Subject:** Modeling for Suwannee American Cement

Per our conversation with Ellen Porter today, it appears that Mesopuff modeling is sufficient to evaluate regional haze impacts on the three Class I areas closest to the proposed cement plant because it was an allowable procedure under phase I of IWAQM. Phase I was the procedure in place at the time the application was submitted. I'll call Steve Cullen and ask him to express mail the diskettes to us and FWS.

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 ▪ FAX/377-7158

PROJECT 624-98-01

# FAX TRANSMITTAL FORM

TO: Joe Kahn
FDEP

FAX NO.

FROM: Steve Cullen

DATE: 6/28/99 SENT BY: SC

The text being transmitted consist s of 3 page(s) PLUS this one. If you do not receive all of the pages or if there are difficulties with this transmission, please call (352) 377-5822.

REMARKS: ESP info per your request.

# SECTION 4

## 4. OPERATING CONDITIONS AND GUARANTEES

### A. OPERATING CONDITIONS - KILN/MILL PRECIPITATOR

| | | |
|---|---|---|
| Process - Type | Preheater Cement Kiln with Roller Mill Circuit | |
| Mode of Operation | Direct | Compound |
| Gas Volume ACFM | 200,000 | 194,000 |
| Gas Temperature °F | 356/300 | 220/205 |
| Inlet Particulate Loading gr/ACF | 18 | 25 |
| Dew Point$^0$F | 138 | 115 |
| Collection Efficiency (percent removal) | 99.96 | 99.97 |
| Outlet Particulate Residual gr/ACF | 0.007 | 0.007 |
| Precipitator Gas Velocity (f.p.s.) | 2.9 | 2.8 |
| Time of Treatment (Sec.) | 14.9 | 15.3 |
| SCA ($Ft^2$ collecting surface per 1,000 ACFM) | 371.5 | 382.9 |
| Aspect Ratio | 1.0 | 1.0 |
| Pressure Loss (in. $H_2O$) | 1.0 | 1.0 |

### B. PERFORMANCE GUARANTEE

1. Direct Operation

With all electrical fields energized under normal conditions of operation with kiln only, as stipulated under "Operating Conditions", when passing 200,000 ACFM of gas through the precipitator, with an inlet loading of 18 gr/ACF or more, the efficiency is guaranteed to 99.96% removal.

Under identical conditions of operation, with an inlet particulate loading of 18 gr/ACF or less, the outlet particulate residual is guaranteed not to exceed 0.007 gr/ACF.

2. Compound Operation

With all electrical fields energized under normal conditions of operation with kiln only, as stipulated under "Operating Conditions", when passing 194,000 ACFM of gas through the precipitator, with an inlet loading of 25 gr/ACF or more, the efficiency is guaranteed to 99.97% removal.

Under identical conditions of operation, with an inlet particulate loading of 25 gr/ACF or less, the outlet particulate residual is guaranteed not to exceed 0.007 gr/ACF.

C. OPERATING CONDITIONS - Clinker Cooler

| | |
|---|---|
| Process - Type | Clinker Cooler Exhaust |
| Gas Volume ACFM | 160,000 |
| Gas Temperature °F | 480 |
| Inlet Particulate Loading gr/ACF | 13 |
| Moisture Content (% by volume)* | 2 to 3 |
| Collection Efficiency (percent removal) | 99.92 |
| Outlet Particulate Residual gr/ACF | 0.01 |
| Precipitator Gas Velocity (f.p.s.) | 2.3 |
| Time of Treatment (Sec.) | 18.5 |
| SCA ($Ft^2$ collecting surface per 1,000 ACFM) | 464.3 |
| Aspect Ratio | 1.0 |
| Pressure Loss (in. $H_2O$) | 1.0 |

*Note: Additional moisture may be required.

D. PERFORMANCE GUARANTEE

With all electrical fields energized under normal conditions of operation with kiln only, as stipulated under "Operating Conditions", when passing 160,000 ACFM of gas through the precipitator, with an inlet loading of 13 gr/ACF or more, the efficiency is guaranteed to 99.92% removal.

Under identical conditions of operation, with an inlet particulate loading of 13 gr/ACF or less, the outlet particulate residual is guaranteed not to exceed 0.01 gr/ACF.

Attention is drawn to the fact that the material, workmanship and performance guarantee clauses are contingent upon the Buyer's assuring that the equipment is erected according to plans and specifications.

E. <u>PERFORMANCE TEST</u>

All particulate emission tests will be conducted in accordance with the methods set down by the Environmental Protection Agency in 40 CFR Part 60, Appendix A (Reference Methods), and any subsequent revision to these methods in effect on the date of this proposal. The EPA Method 17 will be used for inlet sampling and the dry, front half of the EPA Method 5 will be used for outlet sampling. Test ports with suitable access are to be furnished with inlet duct and outlet duct or stack to meet EPA and OSHA standards.

Performance tests will be conducted within ninety (90) days after the equipment is first commercially operated, but no later than (Later). Performance testing will be done by an independent testing company mutually acceptable to both Buyer and Seller. The cost of testing will be borne by Buyer. If, through no fault of Seller, performance test cannot be run within the time periods given above, the equipment will be treated as though the performance tests were run and the performance guarantees met.

The performance test shall be deemed "passed" when the Buyer and Seller have analyzed the test results and determined that equipment guarantee has been met. The test results will be available to the Buyer and Seller for said analysis within three (3) weeks after completion of testing. Whatever security Buyer has retained to secure compliance with the performance guarantee shall be due and payable to Seller immediately upon the determination that the performance test has been "passed".

Seller shall have the right to witness testing and to have access to all information acquired by said third party which is relevant to determining whether the equipment has passed the performance test. Seller does not assume the risk that the performance test will be improperly performed, or that tests results will be improperly computed. If, as a result of the fault of either Buyer and/or the third party responsible for conducting the performance test, the determination that the equipment has passed the performance test is delayed, the amount outstanding on the contract price, if any, shall be subject to a per diem interest charge at the maximum rate allowed by law, chargeable from the time the equipment would have passed the performance test but for said fault.

Compliance with the performance criteria on a majority of the tests performed shall constitute fulfillment of the performance guarantee. Seller shall have the right to make, at its own expense, any adjustments, changes, or additions to the equipment in an endeavor to obtain performance in accordance with the guarantee. If Seller in good faith determines that compliance with the performance guarantee is unobtainable, Seller shall forfeit its right to the funds or security retained by Buyer to secure equipment compliance with the guarantee, unless Buyer has not suffered actual damages which are recoverable hereunder.

**Chassahowitzka NWA -- Regional Haze Analysis**

The maximum 24-hour average $SO_4$ concentration was calculated to be 0.0015 $\mu g/m^3$ November 4, 1986. Maximum hourly RH = 97%, f(RH) = 14.5

The PM10 concentration at the same location and date was calculated to be 0.0061 $\mu g/m^3$ and the $NO_3$ concentration was calculated to be 0.0 $\mu g/m^3$.

**Multiply the mass concentration of $SO_4$ by 1.375 to obtain $(NH_4)_2SO_4$**

$0.0015\ \mu g/m^3 \times 1.375 = 0.0021\ \mu g/m^3$

Multiply the mass concentration of $NO_3$ by 1.29 to obtain $NH_4NO_3$
$0.0\ \mu g/m^3 \times 1.29 = 0.0000\ \mu g/m^3$

**Calculate the extinction by the following equation:**

$b_{ext} = 0.003 \times concentration \times f(RH)$

$$\begin{array}{l}\quad\quad (NH_4)_2SO_4 \quad\quad\quad\quad NH_4NO_3 \quad\quad\quad\quad PM10 \\ = [\ 0.003 \times 0.0021 \times 14.5] + [\ 0.003 \times 0 \times 14.5] + [\ 0.003 \times 0.0061 \times 1.0]\end{array}$$

= 0.00009 + 0.00 + 0.00002 = 0.00011

Calculate change in deciviews (dv) by the following equation:

$\Delta dv = \ln(1 + b_{ext}/b_{bgd}) \times 10 = \ln(1 + 0.00011/0.0602) \times 10 =$ 0.02 dv Change

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MAY 27 1999

BUREAU OF
AIR REGULATION

FROM STEVE CULLEN

**Okefenokee NWA -- Regional Haze Analysis**

The maximum 24-hour average $SO_4$ concentration was calculated to be 0.0036 $\mu g/m^3$ January 23, 1986. Maximum hourly RH = 90%, f(RH) = 6

The PM10 concentration at the same location and date was calculated to be 0.023 $\mu g/m^3$ and the $NO_3$ concentration was calculated to be 0.0 $\mu g/m^3$.

**Multiply the mass concentration of $SO_4$ by 1.375 to obtain $(NH_4)_2SO_4$**

$0.0036\ \mu g/m^3 \times 1.375 = 0.0050\ \mu g/m^3$

Multiply the mass concentration of $NO_3$ by 1.29 to obtain $NH_4NO_3$
$0.0\ \mu g/m^3 \times 1.29 = 0.0000\ \mu g/m^3$

**Calculate the extinction by the following equation:**

$b_{ext} = 0.003 \times concentration \times f(RH)$

$$\begin{array}{ccccc} & (NH_4)_2SO_4 & & NH_4NO_3 & & PM10 \\ = & [\ 0.003 \times 0.0050 \times 6] & + & [\ 0.003 \times 0 \times 6] & + & [\ 0.003 \times 0.023 \times 1.0] \end{array}$$

= 0.00009 + 0.00 + 0.00007 = 0.00016

Calculate change in deciviews (dv) by the following equation:

$\Delta dv = \ln(1 + b_{ext}/b_{bgd}) \times 10 = \ln(1 + 0.00016/0.0602) \times 10 =$ 0.03 dv Change

RECEIVED

MAY 27 1999

BUREAU OF
AIR REGULATION

FROM STEVE CULLEN

St. Marks NWA -- Regional Haze Analysis

The maximum 24-hour average $SO_4$ concentration was calculated to be 0.0040 $\mu g/m^3$ December 2, 1986. Maximum hourly RH = 100%, f(RH) = 19.2

The PM10 concentration at the same location and date was calculated to be 0.011 $\mu g/m^3$ and the $NO_3$ concentration was calculated to be 0.0 $\mu g/m^3$.

**Multiply the mass concentration of $SO_4$ by 1.375 to obtain $(NH_4)_2SO_4$**

$0.0040\ \mu g/m^3 \times 1.375 = 0.0055\ \mu g/m^3$

Multiply the mass concentration of $NO_3$ by 1.29 to obtain $NH_4NO_3$
$0.0\ \mu g/m^3 \times 1.29 = 0.0000\ \mu g/m^3$

**Calculate the extinction by the following equation:**

$b_{ext} = 0.003 \times concentration \times f(RH)$

$$\begin{array}{ccccc} (NH_4)_2SO_4 & & NH_4NO_3 & & PM10 \\ = [\,0.003 \times 0.0055 \times 19.2] & + & [\,0.003 \times 0 \times 19.2] & + & [\,0.003 \times 0.011 \times 1.0] \end{array}$$

$= 0.00032 + 0.00 + 0.00003 = 0.00035$

Calculate change in deciviews (dv) by the following equation:

$\Delta dv = \ln(1 + b_{ext}/b_{bgd}) \times 10 = \ln(1 + 0.00035/0.0602) \times 10 =$ 0.06 dv Change

RECEIVED

MAY 27 1999

BUREAU OF
AIR REGULATION

From Steve Cullen

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1875 Century Boulevard
Atlanta, Georgia 30345

IN REPLY REFER TO:

May 25, 1999

RECEIVED
MAY 28 1999
BUREAU OF
AIR REGULATION

PSD-FL-259

Mr. C. H. Fancy
Chief, Bureau of Air Regulation
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road, MS 48
Tallahassee, Florida 32399-2400

Dear Mr. Fancy:

Our Air Quality Branch (AQB) has reviewed additional information from Suwannee Cement Company (Suwannee) regarding their proposed new cement plant in Branford, Florida. Suwannee supplied this additional information in response to our December 1998 comments on Suwannee's Prevention of Significant Deterioration Permit Application. The AQB's technical review of the additional information is attached. In summary, we recommend that your department require Suwannee to reevaluate its proposed control technology for sulfur dioxide emissions and consider a lower emission limit for nitrogen oxides. Also, we ask that Suwannee be required to reevaluate potential impacts from the new emissions to regional haze at St. Marks, Chassahowitzka, and Okefenokee Wilderness Areas, as their previous analysis was done incorrectly.

We appreciate your cooperation in notifying us of proposed projects with the potential to impact the air quality and related resources of our Class I air quality areas. If you have any questions, please contact Ms. Ellen Porter of our Air Quality Branch in Denver at (303) 969-2617.

Sincerely yours,

H Dale Hall
for Sam D. Hamilton
Regional Director

Enclosure

cc: J. Kahn, BAR
C. Holladay, BAR

**Technical Review of Additional Information**
**For a New Cement Plant**
**Suwannee American Cement Company**
**Branford, Florida**
**PSD-FL-259**

by

Air Quality Branch, Fish and Wildlife Service – Denver
**May 19, 1999**

In December 1998 we provided technical comments to the Florida Department of Environmental Protection (FDEP) on the Prevention of Significant Deterioration Permit Application for Suwannee American Cement Company's (Suwannee) proposed new cement plant in Branford, Suwannee County, Florida. We provided additional comments, via fax, in February 1999. The cement plant will be a dry process preheater/precalciner kiln, producing 2,300 tons per day of clinker, and up to 1,191,360 tons per year of various types and grades of Portland cement. The primary fuels will be coal and petroleum coke. Natural gas will be used as a startup fuel and supplemental fuel. Whole tires and/or tire-derived fuel will be used as a supplemental fuel. The facility is located 83 km southwest of Okefenokee Wilderness and 88 km north of Chassahowitzka Wilderness, and 102 km east of St. Marks Wilderness, all Class I air quality areas administered by the U.S. Fish and Wildlife Service (FWS). This project will result in PSD-significant increases in emissions of nitrogen oxides ($NO_X$), sulfur dioxide ($SO_2$), volatile organic compounds (VOC), particulate matter (PM), fine particulate matter less than 10 microns in diameter (PM-10), and carbon monoxide (CO). Emissions (in tons per year – TPY) are summarized below.

| POLLUTANT | EMISSIONS INCREASE (TPY) |
|---|---|
| $NO_X$ | 1175 |
| SO2 | 118 |
| VOC | 50 |
| PM | 267 |
| PM-10 | 228 |
| CO | 1511 |

We recommended in our December 1998 comments that Suwannee re-evaluate its proposed control technology for $NO_X$ emissions. We also asked that Suwannee be required to evaluate potential impacts to visibility at the Class I areas, using the guidance of the Interagency Workgroup on Air Quality Modeling (IWAQM) at: http://www.epa.gov/scram001/; "Model Support"; "6th Modeling Conference"; "IWAQM".

In our February fax, we suggested that Suwannee evaluate installation of a wet scrubber for $SO_2$ control. This recommendation was based on recent information from a proposed new portland cement plant in Colorado (Holman).

**Best Available Control Technology (BACT) Analysis**

Suwannee provided additional information in February 1999 that supported its best available control technology (BACT) analysis for $NO_X$ emissions. We agreed with their conclusions, based on this additional information. However, we believe that Suwannee could meet a lower emission limit than that proposed (3.0-3.1 lb/ton clinker). A similar facility, LoneStar Cement (CA) has proposed a limit of 2.5 lb/ton clinker. We understand that LoneStar is using dry limestone, in contrast to the wet limestone that Suwannee proposes to use. Therefore, Suwannee maintains that more heat input will be needed to dry the limestone, resulting in a higher $NO_X$ emission rate. However, Suwannee's limestone could be air-dried, allowing them to meet an emission rate in the range 2.5-2.8 lb/ton clinker.

Suwannee provided additional information regarding its BACT analysis for $SO_2$ emissions in May 1999. We do not agree with Suwannee's conclusion that, because their $SO_2$ emissions are already relatively low, they should not have to consider adding scrubbers for further reductions. A BACT analysis should not discount a potential control technology on the basis that emissions are already low. Suwannee should thoroughly evaluate the use of scrubbers at their proposed facility.

**Regional Haze Analysis**

Suwannee submitted a regional haze analysis in March 1999 that evaluated potential impacts from the project to visibility at St. Marks, Chassahowitzka, and Okefenokee. Suwannee performed the analysis incorrectly, applying a relative humidity value of 80% instead of the 95% recommended in the IWAQM guidance, referred to in our December 1999 comments. (Note that the use of a lower relative humidity value will result in smaller changes in light extinction, i.e., smaller impacts to visibility.) Suwannee stated that, in using the 80% relative humidity value, they were following advice supplied by our office in 1995 and they had used this value in several past analyses without objection by FDEP. They therefore felt justified in using this approach.

However, a more recent examination of meteorological data indicates that relative humidities generally exceed 80% in Florida. Therefore, when we supplied our December 1998 comments, we advised Suwannee to perform the analysis following the IWAQM guidelines, which prescribe a relative humidity value of 95% if actual relative humidity values are not available. Suwannee is not justified in disregarding our recent comments in order to use outdated advice to their advantage. We recommend that Suwannee perform the analysis again, either using a relative humidity value of 95% or actual relative humidity values.

If the analysis predicts that emissions from the project would result in a greater than 5% change in light extinction at a Class I area, Suwannee should reduce emission rates or reduce production. In addition, Suwannee has the option to perform a refined modeling analysis with CALPUFF. In any case, Suwannee must demonstrate that they will not cause a greater than 5% change in light extinction at St. Marks, Chassahowitzka, or Okefenokee wildernesses.

Contact: Ellen Porter, Air Quality Branch (303) 969-2617.

# INTEROFFICE MEMORANDUM

**Sensitivity:** COMPANY CONFIDENTIAL

**Date:** 26-May-1999 12:44pm
**From:** Cindy Phillips TAL
PHILLIPS_C
**Dept:** Air Resources Management
**Tel No:** 850/921-9534

**To:** Joseph Kahn TAL ( KAHN_J )

**Subject:** Re: Portland Cement NESHAP

**I got the edited general conditions. Thanks for your help with this. Do you
**know when DEP will be adopting Subpart LLL into 62-204?

If it actually comes out in the federal register by the end of June, Mike Hewett said that it would probably be adopted into 62-204 by the end of August with the other federal regulations that are promulgated during 2nd quarter 1999. I asked him if he could fasttrack Subpart LLL if it did not make it into the federal register by the end of June, rather than wait until the end of the 3rd quarter, and he said he could if it was necessary. It will take at least 60 days from the time it appears in the federal register for it to get adopted by reference into our regs.

# INTEROFFICE MEMORANDUM

**Date:** 26-May-1999 10:42am
**From:** Joseph Kahn TAL
KAHN_J
**Dept:** Air Resources Management
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**To:** Cindy Phillips TAL ( PHILLIPS_C )

**Subject:** Portland Cement NESHAP

I got the edited general conditions. Thanks for your help with this. Do you know when DEP will be adopting Subpart LLL into 62-204?

**40 CFR 63 Subpart A - General Provisions**

**Edited for use with Subpart LLL – Portland Cement Manufacturing Industry Sources.**

{Last Updated ~~9/24/98~~ 5/25/99}
[SOURCE: 40 CFR 63 (7-1-96 Edition) and Federal Register revisions dated 12-17-96, 5-4-98, 9-21-98, and 2-12-99.]

## § 63.1 Applicability.

(a) *General.*

(1) Terms used throughout this part are defined in § 63.2 or in the Clean Air Act (Act) as amended in 1990, except that individual subparts of this part may include specific definitions in addition to or that supersede definitions in § 63.2.

(2) This part contains national emission standards for hazardous air pollutants (NESHAP) established pursuant to section 112 of the Act as amended November 15, 1990. These standards regulate specific categories of stationary sources that emit (or have the potential to emit) one or more hazardous air pollutants listed in this part pursuant to section 112(b) of the Act. This section explains the applicability of such standards to sources affected by them. The standards in this part are independent of NESHAP contained in 40 CFR part 61. The NESHAP in part 61 promulgated by signature of the Administrator before November 15, 1990 (i.e., the date of enactment of the Clean Air Act Amendments of 1990) remain in effect until they are amended, if appropriate, and added to this part.

(3) No emission standard or other requirement established under this part shall be interpreted, construed, or applied to diminish or replace the requirements of a more stringent emission limitation or other applicable requirement established by the Administrator pursuant to other authority of the Act (including those requirements in part 60 of this chapter), or a standard issued under State authority.

(4) The provisions of this subpart (i.e., subpart A of this part) apply to owners or operators who are subject to subsequent subparts of this part, except when otherwise specified in a particular subpart or in a relevant standard. The general provisions in subpart A eliminate the repetition of requirements applicable to all owners or operators affected by this part. The general provisions in subpart A do not apply to regulations developed pursuant to section 112(r) of the amended Act, unless otherwise specified in those regulations.

(5) [Reserved]

(6) To obtain the most current list of categories of sources to be regulated under section 112 of the Act, or to obtain the most recent regulation promulgation schedule established pursuant to section 112(e) of the Act, contact the Office of the Director, Emission Standards Division, Office of Air Quality Planning and Standards, U.S. EPA (MD–13), Research Triangle Park, North Carolina 27711.

(7) Subpart D of this part contains regulations that address procedures for an owner or operator to obtain an extension of compliance with a relevant standard through an early reduction of emissions of hazardous air pollutants pursuant to section 112(i)(5) of the Act.

(8) Subpart E of this part contains regulations that provide for the establishment of procedures consistent with section 112(l) of the Act for the approval of State rules or programs to implement and enforce applicable Federal rules promulgated under the authority of section 112. Subpart E also establishes procedures for the review and withdrawal of section 112 implementation and enforcement authorities granted through a section 112(l) approval.

(9) [Reserved]

(10) For the purposes of this part, time periods specified in days shall be measured in calendar days, even if the word ''calendar'' is absent, unless otherwise specified in an applicable requirement.

(11) For the purposes of this part, if an explicit postmark deadline is not specified in an applicable requirement for the submittal of a notification, application, test plan, report, or other written communication to the Administrator, the owner or operator shall postmark the submittal on or before the number of days specified in the applicable requirement. For example, if a notification must be submitted 15 days before a particular event is scheduled to take place, the notification shall be postmarked on or before 15 days preceding the event; likewise, if a notification must be submitted 15 days after a particular event takes place, the notification shall be postmarked on or before 15 days following the end of the event. The use of reliable non-Government mail carriers that provide indications of verifiable delivery of information required to be submitted to the Administrator, similar to the postmark provided by the U.S. Postal Service, or alternative means of delivery agreed to by the permitting authority, is acceptable.

(12) Notwithstanding time periods or postmark deadlines specified in this part for the submittal of information to the Administrator by an owner or operator, or the review of such information by the Administrator, such time periods or deadlines may be changed by mutual agreement between the owner or operator and the Administrator. Procedures governing the implementation of this provision are specified in § 63.9(i).

(13) Special provisions set forth under an applicable subpart of this part or in a relevant standard established under this part shall supersede any conflicting provisions of this subpart.

(14) Any standards, limitations, prohibitions, or other federally enforceable requirements established pursuant to procedural regulations in this part [including, but not limited to, equivalent emission limitations established pursuant to section 112(g) of the Act] shall have the force and effect of requirements promulgated in this part and shall be subject to the provisions of this subpart, except when explicitly specified otherwise.

(b) *Initial applicability determination for this part.*

(1) **[Not applicable. § 63.1340 of 40 CFR 63 Subpart LLL specifies applicability.]**

(2) In addition to complying with the provisions of this part, the owner or operator of any such source may be required to obtain an operating permit issued to stationary sources by an authorized State air pollution control agency or by the Administrator of the U.S. Environmental Protection Agency (EPA) pursuant to title V of the Act (42 U.S.C. 7661). For more information about obtaining an operating permit, see part 70 of this chapter.

(3) An owner or operator of a stationary source that emits (or has the potential to emit, without considering controls) one or more hazardous air pollutants who determines that the source is not subject to a relevant standard or other requirement established under this part, shall keep a record of the applicability determination as specified in § 63.10(b)(3) of this subpart.

(c) *Applicability of this part after a relevant standard has been set under this part.*

(1) If a relevant standard has been established under this part, the owner or operator of an affected source shall comply with the provisions of this subpart and the provisions of that standard, except as specified otherwise in this subpart or that standard.

(2) If a relevant standard has been established under this part, the owner or operator of an affected source may be required to obtain a title V permit from the permitting authority in the State in which the source is located. Emission standards promulgated in this part for area sources will specify whether -

(i) **[Not applicable]**;

(ii) **[Not applicable]**; or

(iii) Area sources affected by that emission standard are immediately subject to the requirement to apply for and obtain a title V permit in all States. If a standard fails to specify what the permitting requirements will be for area sources affected by that standard, then area sources that are subject to the standard will be subject to the requirement to obtain a title V permit without deferral. If the owner or operator is required to obtain a title V permit, he or she shall apply for such permit in accordance with part 70 of this chapter and applicable State regulations, or in accordance with the regulations contained in this chapter to implement the Federal title V permit program (42 U.S.C. 7661), whichever regulations are applicable.

(3) [Reserved]

(4) If the owner or operator of an existing source obtains an extension of compliance for such source in accordance with the provisions of subpart D of this part, the owner or operator shall comply with all requirements of this subpart except those requirements that are specifically overridden in the extension of compliance for that source.

(5) If an area source that otherwise would be subject to an emission standard or other requirement established under this part if it were a major source subsequently increases its emissions of hazardous air pollutants (or its potential to emit hazardous air pollutants) such that the source is a major source that is subject to the emission standard or other requirement, such source also shall be subject to the notification requirements of this subpart.

(d) [Reserved]

(e) *Applicability of permit program before a relevant standard has been set under this part.* After the effective date of an approved permit program in the State in which a stationary source is (or would be) located, the owner or operator of such source may be required to obtain a title V permit from the permitting authority in that State (or revise such a permit if one has already been issued to the source) before a relevant standard is established under this part. If the owner or operator is required to obtain (or revise) a title V permit, he/she shall apply to obtain (or revise) such permit in accordance with the regulations contained in part 70 of this chapter and applicable State regulations, or the regulations codified in this chapter to implement the Federal title V permit program (42 U.S.C. 7661), whichever regulations are applicable.

**§ 63.2 Definitions. [Additional definitions in § 63.1341 of 40 CFR 63 Subpart LLL.]**

The terms used in this part are defined in the Act or in this section as follows:

*Act* means the Clean Air Act (42 U.S.C. 7401 et seq., as amended by Pub. L. 101–549, 104 Stat. 2399).

*Actual emissions* is defined in subpart D of this part for the purpose of granting a compliance extension for an early reduction of hazardous air pollutants.

*Administrator* means the Administrator of the United States Environmental Protection Agency or his or her authorized representative (e.g., a State that has been delegated the authority to implement the provisions of this part).

*Affected source*, for the purposes of this part, means the stationary source, the group of stationary sources, or the portion of a stationary source that is regulated by a relevant standard or other requirement established pursuant to section 112 of the Act. Each relevant standard will define the ''affected source'' for the purposes of that standard. The term ''affected source,'' as used in this part, is separate and distinct from any other use of that term in EPA regulations such as those implementing title IV of the Act. Sources regulated under part 60 or part 61 of this chapter are not affected sources for the purposes of part 63.

*Alternative emission limitation* means conditions established pursuant to sections 112(i)(5) or 112(i)(6) of the Act by the Administrator or by a State with an approved permit program.

*Alternative emission standard* means an alternative means of emission limitation that, after notice and opportunity for public comment, has been demonstrated by an owner or operator to the Administrator's satisfaction to achieve a reduction in emissions of any air pollutant at least equivalent to the reduction in emissions of such pollutant achieved under a relevant design, equipment, work practice, or operational emission standard, or combination thereof, established under this part pursuant to section 112(h) of the Act.

*Alternative test method* means any method of sampling and analyzing for an air pollutant that is not a test method in this chapter and that has been demonstrated to the Administrator's satisfaction, using Method 301 in Appendix A of this part, to produce results adequate for the Administrator's determination that it may be used in place of a test method specified in this part.

*Approved permit program* means a State permit program approved by the Administrator as meeting the requirements of part 70 of this chapter or a Federal permit program established in this chapter pursuant to title V of the Act (42 U.S.C. 7661).

*Area source* means any stationary source of hazardous air pollutants that is not a major source as defined in this part.

*Commenced* means, with respect to construction or reconstruction of a stationary source, that an owner or operator has undertaken a continuous program of construction or reconstruction or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or reconstruction.

*Compliance date* means the date by which an affected source is required to be in compliance with a relevant standard, limitation, prohibition, or any federally enforceable requirement established by the Administrator (or a State with an approved permit program) pursuant to section 112 of the Act.

*Compliance plan* means a plan that contains all of the following:

(1) A description of the compliance status of the affected source with respect to all applicable requirements established under this part;

(2) A description as follows:

(i) For applicable requirements for which the source is in compliance, a statement that the source will continue to comply with such requirements;

(ii) For applicable requirements that the source is required to comply with by a future date, a statement that the source will meet such requirements on a timely basis;

(iii) For applicable requirements for which the source is not in compliance, a narrative description of how the source will achieve compliance with such requirements on a timely basis;

(3) A compliance schedule, as defined in this section; and

(4) A schedule for the submission of certified progress reports no less frequently than every 6 months for affected sources required to have a schedule of compliance to remedy a violation.

*Compliance schedule* means:

(1) In the case of an affected source that is in compliance with all applicable requirements established under this part, a statement that the source will continue to comply with such requirements; or

(2) In the case of an affected source that is required to comply with applicable requirements by a future date, a statement that the source will meet such requirements on a timely basis and, if required by an applicable requirement, a detailed schedule of the dates by which each step toward compliance will be reached; or

(3) In the case of an affected source not in compliance with all applicable requirements established under this part, a schedule of remedial measures, including an enforceable sequence of actions or operations with milestones and a schedule for the submission of certified progress reports, where applicable, leading to compliance with a relevant standard, limitation, prohibition, or any federally enforceable requirement established pursuant to section 112 of the Act for which the affected source is not in compliance. This compliance schedule shall resemble and be at least as stringent as that contained in any judicial consent decree or administrative order to which the source is subject. Any such schedule of compliance shall be supplemental to, and shall not sanction non-compliance with, the applicable requirements on which it is based.

*Construction* means the on-site fabrication, erection, or installation of an affected source.

*Continuous emission monitoring system (CEMS)* means the total equipment that may be required to meet the data acquisition and availability requirements of this part, used to sample, condition (if applicable), analyze, and provide a record of emissions.

*Continuous monitoring system (CMS)* is a comprehensive term that may include, but is not limited to, continuous emission monitoring systems, continuous opacity monitoring systems, continuous parameter monitoring systems, or other manual or automatic monitoring that is used for demonstrating compliance with an applicable regulation on a continuous basis as defined by the regulation.

*Continuous opacity monitoring system (COMS)* means a continuous monitoring system that measures the opacity of emissions.

*Continuous parameter monitoring system* means the total equipment that may be required to meet the data acquisition and availability requirements of this part, used to sample, condition (if applicable), analyze, and provide a record of process or control system parameters.

*Effective date* means:

(1) With regard to an emission standard established under this part, the date of promulgation in the FEDERAL REGISTER of such standard; or

(2) With regard to an alternative emission limitation or equivalent emission limitation determined by the Administrator (or a State with an approved permit program), the date that the alternative emission limitation or equivalent emission limitation becomes effective according to the provisions of this part. The effective date of a permit program established under title V of the Act (42 U.S.C. 7661) is determined according to the regulations in this chapter establishing such programs.

*Emission standard* means a national standard, limitation, prohibition, or other regulation promulgated in a subpart of this part pursuant to sections 112(d), 112(h), or 112(f) of the Act.

*Emissions averaging* is a way to comply with the emission limitations specified in a relevant standard, whereby an affected source, if allowed under a subpart of this part, may create emission credits by reducing emissions from specific points to a level below that required by the relevant standard, and those credits are used to offset emissions from points that are not controlled to the level required by the relevant standard.

*EPA* means the United States Environmental Protection Agency.

*Equivalent emission limitation* means the maximum achievable control technology emission limitation (MACT emission limitation) for hazardous air pollutants that the Administrator (or a State with an approved permit program) determines on a case-by-case basis, pursuant to section 112(g) or section 112(j) of the Act, to be equivalent to the emission standard that would apply to an affected source if such standard had been promulgated by the Administrator under this part pursuant to section 112(d) or section 112(h) of the Act.

*Excess emissions and continuous monitoring system performance report* is a report that must be submitted periodically by an affected source in order to provide data on its compliance with relevant emission limits, operating parameters, and the performance of its continuous parameter monitoring systems.

*Existing source* means any affected source that is not a new source.

*Federally enforceable* means all limitations and conditions that are enforceable by the Administrator and citizens under the Act or that are enforceable under other statutes administered by the Administrator. Examples of federally enforceable limitations and conditions include, but are not limited to:

(1) Emission standards, alternative emission standards, alternative emission limitations, and equivalent emission limitations established pursuant to section 112 of the Act as amended in 1990;

(2) New source performance standards established pursuant to section 111 of the Act, and emission standards established pursuant to section 112 of the Act before it was amended in 1990;

(3) All terms and conditions in a title V permit, including any provisions that limit a source's potential to emit, unless expressly designated as not federally enforceable;

(4) Limitations and conditions that are part of an approved State Implementation Plan (SIP) or a Federal Implementation Plan (FIP);

(5) Limitations and conditions that are part of a Federal construction permit issued under 40 CFR 52.21 or any construction permit issued under regulations approved by the EPA in accordance with 40 CFR part 51;

(6) Limitations and conditions that are part of an operating permit issued pursuant to a program approved by the EPA into a SIP as meeting the EPA's minimum criteria for Federal enforceability, including adequate notice and opportunity for EPA and public comment prior to issuance of the final permit and practicable enforceability;

(7) Limitations and conditions in a State rule or program that has been approved by the EPA under subpart E of this part for the purposes of implementing and enforcing section 112; and

(8) Individual consent agreements that the EPA has legal authority to create.

*Fixed capital cost* means the capital needed to provide all the depreciable components of an existing source.

*Fugitive emissions* means those emissions from a stationary source that could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening. Under section 112 of the Act, all fugitive emissions are to be considered in determining whether a stationary source is a major source.

*Hazardous air pollutant* means any air pollutant listed in or pursuant to section 112(b) of the Act.

*Issuance* of a part 70 permit will occur, if the State is the permitting authority, in accordance with the requirements of part 70 of this chapter and the applicable, approved State permit program. When the EPA is the permitting authority, issuance of a title V permit occurs immediately after the EPA takes final action on the final permit.

*Lesser quantity* means a quantity of a hazardous air pollutant that is or may be emitted by a stationary source that the Administrator establishes in order to define a major source under an applicable subpart of this part.

*Major source* means any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants, unless the Administrator establishes a lesser quantity, or in the case of radionuclides, different criteria from those specified in this sentence.

*Malfunction* means any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

*New source* means any affected source the construction or reconstruction of which is commenced after the Administrator first proposes a relevant emission standard under this part.

*One-hour period*, unless otherwise defined in an applicable subpart, means any 60-minute period commencing on the hour.

*Opacity* means the degree to which emissions reduce the transmission of light and obscure the view of an object in the background. For continuous opacity monitoring systems, opacity means the fraction of incident light that is attenuated by an optical medium.

*Owner or operator* means any person who owns, leases, operates, controls, or supervises a stationary source.

*Part* 70 permit means any permit issued, renewed, or revised pursuant to part 70 of this chapter.

*Performance audit* means a procedure to analyze blind samples, the content of which is known by the Administrator, simultaneously with the analysis of performance test samples in order to provide a measure of test data quality.

*Performance evaluation* means the conduct of relative accuracy testing, calibration error testing, and other measurements used in validating the continuous monitoring system data.

*Performance test* means the collection of data resulting from the execution of a test method (usually three emission test runs) used to demonstrate compliance with a relevant emission standard as specified in the performance test section of the relevant standard.

*Permit modification* means a change to a title V permit as defined in regulations codified in this chapter to implement title V of the Act (42 U.S.C. 7661).

*Permit program* means a comprehensive State operating permit system established pursuant to title V of the Act (42 U.S.C. 7661) and regulations codified in part 70 of this chapter and applicable State regulations, or a comprehensive Federal operating permit system established pursuant to title V of the Act and regulations codified in this chapter.

*Permit revision* means any permit modification or administrative permit amendment to a title V permit as defined in regulations codified in this chapter to implement title V of the Act (42 U.S.C. 7661).

*Permitting authority* means:

(1) The State air pollution control agency, local agency, other State agency, or other agency authorized by the Administrator to carry out a permit program under part 70 of this chapter; or

(2) The Administrator, in the case of EPA-implemented permit programs under title V of the Act (42 U.S.C. 7661).

*Potential to emit* means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the stationary source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable.

*Reconstruction* means the replacement of components of an affected or a previously unaffected stationary source to such an extent that:

(1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable new source; and

(2) It is technologically and economically feasible for the reconstructed source to meet the relevant standard(s) established by the Administrator (or a State) pursuant to section 112 of the Act. Upon reconstruction, an affected source, or a stationary source that becomes an affected source, is subject to relevant standards for new sources, including compliance dates, irrespective of any change in emissions of hazardous air pollutants from that source.

*Regulation promulgation schedule* means the schedule for the promulgation of emission standards under this part, established by the Administrator pursuant to section 112(e) of the Act and published in the FEDERAL REGISTER.

*Relevant standard* means:

(1) An emission standard;

(2) An alternative emission standard;

(3) An alternative emission limitation; or

(4) An equivalent emission limitation established pursuant to section 112 of the Act that applies to the stationary source, the group of stationary sources, or the portion of a stationary source regulated by such standard or limitation. A relevant standard may include or consist of a design, equipment, work practice, or operational requirement, or other measure, process, method, system, or technique (including prohibition of emissions) that the Administrator (or a State) establishes for new or existing sources to which such standard or limitation applies. Every relevant standard established pursuant to section 112 of the Act includes subpart A of this part and all applicable appendices of this part or of other parts of this chapter that are referenced in that standard.

*Responsible official* means one of the following:

(1) For a corporation: A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities and either:

(i) The facilities employ more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars); or

(ii) The delegation of authority to such representative is approved in advance by the Administrator.

(2) For a partnership or sole proprietorship: a general partner or the proprietor, respectively.

(3) For a municipality, State, Federal, or other public agency: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of the EPA).

(4) For affected sources (as defined in this part) applying for or subject to a title V permit: ''responsible official'' shall have the same meaning as defined in part 70 or Federal title V regulations in this chapter (42 U.S.C. 7661), whichever is applicable.

*Run* means one of a series of emission or other measurements needed to determine emissions for a representative operating period or cycle as specified in this part.

*Shutdown* means the cessation of operation of an affected source for any purpose.

*Six-minute period* means, with respect to opacity determinations, any one of the 10 equal parts of a 1-hour period.

*Standard conditions* means a temperature of 293 $^{\circ}$K (68° F) and a pressure of 101.3 kilopascals (29.92 in. Hg).

*Startup* means the setting in operation of an affected source for any purpose.

*State* means all non-Federal authorities, including local agencies, interstate associations, and State-wide programs, that have delegated authority to implement:

(1) The provisions of this part and/or

(2) the permit program established under part 70 of this chapter. The term State shall have its conventional meaning where clear from the context.

*Stationary source* means any building, structure, facility, or installation which emits or may emit any air pollutant.

*Test method* means the validated procedure for sampling, preparing, and analyzing for an air pollutant specified in a relevant standard as the performance test procedure. The test method may include methods described in an appendix of this chapter, test methods incorporated by reference in this part, or methods validated for an application through procedures in Method 301 of appendix A of this part.

*Title V permit* means any permit issued, renewed, or revised pursuant to Federal or State regulations established to implement title V of the Act (42 U.S.C. 7661). A title V permit issued by a State permitting authority is called a part 70 permit in this part.

*Visible emission* means the observation of an emission of opacity or optical density above the threshold of vision.

**§ 63.3 Units and abbreviations.**

Used in this part are abbreviations and symbols of units of measure. These are defined as follows:

(a) System International (SI) units of measure:

A = ampere
g = gram
Hz = hertz
J = joule
°K = degree Kelvin
kg = kilogram
l = liter
m = meter
$m^3$ = cubic meter
mg = milligram = $10^{-3}$ gram
ml = milliliter = $10^{-3}$ liter
mm = millimeter = $10^{-3}$ meter
Mg = megagram = $10^6$ gram = metric ton
MJ = megajoule
mol = mole
N = newton
ng = nanogram = $10^{-9}$ gram
nm = nanometer = $10^{-9}$ meter
Pa = pascal
s = second
V = volt
W = watt
Ω = ohm
μg = microgram = $10^{-6}$ gram
μl = microliter = $10^{-6}$ liter

(b) Other units of measure:

Btu = British thermal unit
°C = degree Celsius (centigrade)
cal = calorie
cfm = cubic feet per minute
cc = cubic centimeter
cu ft = cubic feet
d = day
dcf = dry cubic feet
dcm = dry cubic meter
dscf = dry cubic feet at standard conditions
dscm = dry cubic meter at standard conditions
eq = equivalent
°F = degree Fahrenheit
ft = feet
$ft^2$ = square feet
$ft^3$ = cubic feet
gal = gallon
gr = grain
g-eq = gram equivalent
g-mole = gram mole
hr = hour
in. = inch
in. $H_2O$ = inches of water
K = 1,000
kcal = kilocalorie
lb = pound
lpm = liter per minute
meq = milliequivalent
min = minute
MW = molecular weight
oz = ounces
ppb = parts per billion
ppbw = parts per billion by weight
ppbv = parts per billion by volume
ppm = parts per million
ppmw = parts per million by weight
ppmv = parts per million by volume
psia = pounds per square inch absolute
psig = pounds per square inch gage
°R = degree Rankine
scf = cubic feet at standard conditions
scfh = cubic feet at standard conditions per hour
scm = cubic meter at standard conditions
sec = second
sq ft = square feet
std = at standard conditions
v/v = volume per volume
$yd^2$ = square yards

yr = year

(c) Miscellaneous:

act = actual

avg = average

I.D. = inside diameter

M = molar

N = normal

O.D. = outside diameter

% = percent

**§ 63.4 Prohibited activities and circumvention.**

(a) *Prohibited activities.*

(1) No owner or operator subject to the provisions of this part shall operate any affected source in violation of the requirements of this part except under-

(i) An extension of compliance granted by the Administrator under this part; or

(ii) An extension of compliance granted under this part by a State with an approved permit program; or

(iii) An exemption from compliance granted by the President under section 112(i)(4) of the Act.

(2) No owner or operator subject to the provisions of this part shall fail to keep records, notify, report, or revise reports as required under this part.

(3) After the effective date of an approved permit program in a State, no owner or operator of an affected source in that State who is required under this part to obtain a title V permit shall operate such source except in compliance with the provisions of this part and the applicable requirements of the permit program in that State.

(4) [Reserved]

(5) An owner or operator of an affected source who is subject to an emission standard promulgated under this part shall comply with the requirements of that standard by the date(s) established in the applicable subpart(s) of this part (including this subpart) regardless of whether -

(i) A title V permit has been issued to that source; or

(ii) If a title V permit has been issued to that source, whether such permit has been revised or modified to incorporate the emission standard.

(b) *Circumvention.* No owner or operator subject to the provisions of this part shall build, erect, install, or use any article, machine, equipment, or process to conceal an emission that would otherwise constitute noncompliance with a relevant standard. Such concealment includes, but is not limited to

(1) The use of diluents to achieve compliance with a relevant standard based on the concentration of a pollutant in the effluent discharged to the atmosphere;

(2) The use of gaseous diluents to achieve compliance with a relevant standard for visible emissions; and

(3) The fragmentation of an operation such that the operation avoids regulation by a relevant standard.

(c) *Severability.* Notwithstanding any requirement incorporated into a title V permit obtained by an owner or operator subject to the provisions of this part, the provisions of this part are federally enforceable.

**§ 63.5 Construction and reconstruction.**

(a) *Applicability.*

(1) This section implements the preconstruction review requirements of section 112(i)(1) for sources subject to a relevant emission standard that has been promulgated in this part. In addition, this section includes other requirements for constructed and reconstructed stationary sources that are or become subject to a relevant promulgated emission standard.

(2) After the effective date of a relevant standard promulgated under this part, the requirements in this section apply to owners or operators who construct a new source or reconstruct a source after the proposal date of that standard. New or reconstructed sources that start up before the standard's effective date are not subject to the preconstruction review requirements specified in paragraphs (b)(3), (d), and (e) of this section.

(b) *Requirements for existing, newly constructed, and reconstructed sources.*

(1) Upon construction an affected source is subject to relevant standards for new sources, including compliance dates. Upon reconstruction, an affected source is subject to relevant standards for new sources, including compliance dates, irrespective of any change in emissions of hazardous air pollutants from that source.

(2) [Reserved]

(3) After the effective date of any relevant standard promulgated by the Administrator under this part, whether or not an approved permit program is effective in the State in which an affected source is (or would be) located, no person may construct a new major affected source or reconstruct a major affected source subject to such standard, or reconstruct a major source such that the source becomes a major affected source subject to the standard, without obtaining written approval, in advance, from the Administrator in accordance with the procedures specified in paragraphs (d) and (e) of this section.

(4) After the effective date of any relevant standard promulgated by the Administrator under this part, whether or not an approved permit program is effective in the State in which an affected source is (or would be) located, no person may construct a new affected source or reconstruct an affected source subject to such standard, or reconstruct a source such that the source becomes an affected source subject to the standard, without notifying the Administrator of the intended construction or reconstruction. The notification shall be submitted in accordance with the procedures in § 63.9(b) and shall include all the information required for an application for approval of construction or reconstruction as specified in paragraph (d) of this section. For major sources, the application for approval of construction or reconstruction may be used to fulfill the notification requirements of this paragraph.

(5) After the effective date of any relevant standard promulgated by the Administrator under this part, whether or not an approved permit program is effective in the State in which an affected source is located, no person may operate such source without complying with the provisions of this subpart and the relevant standard unless that person has received an extension of compliance or an exemption from compliance under § 63.6(i) or § 63.6(j) of this subpart.

(6) After the effective date of any relevant standard promulgated by the Administrator under this part, whether or not an approved permit program is effective in the State in which an affected source is located, equipment added (or a process change) to an affected source that is within the scope of the definition of affected source under the relevant standard shall be considered part of the affected source and subject to all provisions of the relevant standard established for that affected source. If a new affected source is added to the facility, the new

affected source shall be subject to all the provisions of the relevant standard that are established for new sources including compliance dates.

(c) [Reserved]

(d) *Application for approval of construction or reconstruction.* The provisions of this paragraph implement section 112(i)(1) of the Act.

(1) *General application requirements.*

(i) An owner or operator who is subject to the requirements of paragraph (b)(3) of this section shall submit to the Administrator an application for approval of the construction of a new major affected source, the reconstruction of a major affected source, or the reconstruction of a major source such that the source becomes a major affected source subject to the standard. The application shall be submitted as soon as practicable before the construction or reconstruction is planned to commence (but no sooner than the effective date of the relevant standard) if the construction or reconstruction commences after the effective date of a relevant standard promulgated in this part. The application shall be submitted as soon as practicable before startup but no later than 60 days after the effective date of a relevant standard promulgated in this part if the construction or reconstruction had commenced and initial startup had not occurred before the standard's effective date. The application for approval of construction or reconstruction may be used to fulfill the initial notification requirements of § 63.9(b)(5) of this subpart. The owner or operator may submit the application for approval well in advance of the date construction or reconstruction is planned to commence in order to ensure a timely review by the Administrator and that the planned commencement date will not be delayed.

(ii) A separate application shall be submitted for each construction or reconstruction. Each application for approval of construction or reconstruction shall include at a minimum:

(A) The applicant's name and address;

(B) A notification of intention to construct a new major affected source or make any physical or operational change to a major affected source that may meet or has been determined to meet the criteria for a reconstruction, as defined in § 63.2;

(C) The address (i.e., physical location) or proposed address of the source;

(D) An identification of the relevant standard that is the basis of the application;

(E) The expected commencement date of the construction or reconstruction;

(F) The expected completion date of the construction or reconstruction;

(G) The anticipated date of (initial) startup of the source;

(H) The type and quantity of hazardous air pollutants emitted by the source, reported in units and averaging times and in accordance with the test methods specified in the relevant standard, or if actual emissions data are not yet available, an estimate of the type and quantity of hazardous air pollutants expected to be emitted by the source reported in units and averaging times specified in the relevant standard. The owner or operator may submit percent reduction information if a relevant standard is established in terms of percent reduction. However, operating parameters, such as flow rate, shall be included in the submission to the extent that they demonstrate performance and compliance; and

(I) [Reserved]

(J) Other information as specified in paragraphs (d)(2) and (d)(3) of this section.

(iii) An owner or operator who submits estimates or preliminary information in place of the actual emissions data and analysis required in paragraphs (d)(1)(ii)(H) and (d)(2) of this section shall submit the actual, measured emissions data and other correct information as soon as available but no later than with the notification of compliance status required in § 63.9(h) (see
§ 63.9(h)(5)).

(2) *Application for approval of construction.* Each application for approval of construction shall include, in addition to the information required in paragraph (d)(1)(ii) of this section, technical information describing the proposed nature, size, design, operating design capacity, and method of operation of the source, including an identification of each point of emission for each hazardous air pollutant that is emitted (or could be emitted) and a description of the planned air pollution control system (equipment or method) for each emission point. The description of the equipment to be used for the control of emissions shall include each control device for each hazardous air pollutant and the estimated control efficiency (percent) for each control device. The description of the method to be used for the control of emissions shall include an estimated control efficiency (percent) for that method. Such technical information shall include calculations of emission estimates in sufficient detail to permit assessment of the validity of the calculations. An owner or operator who submits approximations of control efficiencies under this subparagraph shall submit the actual control efficiencies as specified in paragraph (d)(1)(iii) of this section.

(3) *Application for approval of reconstruction.* Each application for approval of reconstruction shall include, in addition to the information required in paragraph (d)(1)(ii) of this section - (i) A brief description of the affected source and the components that are to be replaced;

(ii) A description of present and proposed emission control systems (i.e., equipment or methods). The description of the equipment to be used for the control of emissions shall include each control device for each hazardous air pollutant and the estimated control efficiency (percent) for each control device. The description of the method to be used for the control of emissions shall include an estimated control efficiency (percent) for that method. Such technical information shall include calculations of emission estimates in sufficient detail to permit assessment of the validity of the calculations;

(iii) An estimate of the fixed capital cost of the replacements and of constructing a comparable entirely new source;

(iv) The estimated life of the affected source after the replacements; and

(v) A discussion of any economic or technical limitations the source may have in complying with relevant standards or other requirements after the proposed replacements. The discussion shall be sufficiently detailed to demonstrate to the Administrator's satisfaction that the technical or economic limitations affect the source's ability to comply with the relevant standard and how they do so.

(vi) If in the application for approval of reconstruction the owner or operator designates the affected source as a reconstructed source and declares that there are no economic or technical limitations to prevent the source from complying with all relevant standards or other requirements, the owner or operator need not submit the information required in subparagraphs (d)(3) (iii) through (v) of this section, above.

(4) *Additional information.* The Administrator may request additional relevant information after the submittal of an application for approval of construction or reconstruction.

(e) *Approval of construction or reconstruction.*

(1) (i) If the Administrator determines that, if properly constructed, or reconstructed, and operated, a new or existing source for which an application under paragraph (d) of this section was submitted will not cause emissions in violation of the relevant standard(s) and any other federally enforceable requirements, the Administrator will approve the construction or reconstruction.

(ii) In addition, in the case of reconstruction, the Administrator's determination under this paragraph will be based on:

(A) The fixed capital cost of the replacements in comparison to the fixed capital cost that would be required to construct a comparable entirely new source;

(B) The estimated life of the source after the re-placements compared to the life of a comparable entirely new source;

(C) The extent to which the components being replaced cause or contribute to the emissions from the source; and

(D) Any economic or technical limitations on compliance with relevant standards that are inherent in the proposed replacements.

(2) (i) The Administrator will notify the owner or operator in writing of approval or intention to deny approval of construction or reconstruction within 60 calendar days after receipt of sufficient information to evaluate an application submitted under paragraph (d) of this section. The 60-day approval or denial period will begin after the owner or operator has been notified in writing that his/her application is complete. The Administrator will notify the owner or operator in writing of the status of his/her application, that is, whether the application contains sufficient information to make a determination, within 30 calendar days after receipt of the original application and within 30 calendar days after receipt of any supplementary information that is submitted.

(ii) When notifying the owner or operator that his/her application is not complete, the Administrator will specify the information needed to complete the application and provide notice of opportunity for the applicant to present, in writing, within 30 calendar days after he/she is notified of the incomplete application, additional information or arguments to the Administrator to enable further action on the application.

(3) Before denying any application for approval of construction or reconstruction, the Administrator will notify the applicant of the Administrator's intention to issue the denial together with - (i) Notice of the information and findings on which the intended denial is based; and

(ii) Notice of opportunity for the applicant to present, in writing, within 30 calendar days after he/she is notified of the intended denial, additional information or arguments to the Administrator to enable further action on the application.

(4) A final determination to deny any application for approval will be in writing and will specify the grounds on which the denial is based. The final determination will be made within 60 calendar days of presentation of additional information or arguments (if the application is complete), or within 60 calendar days after the final date specified for presentation if no presentation is made.

(5) Neither the submission of an application for approval nor the Administrator's approval of construction or reconstruction shall -

(i) Relieve an owner or operator of legal responsibility for compliance with any applicable provisions of this part or with any other applicable Federal, State, or local requirement; or (ii) Prevent the Administrator from implementing or enforcing this part or taking any other action under the Act.

(f) *Approval of construction or reconstruction based on prior State preconstruction review.*

(1) The Administrator may approve an application for construction or reconstruction specified in paragraphs (b)(3) and (d) of this section if the owner or operator of a new or reconstructed source who is subject to such requirement demonstrates to the Administrator's satisfaction that the following conditions have been (or will be) met:

(i) The owner or operator of the new or reconstructed source has undergone a preconstruction review and approval process in the State in which the source is (or would be) located before the promulgation date of the relevant standard and has received a federally enforceable construction permit that contains a finding that the source will meet the relevant emission standard as proposed, if the source is properly built and operated;

(ii) In making its finding, the State has considered factors substantially equivalent to those specified in paragraph (e)(1) of this section; and either

(iii) The promulgated standard is no more stringent than the proposed standard in any relevant aspect that would affect the Administrator's decision to approve or disapprove an application for approval of construction or reconstruction under this section; or

(iv) The promulgated standard is more stringent than the proposed standard but the owner or operator will comply with the standard as proposed during the 3-year period immediately following the effective date of the standard as allowed for in § 63.6(b)(3) of this subpart.

(2) The owner or operator shall submit to the Administrator the request for approval of construction or reconstruction under this paragraph no later than the application deadline specified in paragraph (d)(1) of this section (see also § 63.9(b)(2) of this subpart). The owner or operator shall include in the request information sufficient for the Administrator's determination. The Administrator will evaluate the owner or operator's request in accordance with the procedures specified in paragraph (e) of this section. The Administrator may request additional relevant information after the submittal of a request for approval of construction or reconstruction under this paragraph.

**§ 63.6 Compliance with standards and maintenance requirements.**

(a) *Applicability.*

(1) The requirements in this section apply to owners or operators of affected sources for which any relevant standard has been established pursuant to section 112 of the Act unless -

(i) The Administrator (or a State with an approved permit program) has granted an extension of compliance consistent with paragraph (i) of this section; or

(ii) The President has granted an exemption from compliance with any relevant standard in accordance with section 112(i)(4) of the Act.

(2) If an area source that otherwise would be subject to an emission standard or other requirement established under this part if it were a major source subsequently increases its emissions of hazardous air pollutants (or its potential to emit hazardous air pollutants) such that the source is a major source, such source shall be subject to the relevant emission standard or other requirement.

(b) *Compliance dates for new and reconstructed sources.*

(1) Except as specified in paragraphs (b)(3) and (b)(4) of this section, the owner or operator of a new or reconstructed source that has an initial startup before the effective date of a relevant standard established under this part pursuant to section 112(d), 112(f), or 112(h) of the Act shall comply with such standard not later than the standard's effective date.

(2) Except as specified in paragraphs (b)(3) and (b)(4) of this section, the owner or operator of a new or reconstructed source that has an initial startup after the effective date of a relevant standard established under this part pursuant to section 112(d), 112(f), or 112(h) of the Act shall comply with such standard upon startup of the source.

(3) The owner or operator of an affected source for which construction or reconstruction is commenced after the proposal date of a relevant standard established under this part pursuant to section 112(d), 112(f), or 112(h) of the Act but before the effective date (that is, promulgation) of such standard shall comply with the relevant emission standard not later than the date 3 years after the effective date if:

(i) The promulgated standard (that is, the relevant standard) is more stringent than the proposed standard; and

(ii) The owner or operator complies with the standard as proposed during the 3-year period immediately after the effective date.

(4) The owner or operator of an affected source for which construction or reconstruction is commenced after the proposal date of a relevant standard established pursuant to section 112(d) of the Act but before the proposal date of a relevant standard established pursuant to section 112(f) shall comply with the emission standard under section 112(f) not later than the date 10 years after the date construction or reconstruction is commenced, except that, if the section 112(f) standard is promulgated more than 10 years after construction or reconstruction is commenced, the owner or operator shall comply with the standard as provided in paragraphs (b)(1) and (b)(2) of this section.

(5) The owner or operator of a new source that is subject to the compliance requirements of paragraph (b)(3) or paragraph (b)(4) of this section shall notify the Administrator in accordance with § 63.9(d) of this subpart.

(6) [Reserved]

(7) After the effective date of an emission standard promulgated under this part, the owner or operator of an unaffected new area source (i.e., an area source for which construction or reconstruction was commenced after the proposal date of the standard) that increases its emissions of (or its potential to emit) hazardous air pollutants such that the source becomes a major source that is subject to the emission standard, shall comply with the relevant emission standard immediately upon becoming a major source. This compliance date shall apply to new area sources that become affected major sources regardless of whether the new area source previously was affected by that standard. The new affected major source shall comply with all requirements of that standard that affect new sources.

(c) *Compliance dates for existing sources*.

(1) After the effective date of a relevant standard established under this part pursuant to section 112(d) or 112(h) of the Act, the owner or operator of an existing source shall comply with such standard by the compliance date established by the Administrator in the applicable subpart(s) of this part. Except as otherwise provided for in section 112 of the Act, in no case will the compliance date established for an existing source in an applicable subpart of this part exceed 3 years after the effective date of such standard.

(2) After the effective date of a relevant standard established under this part pursuant to section 112(f) of the Act, the owner or operator of an existing source shall comply with such standard not later than 90 days after the standard's effective date unless the Administrator has granted an extension to the source under paragraph (i)(4)(ii) of this section.

(3)–(4) [Reserved]

(5) After the effective date of an emission standard promulgated under this part, the owner or operator of an unaffected existing area source that increases its emissions of (or its potential to emit) hazardous air pollutants such that the source becomes a major source that is subject to the emission standard shall comply by the date specified in the standard for existing area sources that become major sources. If no such compliance date is specified in the standard, the source shall have a period of time to comply with the relevant emission standard that is equivalent to the compliance period specified in that standard for other existing sources. This compliance period shall apply to existing area sources that become affected major sources regardless of whether the existing area source previously was affected by that standard. Notwithstanding the previous two sentences, however, if the existing area source becomes a major source by the addition of a new affected source or by reconstructing, the portion of the existing facility that is a new affected source or a reconstructed source shall comply with all requirements of that standard that affect new sources, including the compliance date for new sources.

(d) [Reserved]

(e) *Operation and maintenance requirements.*

(1) (i) At all times, including periods of startup, shutdown, and malfunction, owners or operators shall operate and maintain any affected source, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the levels required by all relevant standards.

(ii) Malfunctions shall be corrected as soon as practicable after their occurrence in accordance with the startup, shutdown, and malfunction plan required in paragraph (e)(3) of this section.

(iii) Operation and maintenance requirements established pursuant to section 112 of the Act are enforceable independent of emissions limitations or other requirements in relevant standards.

(2) Determination of whether acceptable operation and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures (including the startup, shutdown, and malfunction plan required in paragraph (e)(3) of this section), review of operation and maintenance records, and inspection of the source.

(3) *Startup, shutdown, and malfunction plan.*

(i) The owner or operator of an affected source shall develop and implement a written startup, shutdown, and malfunction plan that describes, in detail, procedures for operating and maintaining the source during periods of startup, shutdown, and malfunction and a program of corrective action for malfunctioning process and air pollution control equipment used to comply with the relevant standard. As required under § 63.8(c)(1)(i), the plan shall identify all routine or otherwise predictable CMS malfunctions. This plan shall be developed by the owner or operator by the source's compliance date for that relevant standard. The plan shall be incorporated by reference into the source's title V permit. The purpose of the startup, shutdown, and malfunction plan is to -

(A) Ensure that, at all times, owners or operators operate and maintain affected sources, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the levels required by all relevant standards;

(B) Ensure that owners or operators are prepared to correct malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of hazardous air pollutants; and

(C) Reduce the reporting burden associated with periods of startup, shutdown, and malfunction (including corrective action taken to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation).

(ii) During periods of startup, shutdown, and malfunction, the owner or operator of an affected source shall operate and maintain such source (including associated air pollution control equipment) in accordance with the procedures specified in the startup, shutdown, and malfunction plan developed under paragraph (e)(3)(i) of this section.

(iii) When actions taken by the owner or operator during a startup, shutdown, or malfunction (including actions taken to correct a malfunction) are consistent with the procedures specified in the affected source's startup, shutdown, and malfunction plan, the owner or operator shall keep records for that event that demonstrate that the procedures specified in the plan were followed. These records may take the form of a "checklist," or other effective form of recordkeeping, that confirms conformance with the startup, shutdown, and malfunction plan for that event. In addition, the owner or operator shall keep records of these events as specified in § 63.10(b) (and elsewhere in this part), including records of the occurrence and duration of each startup, shutdown, or malfunction of operation and each malfunction of the air pollution control equipment. Furthermore, the owner or operator shall confirm that actions taken during the relevant reporting period during periods of startup, shutdown, and malfunction were consistent with the affected source's startup, shutdown and malfunction plan in the semiannual (or more frequent) startup, shutdown, and malfunction report required in § 63.10(d)(5).

(iv) If an action taken by the owner or operator during a startup, shutdown, or malfunction (including an action taken to correct a malfunction) is not consistent with the procedures specified in the affected source's startup, shutdown, and malfunction plan, the owner or operator shall record the actions taken for that event and shall report such actions within 2 working days after commencing actions inconsistent with the plan, followed by a letter within 7 working days after the end of the event, in accordance with § 63.10(d)(5) (unless the owner or operator makes alternative reporting arrangements, in advance, with the Administrator (see § 63.10(d)(5)(ii))).

(v) The owner or operator shall keep the written startup, shutdown, and malfunction plan on record after it is developed to be made available for inspection, upon request, by the Administrator for the life of the affected source or until the affected source is no longer subject to the provisions of this part. In addition, if the startup, shutdown, and malfunction plan is revised, the owner or operator shall keep previous (i.e., superseded) versions of the startup, shutdown, and malfunction plan on record, to be made available for inspection, upon request, by the Administrator, for a period of 5 years after each revision to the plan.

(vi) To satisfy the requirements of this section to develop a startup, shutdown, and malfunction plan, the owner or operator may use the affected source's standard operating procedures (SOP) manual, or an Occupational Safety and Health Administration (OSHA) or other plan, provided the alternative plans meet all the requirements of this section and are made available for inspection when requested by the Administrator.

(vii) Based on the results of a determination made under paragraph (e)(2) of this section, the Administrator may require that an owner or operator of an affected source make changes to the startup, shutdown, and malfunction plan for that source. The Administrator may require reasonable revisions to a startup, shutdown, and malfunction plan, if the Administrator finds that the plan:

(A) Does not address a startup, shutdown, or malfunction event that has occurred;

(B) Fails to provide for the operation of the source (including associated air pollution control equipment) during a startup, shutdown, or malfunction event in a manner consistent with good air pollution control practices for minimizing emissions at least to the levels required by all relevant standards; or

(C) Does not provide adequate procedures for correcting malfunctioning process and/or air pollution control equipment as quickly as practicable.

(viii) If the startup, shutdown, and malfunction plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction but was not included in the startup, shutdown, and malfunction plan at the time the owner or operator developed the plan, the owner or operator shall revise the startup, shutdown, and malfunction plan within 45 days after the event to include detailed procedures for operating and maintaining the source during similar malfunction events and a program of corrective action for similar malfunctions of process or air pollution control equipment.

(f) *Compliance with nonopacity emission standards* -

(1) *Applicability*. The nonopacity emission standards set forth in this part shall apply at all times except during periods of startup, shutdown, and malfunction, and as otherwise specified in an applicable subpart.

(2) *Methods for determining compliance.*

(i) The Administrator will determine compliance with nonopacity emission standards in this part based on the results of performance tests conducted according to the procedures in § 63.7, unless otherwise specified in an applicable subpart of this part.

(ii) The Administrator will determine compliance with nonopacity emission standards in this part by evaluation of an owner or operator's conformance with operation and maintenance requirements, including the evaluation of monitoring data, as specified in § 63.6(e) and applicable subparts of this part.

(iii) If an affected source conducts performance testing at startup to obtain an operating permit in the State in which the source is located, the results of such testing may be used to demonstrate compliance with a relevant standard if -

(A) The performance test was conducted within a reasonable amount of time before an initial performance test is required to be conducted under the relevant standard;

(B) The performance test was conducted under representative operating conditions for the source;

(C) The performance test was conducted and the resulting data were reduced using EPA-approved test methods and procedures, as specified in § 63.7(e) of this subpart; and

(D) The performance test was appropriately quality-assured, as specified in § 63.7(c) of this subpart.

(iv) The Administrator will determine compliance with design, equipment, work practice, or operational emission standards in this part by review of records, inspection of the source, and other procedures specified in applicable subparts of this part.

(v) The Administrator will determine compliance with design, equipment, work practice, or operational emission standards in this part by evaluation of an owner or operator's conformance with operation and maintenance requirements, as specified in paragraph (e) of this section and applicable subparts of this part.

(3) *Finding of compliance*. The Administrator will make a finding concerning an affected source's compliance with a nonopacity emission standard, as specified in paragraphs

(f)(1) and (f)(2) of this section, upon obtaining all the compliance information required by the relevant standard (including the written reports of performance test results, monitoring results, and other information, if applicable) and any information available to the Administrator needed to determine whether proper operation and maintenance practices are being used.

(g) *Use of an alternative nonopacity emission standard.*

(1) If, in the Administrator's judgment, an owner or operator of an affected source has established that an alternative means of emission limitation will achieve a reduction in emissions of a hazardous air pollutant from an affected source at least equivalent to the reduction in emissions of that pollutant from that source achieved under any design, equipment, work practice, or operational emission standard, or combination thereof, established under this part pursuant to section 112(h) of the Act, the Administrator will publish in the FEDERAL REGISTER a notice permitting the use of the alternative emission standard for purposes of compliance with the promulgated standard. Any FEDERAL REGISTER notice under this paragraph shall be published only after the public is notified and given the opportunity to comment. Such notice will restrict the permission to the stationary source(s) or category(ies) of sources from which the alternative emission standard will achieve equivalent emission reductions. The Administrator will condition permission in such notice on requirements to assure the proper operation and maintenance of equipment and practices required for compliance with the alternative emission standard and other requirements, including appropriate quality assurance and quality control requirements, that are deemed necessary.

(2) An owner or operator requesting permission under this paragraph shall, unless otherwise specified in an applicable subpart, submit a proposed test plan or the results of testing and monitoring in accordance with § 63.7 and § 63.8, a description of the procedures followed in testing or monitoring, and a description of pertinent conditions during testing or monitoring. Any testing or monitoring conducted to request permission to use an alternative nonopacity emission standard shall be appropriately quality assured and quality controlled, as specified in § 63.7 and § 63.8.

(3) The Administrator may establish general procedures in an applicable subpart that accomplish the requirements of paragraphs (g)(1) and (g)(2) of this section.

(h) *Compliance with opacity and visible emission standards -*

(1) *Applicability.* The opacity and visible emission standards set forth in this part shall apply at all times except during periods of startup, shutdown, and malfunction, and as otherwise specified in an applicable subpart.

(2) Methods for determining compliance.

(i) The Administrator will determine compliance with opacity and visible emission standards in this part based on the results of the test method specified in an applicable subpart. Whenever a continuous opacity monitoring system (COMS) is required to be installed to determine compliance with numerical opacity emission standards in this part, compliance with opacity emission standards in this part shall be determined by using the results from the COMS. Whenever an opacity emission test method is not specified, compliance with opacity emission standards in this part shall be determined by conducting observations in accordance with Test Method 9 in appendix A of part 60 of this chapter or the method specified in paragraph (h)(7)(ii) of this section. Whenever a visible emission test method is not specified, compliance with visible emission standards in this part shall be determined by conducting observations in accordance with Test Method 22 in appendix A of part 60 of this chapter.

(ii) [Reserved]

(iii) If an affected source undergoes opacity or visible emission testing at startup to obtain an operating permit in the State in which the source is located, the results of such testing may be used to demonstrate compliance with a relevant standard if -

(A) The opacity or visible emission test was conducted within a reasonable amount of time before a performance test is required to be conducted under the relevant standard;

(B) The opacity or visible emission test was conducted under representative operating conditions for the source;

(C) The opacity or visible emission test was conducted and the resulting data were reduced using EPA-approved test methods and procedures, as specified in § 63.7(e) of this subpart; and

(D) The opacity or visible emission test was appropriately quality-assured, as specified in § 63.7(c) of this section.

(3) [Reserved]

(4) *Notification of opacity or visible emission observations*. The owner or operator of an affected source shall notify the Administrator in writing of the anticipated date for conducting opacity or visible emission observations in accordance with § 63.9(f), if such observations are required for the source by a relevant standard.

(5) *Conduct of opacity or visible emission observations.* When a relevant standard under this part includes an opacity or visible emission standard, the owner or operator of an affected source shall comply with the following:

(i) For the purpose of demonstrating initial compliance, opacity or visible emission observations shall be conducted concurrently with the initial performance test required in § 63.7 unless one of the following conditions applies:

(A) If no performance test under § 63.7 is required, opacity or visible emission observations shall be conducted within 60 days after achieving the maximum production rate at which a new or reconstructed source will be operated, but not later than 120 days after initial startup of the source, or within 120 days after the effective date of the relevant standard in the case of new sources that start up before the standard's effective date. If no performance test under § 63.7 is required, opacity or visible emission observations shall be conducted within 120 days after the compliance date for an existing or modified source; or

(B) If visibility or other conditions prevent the opacity or visible emission observations from being conducted concurrently with the initial performance test required under § 63.7, or within the time period specified in paragraph (h)(5)(i)(A) of this section, the source's owner or operator shall reschedule the opacity or visible emission observations as soon after the initial performance test, or time period, as possible, but not later than 30 days thereafter, and shall advise the Administrator of the rescheduled date. The rescheduled opacity or visible emission observations shall be conducted (to the extent possible) under the same operating conditions that existed during the initial performance test conducted under § 63.7. The visible emissions observer shall determine whether visibility or other conditions prevent the opacity or visible emission observations from being made concurrently with the initial performance test in accordance with procedures contained in Test Method 9 or Test Method 22 in appendix A of part 60 of this chapter.

(ii) **[Test duration specified in 40 CFR 63 Subpart LLL].**

(iii) **[Test duration specified in 40 CFR 63 Subpart LLL].**

(iv) [Reserved]

(v) Opacity readings of portions of plumes that contain condensed, uncombined water vapor shall not be used for purposes of determining compliance with opacity emission standards.

(6) *Availability of records*. The owner or operator of an affected source shall make available, upon request by the Administrator, such records that the Administrator deems necessary to determine the conditions under which the visual observations were made and shall provide evidence indicating proof of current visible observer emission certification.

(7) *Use of a continuous opacity monitoring system.*

(i) The owner or operator of an affected source required to use a continuous opacity monitoring system (COMS) shall record the monitoring data produced during a performance test required under § 63.7 and shall furnish the Administrator a written report of the monitoring results in accordance with the provisions of § 63.10(e)(4).

(ii) Whenever an opacity emission test method has not been specified in an applicable subpart, or an owner or operator of an affected source is required to conduct Test Method 9 observations (see appendix A of part 60 of this chapter), the owner or operator may submit, for compliance purposes, COMS data results produced during any performance test required under § 63.7 in lieu of Method 9 data. If the owner or operator elects to submit COMS data for compliance with the opacity emission standard, he or she shall notify the Administrator of that decision, in writing, simultaneously with the notification under § 63.7(b) of the date the performance test is scheduled to begin. Once the owner or operator of an affected source has notified the Administrator to that effect, the COMS data results will be used to determine opacity compliance during subsequent performance tests required under § 63.7, unless the owner or operator notifies the Administrator in writing to the contrary not later than with the notification under § 63.7(b) of the date the subsequent performance test is scheduled to begin.

(iii) For the purposes of determining compliance with the opacity emission standard during a performance test required under § 63.7 using COMS data, the COMS data shall be reduced to 6-minute averages over the duration of the mass emission performance test.

(iv) The owner or operator of an affected source using a COMS for compliance purposes is responsible for demonstrating that he/she has complied with the performance evaluation requirements of § 63.8(e), that the COMS has been properly maintained, operated, and data quality-assured, as specified in § 63.8(c) and § 63.8(d), and that the resulting data have not been altered in any way.

(v) Except as provided in paragraph (h)(7)(ii) of this section, the results of continuous monitoring by a COMS that indicate that the opacity at the time visual observations were made was not in excess of the emission standard are probative but not conclusive evidence of the actual opacity of an emission, provided that the affected source proves that, at the time of the alleged violation, the instrument used was properly maintained, as specified in § 63.8(c), and met Performance Specification 1 in appendix B of part 60 of this chapter, and that the resulting data have not been altered in any way.

(8) *Finding of compliance*. The Administrator will make a finding concerning an affected source's compliance with an opacity or visible emission standard upon obtaining all the compliance information required by the relevant standard (including the written reports of the results of the performance tests required by § 63.7, the results of Test Method 9 or another required opacity or visible emission test method, the observer certification required by paragraph (h)(6) of this section, and the continuous opacity monitoring system results, whichever is/are applicable) and any information available to the Administrator needed to determine whether proper operation and maintenance practices are being used.

(9) *Adjustment to an opacity emission standard.*

(i) If the Administrator finds under paragraph (h)(8) of this section that an affected source is in compliance with all relevant standards for which initial performance tests were conducted under § 63.7, but during the time such performance tests were conducted fails to meet any relevant opacity emission standard, the owner or operator of such source may petition the Administrator to make appropriate adjustment to the opacity emission standard for the affected source. Until the Administrator notifies the owner or operator of the appropriate adjustment, the relevant opacity emission standard remains applicable.

(ii) The Administrator may grant such a petition upon a demonstration by the owner or operator that -

(A) The affected source and its associated air pollution control equipment were operated and maintained in a manner to minimize the opacity of emissions during the performance tests;

(B) The performance tests were performed under the conditions established by the Administrator; and

(C) The affected source and its associated air pollution control equipment were incapable of being adjusted or operated to meet the relevant opacity emission standard.

(iii) The Administrator will establish an adjusted opacity emission standard for the affected source meeting the above requirements at a level at which the source will be able, as indicated by the performance and opacity tests, to meet the opacity emission standard at all times during which the source is meeting the mass or concentration emission standard. The Administrator will promulgate the new opacity emission standard in the FEDERAL REGISTER.

(iv) After the Administrator promulgates an adjusted opacity emission standard for an affected source, the owner or operator of such source shall be subject to the new opacity emission standard, and the new opacity emission standard shall apply to such source during any subsequent performance tests.

(i) *Extension of compliance with emission standards.*

(1) Until an extension of compliance has been granted by the Administrator (or a State with an approved permit program) under this paragraph, the owner or operator of an affected source subject to the requirements of this section shall comply with all applicable requirements of this part.

(2) *Extension of compliance for early reductions and other reductions*

(i) *Early reductions.* Pursuant to section 112(i)(5) of the Act, if the owner or operator of an existing source demonstrates that the source has achieved a reduction in emissions of hazardous air pollutants in accordance with the provisions of subpart D of this part, the Administrator (or the State with an approved permit program) will grant the owner or operator an extension of compliance with specific requirements of this part, as specified in subpart D.

(ii) *Other reductions.* Pursuant to section 112(i)(6) of the Act, if the owner or operator of an existing source has installed best available control technology (BACT) (as defined in section 169(3) of the Act) or technology required to meet a lowest achievable emission rate (LAER) (as defined in section 171 of the Act) prior to the promulgation of an emission standard in this part applicable to such source and the same pollutant (or stream of pollutants) controlled pursuant to the BACT or LAER installation, the Administrator will grant the owner or operator an extension of compliance with such emission standard that will apply until the date 5 years after the date on which such installation was achieved, as determined by the Administrator.

(3) *Request for extension of compliance.* Paragraphs (i)(4) through (i)(7) of this section concern requests for an extension of compliance with a relevant standard under this part (except requests for an extension of compliance under paragraph (i)(2)(i) of this section will be handled through procedures specified in subpart D of this part).

(4) (i) (A) The owner or operator of an existing source who is unable to comply with a relevant standard established under this part pursuant to section 112(d) of the Act may request that the Administrator (or a State, when the State has an approved part 70 permit

program and the source is required to obtain a part 70 permit under that program, or a State, when the State has been delegated the authority to implement and enforce the emission standard for that source) grant an extension allowing the source up to 1 additional year to comply with the standard, if such additional period is necessary for the installation of controls. An additional extension of up to 3 years may be added for mining waste operations, if the 1-year extension of compliance is insufficient to dry and cover mining waste in order to reduce emissions of any hazardous air pollutant. The owner or operator of an affected source who has requested an extension of compliance under this paragraph and who is otherwise required to obtain a title V permit shall apply for such permit or apply to have the source's title V permit revised to incorporate the conditions of the extension of compliance. The conditions of an extension of compliance granted under this paragraph will be incorporated into the affected source's title V permit according to the provisions of part 70 or Federal title V regulations in this chapter (42 U.S.C. 7661), whichever are applicable.

(B) Any request under this paragraph for an extension of compliance with a relevant standard shall be submitted in writing to the appropriate authority not later than 12 months before the affected source's compliance date (as specified in paragraphs (b) and (c) of this section) for sources that are not including emission points in an emissions average, or not later than 18 months before the affected source's compliance date (as specified in paragraphs (b) and (c) of this section) for sources that are including emission points in an emissions average. Emission standards established under this part may specify alternative dates for the submittal of requests for an extension of compliance if alternatives are appropriate for the source categories affected by those standards, e.g., a compliance date specified by the standard is less than 12 (or 18) months after the standard's effective date.

(ii) The owner or operator of an existing source unable to comply with a relevant standard established under this part pursuant to section 112(f) of the Act may request that the Administrator grant an extension allowing the source up to 2 years after the standard's effective date to comply with the standard. The Administrator may grant such an extension if he/she finds that such additional period is necessary for the installation of controls and that steps will be taken during the period of the extension to assure that the health of persons will be protected from imminent endangerment. Any request for an extension of compliance with a relevant standard under this paragraph shall be submitted in writing to the Administrator not later than 15 calendar days after the effective date of the relevant standard.

(5) The owner or operator of an existing source that has installed BACT or technology required to meet LAER [as specified in paragraph (i)(2)(ii) of this section] prior to the promulgation of a relevant emission standard in this part may request that the Administrator grant an extension allowing the source 5 years from the date on which such installation was achieved, as determined by the Administrator, to comply with the standard. Any request for an extension of compliance with a relevant standard under this paragraph shall be submitted in writing to the Administrator not later than 120 days after the promulgation date of the standard. The Administrator may grant such an extension if he or she finds that the installation of BACT or technology to meet LAER controls the same pollutant (or stream of pollutants) that would be controlled at that source by the relevant emission standard.

(6) (i) The request for a compliance extension under paragraph (i)(4) of this section shall include the following information:

(A) A description of the controls to be installed to comply with the standard;

(B) A compliance schedule, including the date by which each step toward compliance will be reached. At a minimum, the list of dates shall include:

(*1*) The date by which contracts for emission control systems or process changes for emission control will be awarded, or the date by which orders will be issued for the purchase of component parts to accomplish emission control or process changes;

(*2*) The date by which on-site construction, installation of emission control equipment, or a process change is to be initiated;

(*3*) The date by which on-site construction, installation of emission control equipment, or a process change is to be completed; and

(*4*) The date by which final compliance is to be achieved;

(C) A description of interim emission control steps that will be taken during the extension period, including milestones to assure proper operation and maintenance of emission control and process equipment; and

(D) Whether the owner or operator is also requesting an extension of other applicable requirements (e.g., performance testing requirements).

(ii) The request for a compliance extension under paragraph (i)(5) of this section shall include all information needed to demonstrate to the Administrator's satisfaction that the installation of BACT or technology to meet LAER controls the same pollutant (or stream of pollutants) that would be controlled at that source by the relevant emission standard.

(7) Advice on requesting an extension of compliance may be obtained from the Administrator (or the State with an approved permit program).

(8) *Approval of request for extension of compliance*. Paragraphs (i)(9) through (i)(14) of this section concern approval of an extension of compliance requested under paragraphs (i)(4) through (i)(6) of this section.

(9) Based on the information provided in any request made under paragraphs (i)(4) through (i)(6) of this section, or other information, the Administrator (or the State with an approved permit program) may grant an extension of compliance with an emission standard, as specified in paragraphs (i)(4) and (i)(5) of this section.

(10) The extension will be in writing and will -

(i) Identify each affected source covered by the extension;

(ii) Specify the termination date of the extension;

(iii) Specify the dates by which steps toward compliance are to be taken, if appropriate;

(iv) Specify other applicable requirements to which the compliance extension applies (e.g., performance tests); and

(v) (A) Under paragraph (i)(4), specify any additional conditions that the Administrator (or the State) deems necessary to assure installation of the necessary controls and protection of the health of persons during the extension period; or

(B) Under paragraph (i)(5), specify any additional conditions that the Administrator deems necessary to assure the proper operation and maintenance of the installed controls during the extension period.

(11) The owner or operator of an existing source that has been granted an extension of compliance under paragraph (i)(10) of this section may be required to submit to the Administrator (or the State with an approved permit program) progress reports indicating whether the steps toward compliance outlined in the compliance schedule have been reached. The contents of the progress reports and the dates by which they shall be submitted will be specified in the written extension of compliance granted under paragraph (i)(10) of this section.

(12) (i) The Administrator (or the State with an approved permit program) will notify the owner or operator in writing of approval or intention to deny approval of a request for an extension of compliance within 30 calendar days after receipt of sufficient information to evaluate a request submitted under paragraph (i)(4)(i) or (i)(5) of this section. The 30-day

approval or denial period will begin after the owner or operator has been notified in writing that his/her application is complete. The Administrator (or the State) will notify the owner or operator in writing of the status of his/her application, that is, whether the application contains sufficient information to make a determination, within 30 calendar days after receipt of the original
application and within 30 calendar days after receipt of any supplementary information that is submitted.

(ii) When notifying the owner or operator that his/her application is not complete, the Administrator will specify the information needed to complete the application and provide notice of opportunity for the applicant to present, in writing, within 30 calendar days after he/she is notified of the incomplete application, additional information or arguments to the Administrator to enable further action on the application.

(iii) Before denying any request for an extension of compliance, the Administrator (or the State with an approved permit program) will notify the owner or operator in writing of the Administrator's (or the State's) intention to issue the denial, together with -

(A) Notice of the information and findings on which the intended denial is based; and

(B) Notice of opportunity for the owner or operator to present in writing, within 15 calendar days after he/she is notified of the intended denial, additional information or arguments to the Administrator (or the State) before further action on the request.

(iv) The Administrator's final determination to deny any request for an extension will be in writing and will set forth the specific grounds on which the denial is based. The final determination will be made within 30 calendar days after presentation of additional information or argument (if the application is complete), or within 30 calendar days after the final date specified for the presentation if no presentation is made.

(13) (i) The Administrator will notify the owner or operator in writing of approval or intention to deny approval of a request for an extension of compliance within 30 calendar days after receipt of sufficient information to evaluate a request submitted under paragraph (i)(4)(ii) of this section. The 30-day approval or denial period will begin after the owner or operator has been notified in writing that his/her application is complete. The Administrator (or the State) will notify the owner or operator in writing of the status of his/her application, that is, whether the application contains sufficient information to make a determination, within 15 calendar days after receipt of the original application and within 15 calendar days after receipt of any supplementary information that is submitted.

(ii) When notifying the owner or operator that his/her application is not complete, the Administrator will specify the information needed to complete the application and provide notice of opportunity for the applicant to present, in writing, within 15 calendar days after he/she is notified of the incomplete application, additional information or arguments to the Administrator to enable further action on the application.

(iii) Before denying any request for an extension of compliance, the Administrator will notify the owner or operator in writing of the Administrator's intention to issue the denial, together with -

(A) Notice of the information and findings on which the intended denial is based; and

(B) Notice of opportunity for the owner or operator to present in writing, within 15 calendar days after he/she is notified of the intended denial, additional information or arguments to the Administrator before further action on the request.

(iv) A final determination to deny any request for an extension will be in writing and will set forth the specific grounds on which the denial is based. The final determination will be made within 30 calendar days after presentation of additional information or argument (if the application is complete), or within 30 calendar days after the final date specified for the presentation if no presentation is made.

(14) The Administrator (or the State with an approved permit program) may terminate an extension of compliance at an earlier date than specified if any specification under paragraphs (i)(10)(iii) or (i)(10)(iv) of this section is not met.

(15) [Reserved]

(16) The granting of an extension under this section shall not abrogate the Administrator's authority under section 114 of the Act.

(j) *Exemption from compliance with emission standards*. The President may exempt any stationary source from compliance with any relevant standard established pursuant to section 112 of the Act for a period of not more than 2 years if the President determines that the technology to implement such standard is not available and that it is in the national security interests of the United States to do so. An exemption under this paragraph may be extended for 1 or more additional periods, each period not to exceed 2 years.

**§ 63.7 Performance testing requirements.**

(a) *Applicability and performance test dates.*

(1) Unless otherwise specified, this section applies to the owner or operator of an affected source required to do performance testing, or another form of compliance demonstration, under a relevant standard. **[§ 63.1349 of 40 CFR 63 Subpart LLL has specific requirements.]**

(2) If required to do performance testing by a relevant standard, and unless a waiver of performance testing is obtained under this section or the conditions of paragraph (c)(3)(ii)(B) of this section apply, the owner or operator of the affected source shall perform such tests as follows -

(i) Within 180 days after the effective date of a relevant standard for a new source that has an initial startup date before the effective date; or

(ii) Within 180 days after initial startup for a new source that has an initial startup date after the effective date of a relevant standard; or

(iii) Within 180 days after the compliance date specified in an applicable subpart of this part for an existing source subject to an emission standard established pursuant to section 112(d) of the Act, or within 180 days after startup of an existing source if the source begins operation after the effective date of the relevant emission standard; or

(iv) Within 180 days after the compliance date for an existing source subject to an emission standard established pursuant to section 112(f) of the Act; or

(v) Within 180 days after the termination date of the source's extension of compliance for an existing source that obtains an extension of compliance under § 63.6(i); or

(vi) Within 180 days after the compliance date for a new source, subject to an emission standard established pursuant to section 112(f) of the Act, for which construction or reconstruction is commenced after the proposal date of a relevant standard established pursuant to section 112(d) of the Act but before the proposal date of the relevant standard established pursuant to section 112(f) [see § 63.6(b)(4)]; or

(vii) [Reserved]; or (viii) [Reserved]; or

(ix) When an emission standard promulgated under this part is more stringent than the standard proposed (see § 63.6(b)(3)), the owner or operator of a new or reconstructed source subject to that standard for which construction or reconstruction is commenced between the proposal and promulgation dates of the standard shall comply with performance testing requirements within 180 days after the standard's effective date, or within 180 days after startup of the source, whichever is later. If the promulgated standard is more stringent than the proposed standard, the owner or operator may choose to demonstrate compliance with either the proposed or the promulgated standard. If the owner or operator chooses to comply with the proposed standard initially, the owner or operator shall conduct a second performance test within 3 years and 180 days after the effective date of the standard, or after startup of the source, whichever is later, to demonstrate compliance with the promulgated standard.

(3) The Administrator may require an owner or operator to conduct performance tests at the affected source at any other time when the action is authorized by section 114 of the Act.

(b) *Notification of performance test.*

(1) The owner or operator of an affected source shall notify the Administrator in writing of his or her intention to conduct a performance test at least 60 calendar days before the performance test is scheduled to begin to allow the Administrator, upon request, to review and approve the site-specific test plan required under paragraph (c) of this section and to have an observer present during the test. Observation of the performance test by the Administrator is optional.

(2) In the event the owner or operator is unable to conduct the performance test on the date specified in the notification requirement specified in paragraph (b)(1) of this section, due to unforeseeable circumstances beyond his or her control, the owner or operator shall notify the Administrator within 5 days prior to the scheduled performance test date and specify the date when the performance test is rescheduled. This notification of delay in conducting the performance test shall not relieve the owner or operator of legal responsibility for compliance with any other applicable provisions of this part or with any other applicable Federal, State, or local requirement, nor will it prevent the Administrator from implementing or enforcing this part or taking any other action under the Act.

(c) *Quality assurance program.*

(1) The results of the quality assurance program required in this paragraph will be considered by the Administrator when he/she determines the validity of a performance test.

(2) (i) *Submission of site-specific test plan.* Before conducting a required performance test, the owner or operator of an affected source shall develop and, if requested by the Administrator, shall submit a site-specific test plan to the Administrator for approval. The test plan shall include a test program summary, the test schedule, data quality objectives, and both an internal and external quality assurance (QA) program. Data quality objectives are the pretest expectations of precision, accuracy, and completeness of data.

(ii) The internal QA program shall include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of test data precision; an example of internal QA is the sampling and analysis of replicate samples.

(iii) The external QA program shall include, at a minimum, application of plans for a test method performance audit (PA) during the performance test. The PA's consist of blind audit samples provided by the Administrator and analyzed during the performance test in order to provide a measure of test data bias. The external QA program may also include systems audits that include the opportunity for on-site evaluation by the Administrator of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

(iv) The owner or operator of an affected source shall submit the site-specific test plan to the Administrator upon the Administrator's request at least 60 calendar days before the performance test is scheduled to take place, that is, simultaneously with the notification of intention to conduct a performance test required under paragraph (b) of this section, or on a mutually agreed upon date.

(v) The Administrator may request additional relevant information after the submittal of a site-specific test plan.

(3) *Approval of site-specific test plan.*

(i) The Administrator will notify the owner or operator of approval or intention to deny approval of the site-specific test plan (if review of the site-specific test plan is requested) within 30 calendar days after receipt of the original plan and within 30 calendar days after receipt of any supplementary information that is submitted under paragraph (c)(3)(i)(B) of this section. Before disapproving any site-specific test plan, the Administrator will notify the applicant of the Administrator's intention to disapprove the plan together with -

(A) Notice of the information and findings on which the intended disapproval is based; and

(B) Notice of opportunity for the owner or operator to present, within 30 calendar days after he/she is notified of the intended disapproval, additional information to the Administrator before final action on the plan.

(ii) In the event that the Administrator fails to approve or disapprove the site-specific test plan within the time period specified in paragraph (c)(3)(i) of this section, the following conditions shall apply:

(A) If the owner or operator intends to demonstrate compliance using the test method(s) specified in the relevant standard, the owner or operator shall conduct the performance test within the time specified in this section using the specified method(s);

(B) If the owner or operator intends to demonstrate compliance by using an alternative to any test method specified in the relevant standard, the owner or operator shall refrain from conducting the performance test until the Administrator approves the use of the alternative method when the Administrator approves the site-specific test plan (if review of the site-specific test plan is requested) or until after the alternative method is approved (see paragraph (f) of this section). If the Administrator does not approve the site-specific test plan (if review is requested) or the use of the alternative method within 30 days before the test is scheduled to begin, the performance test dates specified in paragraph (a) of this section may be extended such that the owner or operator shall conduct the performance test within 60 calendar days after the Administrator approves the site-specific test plan or after use of the alternative method is approved. Notwithstanding the requirements in the preceding two sentences, the owner or operator

may proceed to conduct the performance test as required in this section (without the Administrator's prior approval of the site-specific test plan) if he/she subsequently chooses to use the specified testing and monitoring methods instead of an alter-native.

(iii) Neither the submission of a site-specific test plan for approval, nor the Administrator's approval or disapproval of a plan, nor the Administrator's failure to approve or disapprove a plan in a timely manner shall -

(A) Relieve an owner or operator of legal responsibility for compliance with any applicable provisions of this part or with any other applicable Federal, State, or local requirement; or

(B) Prevent the Administrator from implementing or enforcing this part or taking any other action under the Act.

(4) (i) *Performance test method audit program.* The owner or operator shall analyze performance audit (PA) samples during each performance test. The owner or operator shall request performance audit materials 45 days prior to the test date. Cylinder audit gases may be obtained by contacting the Cylinder Audit Coordinator, Quality Assurance Division (MD–77B),

Atmospheric Research and Exposure Assessment Laboratory (AREAL), U.S. EPA, Research Triangle Park, North Carolina 27711. All other audit materials may be obtained by contacting the Source Test Audit Coordinator, Quality Assurance Division (MD–77B), AREAL, U.S. EPA, Research Triangle Park, North Carolina 27711.

(ii) The Administrator will have sole discretion to require any subsequent remedial actions of the owner or operator based on the PA results.

(iii) If the Administrator fails to provide required PA materials to an owner or operator of an affected source in time to analyze the PA samples during a performance test, the requirement to conduct a PA under this paragraph shall be waived for such source for that performance test. Waiver under this paragraph of the requirement to conduct a PA for a particular performance test does not constitute a waiver of the requirement to conduct a PA for future required performance tests.

(d) *Performance testing facilities.* If required to do performance testing, the owner or operator of each new source and, at the request of the Administrator, the owner or operator of each existing source, shall provide performance testing facilities as follows:

(1) Sampling ports adequate for test methods applicable to such source. This includes:

(i) Constructing the air pollution control system such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and procedures; and

(ii) Providing a stack or duct free of cyclonic flow during performance tests, as demonstrated by applicable test methods and procedures;

(2) Safe sampling platform(s);

(3) Safe access to sampling platform(s);

(4) Utilities for sampling and testing equipment; and

(5) Any other facilities that the Administrator deems necessary for safe and adequate testing of a source.

(e) *Conduct of performance tests.*

(1) Performance tests shall be conducted under such conditions as the Administrator specifies to the owner or operator based on representative performance (i.e., performance based on normal operating conditions) of the affected source. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test, nor shall emissions in excess of the level of the relevant standard during periods of startup, shutdown, and malfunction be considered a violation of the relevant standard unless otherwise specified in the relevant standard or a determination of noncompliance is made under
§ 63.6(e). Upon request, the owner or operator shall make available to the Administrator such records as may be necessary to determine the conditions of performance tests.

(2) Performance tests shall be conducted and data shall be reduced in accordance with the test methods and procedures set forth in this section, in each relevant standard, and, if required, in applicable appendices of parts 51, 60, 61, and 63 of this chapter unless the Administrator -

(i) Specifies or approves, in specific cases, the use of a test method with minor changes in methodology; or

(ii) Approves the use of an alternative test method, the results of which the Administrator has determined to be adequate for indicating whether a specific affected source is in compliance; or

(iii) Approves shorter sampling times and smaller sample volumes when necessitated by process variables or other factors; or

(iv) Waives the requirement for performance tests because the owner or operator of an affected source has demonstrated by other means to the Administrator's satisfaction that the affected source is in compliance with the relevant standard.

(3) Unless otherwise specified in a relevant standard or test method, each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the relevant standard. For the purpose of determining compliance with a relevant standard, the arithmetic mean of the results of the three runs shall apply. Upon receiving approval from the Administrator, results of a test run may be replaced with results of an additional test run in the event that

(i) A sample is accidentally lost after the testing team leaves the site; or

(ii) Conditions occur in which one of the three runs must be discontinued because of forced shutdown; or

(iii) Extreme meteorological conditions occur; or

(iv) Other circumstances occur that are beyond the owner or operator's control.

(4) Nothing in paragraphs (e)(1) through (e)(3) of this section shall be construed to abrogate the Administrator's authority to require testing under section 114 of the Act.

(f) *Use of an alternative test method* -

(1) *General.* Until permission to use an alternative test method has been granted by the Administrator under this paragraph, the owner or operator of an affected source remains subject to the requirements of this section and the relevant standard.

(2) The owner or operator of an affected source required to do performance testing by a relevant standard may use an alternative test method from that specified in the standard provided that the owner or operator -

(i) Notifies the Administrator of his or her intention to use an alternative test method not later than with the submittal of the site-specific test plan (if requested by the Administrator) or at least 60 days before the performance test is scheduled to begin if a site-specific test plan is not submitted;

(ii) Uses Method 301 in appendix A of this part to validate the alternative test method; and

(iii) Submits the results of the Method 301 validation process along with the notification of intention and the justification for not using the specified test method. The owner or operator may submit the information required in this paragraph well in advance of the deadline specified in paragraph (f)(2)(i) of this section to ensure a timely review by the Administrator in order to meet the performance test date specified in this section or the relevant standard.

(3) The Administrator will determine whether the owner or operator's validation of the proposed alternative test method is adequate when the Administrator approves or disapproves the site-specific test plan required under paragraph (c) of this section. If the Administrator finds reasonable grounds to dispute the results obtained by the Method 301 validation process, the Administrator may require the use of a test method specified in a relevant standard.

(4) If the Administrator finds reasonable grounds to dispute the results obtained by an alternative test method for the purposes of demonstrating compliance with a relevant standard, the Administrator may require the use of a test method specified in a relevant standard.

(5) If the owner or operator uses an alternative test method for an affected source during a required performance test, the owner or operator of such source shall continue to use the

alternative test method for subsequent performance tests at that affected source until he or she receives approval from the Administrator to use another test method as allowed under § 63.7(f).

(6) Neither the validation and approval process nor the failure to validate an alternative test method shall abrogate the owner or operator's responsibility to comply with the requirements of this part.

(g) *Data analysis, recordkeeping, and reporting.*

(1) Unless otherwise specified in a relevant standard or test method, or as otherwise approved by the Administrator in writing, results of a performance test shall include the analysis of samples, determination of emissions, and raw data. A performance test is ''completed'' when field sample collection is terminated. The owner or operator of an affected source shall report the results of the performance test to the Administrator before the, close of business on the 60th day following the completion of the performance test, unless specified otherwise in a relevant standard or as approved otherwise in writing by the Administrator (see § 63.9(i)). The results of the performance test shall be submitted as part of the notification of compliance status required under § 63.9(h). Before a title V permit has been issued to the owner or operator of an affected source, the owner or operator shall send the results of the performance test to the Administrator. After a title V permit has been issued to the owner or operator of an affected source, the owner or operator shall send the
results of the performance test to the appropriate permitting authority.

(2) [Reserved]

(3) For a minimum of 5 years after a performance test is conducted, the owner or operator shall retain and make available, upon request, for inspection by the Administrator the records or results of such performance test and other data needed to determine emissions from an affected source.

(h) *Waiver of performance tests.*

(1) Until a waiver of a performance testing requirement has been granted by the Administrator under this paragraph, the owner or operator of an affected source remains subject to the requirements of this section.

(2) Individual performance tests may be waived upon written application to the Administrator if, in the Administrator's judgment, the source is meeting the relevant standard(s) on a continuous basis, or the source is being operated under an extension of compliance, or the owner or operator has requested an extension of compliance and the Administrator is still considering that request.

(3) Request to waive a performance test.

(i) If a request is made for an extension of compliance under § 63.6(i), the application for a waiver of an initial performance test shall accompany the information required for the request for an extension of compliance. If no extension of compliance is requested or if the owner or operator has requested an extension of compliance and the Administrator is still considering that request, the application for a waiver of an initial performance test shall be submitted at least 60 days before the performance test if the site-specific test plan under paragraph (c) of this section is not submitted.

(ii) If an application for a waiver of a subsequent performance test is made, the application may accompany any required compliance progress report, compliance status report, or excess emissions and continuous monitoring system performance report [such as those required under § 63.6(I), § 63.9(h), and § 63.10(e) or specified in a relevant standard or in the source's title V permit], but it shall be submitted at least 60 days before the performance test if the site-specific test plan required under paragraph (c) of this section is not submitted.

(iii) Any application for a waiver of a performance test shall include information justifying the owner or operator's request for a waiver, such as the technical or economic infeasibility, or the impracticality, of the affected source performing the required test.

(4) Approval of request to waive performance test. The Administrator will approve or deny a request for a waiver of a performance test made under paragraph (h)(3) of this section when he/she -

(i) Approves or denies an extension of compliance under § 63.6(i)(8); or

(ii) Approves or disapproves a site-specific test plan under § 63.7(c)(3); or

(iii) Makes a determination of compliance following the submission of a required compliance status report or excess emissions and continuous monitoring systems performance report; or

(iv) Makes a determination of suitable progress towards compliance following the submission of a compliance progress report, whichever is applicable.

(5) Approval of any waiver granted under this section shall not abrogate the Administrator's authority under the Act or in any way prohibit the Administrator from later canceling the waiver. The cancellation will be made only after notice is given to the owner or operator of the affected source.

**§ 63.8 Monitoring requirements.**

(a) *Applicability.*

(1) (i) Unless otherwise specified in a relevant standard, this section applies to the owner or operator of an affected source required to do monitoring under that standard.

(ii) Relevant standards established under this part will specify monitoring systems, methods, or procedures, monitoring frequency, and other pertinent requirements for source(s) regulated by those standards. This section specifies general monitoring requirements such as those governing the conduct of monitoring and requests to use alternative monitoring methods. In addition, this section specifies detailed requirements that apply to affected sources required to use continuous monitoring systems (CMS) under a relevant standard.

(2) **[Not applicable. § 63.1350 of 40 CFR 63 Subpart LLL includes CEM requirements.]**

(3) [Reserved]

(4) **[Flares not applicable.]**

(b) *Conduct of monitoring.*

(1) Monitoring shall be conducted as set forth in this section and the relevant standard(s) unless the Administrator -

(i) Specifies or approves the use of minor changes in methodology for the specified monitoring requirements and procedures; or

(ii) Approves the use of alternatives to any monitoring requirements or procedures.

(iii) Owners or operators with flares subject to § 63.11(b) are not subject to the requirements of this section unless otherwise specified in the relevant standard.

(2) (i) When the effluents from a single affected source, or from two or more affected sources, are combined before being released to the atmosphere, the owner or operator shall install an applicable CMS on each effluent.

(ii) If the relevant standard is a mass emission standard and the effluent from one affected source is released to the atmosphere through more than one point, the owner or operator shall install an applicable CMS at each emission point unless the installation of fewer systems is

(A) Approved by the Administrator; or

(B) Provided for in a relevant standard (e.g., instead of requiring that a CMS be installed at each emission point before the effluents from those points are channeled to a common control device, the standard specifies that only one CMS is required to be installed at the vent of the control device).

(3) When more than one CMS is used to measure the emissions from one affected source (e.g., multiple breechings, multiple outlets), the owner or operator shall report the results as required for each CMS. However, when one CMS is used as a backup to another CMS, the owner or operator shall report the results from the CMS used to meet the monitoring requirements of this part. If both such CMS are used during a particular reporting period to meet the monitoring requirements of this part, then the owner or operator shall report the results from each CMS for the relevant compliance period.

*(c) Operation and maintenance of continuous monitoring systems.*
**[Performance specification supersedes requirements for THC CEM. Temperature and activated carbon injection monitoring data requirements given in 40 CFR 63 Subpart LLL.]**

(1) The owner or operator of an affected source shall maintain and operate each CMS as specified in this section, or in a relevant standard, and in a manner consistent with good air pollution control practices.

(i) The owner or operator of an affected source shall ensure the immediate repair or replacement of CMS parts to correct "routine" or otherwise predictable CMS malfunctions as defined in the source's startup, shutdown, and malfunction plan required by § 63.6(e)(3). The owner or operator shall keep the necessary parts for routine repairs of the affected equipment readily available. If the plan is followed and the CMS repaired immediately, this action shall be reported in the semiannual startup, shutdown, and malfunction report required under § 63.10(d)(5)(i).

(ii) For those malfunctions or other events that affect the CMS and are not addressed by the startup, shutdown, and malfunction plan, the owner or operator shall report actions that are not consistent with the startup, shutdown, and malfunction plan within 24 hours after commencing actions inconsistent with the plan. The owner or operator shall send a followup report within 2 weeks after commencing actions inconsistent with the plan that either certifies that corrections have been made or includes a corrective action plan and schedule. The owner or operator shall provide proof that repair parts have been ordered or any other records that would indicate that the delay in making repairs is beyond his or her control.

(iii) The Administrator's determination of whether acceptable operation and maintenance procedures are being used will be based on information that may include, but is not limited to, review of operation and maintenance procedures, operation and maintenance records, manufacturing recommendations and specifications, and inspection of the CMS. Operation and maintenance procedures written by the CMS manufacturer and other guidance also can be used to maintain and operate each CMS.

(2) All CMS shall be installed such that representative measurements of emissions or process parameters from the affected source are obtained. In addition, CEMS shall be located according to procedures contained in the applicable performance specification(s).

(3) All CMS shall be installed, operational, and the data verified as specified in the relevant standard either prior to or in conjunction with conducting performance tests under § 63.7. Verification of operational status shall, at a minimum, include completion of the

manufacturer's written specifications or recommendations for installation, operation, and calibration of the system.

(4) Except for system breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level calibration drift adjustments, all CMS, including COMS and CEMS, shall be in continuous operation and shall meet minimum frequency of operation requirements as follows:

(i) All COMS shall complete a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data recording for each successive 6-minute period.

(ii) All CEMS for measuring emissions other than opacity shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

(5) Unless otherwise approved by the Administrator, minimum procedures for COMS shall include a method for producing a simulated zero opacity condition and an upscale (high-level) opacity condition using a certified neutral density filter or other related technique to produce a known obscuration of the light beam. Such procedures shall provide a system check of all the analyzer's internal optical surfaces and all electronic circuitry, including the lamp and photodetector assembly normally used in the measurement of opacity.

(6) The owner or operator of a CMS installed in accordance with the provisions of this part and the applicable CMS performance specification(s) shall check the zero (low-level) and high-level calibration drifts at least once daily in accordance with the written procedure specified in the performance evaluation plan developed under paragraphs (e)(3)(i) and (e)(3)(ii) of this section. The zero (low-level) and high-level calibration drifts shall be adjusted, at a minimum, whenever the 24-hour zero (low-level) drift exceeds two times the limits of the applicable performance specification(s) specified in the relevant standard. The system must allow the amount of excess zero (low-level) and high-level drift measured at the 24-hour interval checks to be recorded and quantified, whenever specified. For COMS, all optical and instrumental surfaces exposed to the effluent gases shall be cleaned prior to performing the zero (low-level) and high-level drift adjustments; the optical surfaces and instrumental surfaces shall be cleaned when the cumulative automatic zero compensation, if applicable, exceeds 4 percent opacity.

(7) (i) A CMS is out of control if -

(A) The zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the applicable performance specification or in the relevant standard; or

(B) The CMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit; or

(C) The COMS CD exceeds two times the limit in the applicable performance specification in the relevant standard.

(ii) When the CMS is out of control, the owner or operator of the affected source shall take the necessary corrective action and shall repeat all necessary tests which indicate that the system is out of control. The owner or operator shall take corrective action and conduct retesting until the performance requirements are below the applicable limits. The beginning of the out-of-control period is the hour the owner or operator conducts a performance check (e.g., calibration drift) that indicates an exceedance of the performance requirements established under this part. The end of the out-of-control period is the hour following the completion of corrective action and successful demonstration that the system is within the allowable limits. During the period the CMS is out of control, recorded data shall not be used in data averages and calculations, or to meet any data availability requirement established under this part.

(8) The owner or operator of a CMS that is out of control as defined in paragraph (c)(7) of this section shall submit all information concerning out-of-control periods, including start and end dates and hours and descriptions of corrective actions taken, in the excess emissions and continuous monitoring system performance report required in § 63.10(e)(3).

(d) *Quality control program.*

(1) The results of the quality control program required in this paragraph will be considered by the Administrator when he/she determines the validity of monitoring data.

(2) The owner or operator of an affected source that is required to use a CMS and is subject to the monitoring requirements of this section and a relevant standard shall develop and implement a CMS quality control program. As part of the quality control program, the owner or operator shall develop and submit to the Administrator for approval upon request a site-specific performance evaluation test plan for the CMS performance evaluation required in paragraph (e)(3)(i) of this section, according to the procedures specified in paragraph (e). In addition, each quality control program shall include, at a minimum, a written protocol that describes procedures for each of the following operations:

(i) Initial and any subsequent calibration of the CMS;

(ii) Determination and adjustment of the calibration drift of the CMS;

(iii) Preventive maintenance of the CMS, including spare parts inventory;

(iv) Data recording, calculations, and reporting;

(v) Accuracy audit procedures, including sampling and analysis methods; and

(vi) Program of corrective action for a malfunctioning CMS.

(3) The owner or operator shall keep these written procedures on record for the life of the affected source or until the affected source is no longer subject to the provisions of this part, to be made available for inspection, upon request, by the Administrator. If the performance evaluation plan is revised, the owner or operator shall keep previous (i.e., superseded) versions of the performance evaluation plan on record to be made available for inspection, upon request, by the Administrator, for a period of 5 years after each revision to the plan. Where relevant, e.g., program of corrective action for a malfunctioning CMS, these written procedures may be incorporated as part of the affected source's startup, shutdown, and malfunction plan to avoid duplication of planning and recordkeeping efforts.

(e) *Performance evaluation of continuous monitoring systems –*

**[Performance specification supersedes requirements for THC CEM.]**

(1) *General.* When required by a relevant standard, and at any other time the Administrator may require under section 114 of the Act, the owner or operator of an affected source being monitored shall conduct a performance evaluation of the CMS. Such performance evaluation shall be conducted according to the applicable specifications and procedures described in this section or in the relevant standard.

(2) *Notification of performance evaluation.* The owner or operator shall notify the Administrator in writing of the date of the performance evaluation simultaneously with the notification of the performance test date required under § 63.7(b) or at least 60 days prior to the date the performance evaluation is scheduled to begin if no performance test is required.

(3) (i) *Submission of site-specific performance evaluation test plan.* Before conducting a required CMS performance evaluation, the owner or operator of an affected source shall develop and submit a site-specific performance evaluation test plan to the Administrator for approval upon request. The performance evaluation test plan shall include the evaluation program objectives, an evaluation program summary, the performance evaluation schedule, data

quality objectives, and both an internal and external QA program. Data quality objectives are the pre-evaluation expectations of precision, accuracy, and completeness of data.

(ii) The internal QA program shall include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of CMS performance. The external QA program shall include, at a minimum, systems audits that include the opportunity for on-site evaluation by the Administrator of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

(iii) The owner or operator of an affected source shall submit the site-specific performance evaluation test plan to the Administrator (if requested) at least 60 days before the performance test or performance evaluation is scheduled to begin, or on a mutually agreed upon date, and review and approval of the performance evaluation test plan by the Administrator will occur with the review and approval of the site-specific test plan (if review of the site-specific test plan is requested).

(iv) The Administrator may request additional relevant information after the submittal of a site-specific performance evaluation test plan.

(v) In the event that the Administrator fails to approve or disapprove the site-specific performance evaluation test plan within the time period specified in § 63.7(c)(3), the following conditions shall apply:

(A) If the owner or operator intends to demonstrate compliance using the monitoring method(s) specified in the relevant standard, the owner or operator shall conduct the performance evaluation within the time specified in this subpart using the specified method(s);

(B) If the owner or operator intends to demonstrate compliance by using an alternative to a monitoring method specified in the relevant standard, the owner or operator shall refrain from conducting the performance evaluation until the Administrator approves the use of the alternative method. If the Administrator does not approve the use of the alternative method within 30 days before the performance evaluation is scheduled to begin, the performance evaluation deadlines specified in paragraph (e)(4) of this section may be extended such that the owner or operator shall conduct the performance evaluation within 60 calendar days after the Administrator approves the use of the alternative method. Notwithstanding the requirements in the preceding two sentences, the owner or operator may proceed to conduct the performance evaluation as required in this section (without the Administrator's prior approval of the site-specific performance evaluation test plan) if he/she subsequently chooses to use the specified monitoring method(s) instead of an alternative.

(vi) Neither the submission of a site-specific performance evaluation test plan for approval, nor the Administrator's approval or disapproval of a plan, nor the Administrator' failure to approve or disapprove a plan in a timely manner shall -

(A) Relieve an owner or operator of legal responsibility for compliance with any applicable provisions of this part or with any other applicable Federal, State, or local requirement; or

(B) Prevent the Administrator from implementing or enforcing this part or taking any other action under the Act.

(4) *Conduct of performance evaluation and performance evaluation dates.* The owner or operator of an affected source shall conduct a performance evaluation of a required CMS during any performance test required under § 63.7 in accordance with the applicable performance specification as specified in the relevant standard. Notwithstanding the requirement in the previous sentence, if the owner or operator of an affected source elects to submit COMS data for compliance with a relevant opacity emission standard as provided under § 63.6(h)(7), he/she shall conduct a performance evaluation of the COMS as specified in the relevant standard, before

the performance test required under § 63.7 is conducted in time to submit the results of the performance evaluation as specified in paragraph (e)(5)(ii) of this section. If a performance test is not required, or the requirement for a performance test has been waived under § 63.7(h), the owner or operator of an affected source shall conduct the performance evaluation not later than 180 days after the appropriate compliance date for the affected source, as specified in § 63.7(a), or as otherwise specified in the relevant standard.

(5) *Reporting performance evaluation results.*

(i) The owner or operator shall furnish the Administrator a copy of a written report of the results of the performance evaluation simultaneously with the results of the performance test required under § 63.7 or within 60 days of completion of the performance evaluation if no test is required, unless otherwise specified in a relevant standard. The Administrator may request that the owner or operator submit the raw data from a performance evaluation in the report of the performance evaluation results.

(ii) The owner or operator of an affected source using a COMS to determine opacity compliance during any performance test required under § 63.7 and described in § 63.6(d)(6) shall furnish the Administrator two or, upon request, three copies of a written report of the results of the COMS performance evaluation under this paragraph. The copies shall be provided at least 15 calendar days before the performance test required under § 63.7 is conducted.

(f) *Use of an alternative monitoring method –*
**[Additional requirments in § 63.1350(l) of 40 CFR 63 Subpart LLL.]**

(1) *General.* Until permission to use an alternative monitoring method has been granted by the Administrator under this paragraph, the owner or operator of an affected source remains subject to the requirements of this section and the relevant standard.

(2) After receipt and consideration of written application, the Administrator may approve alternatives to any monitoring methods or procedures of this part including, but not limited to, the following:

(i) Alternative monitoring requirements when installation of a CMS specified by a relevant standard would not provide accurate measurements due to liquid water or other interferences caused by substances within the effluent gases;

(ii) Alternative monitoring requirements when the affected source is infrequently operated;

(iii) Alternative monitoring requirements to accommodate CEMS that require additional measurements to correct for stack moisture conditions;

(iv) Alternative locations for installing CMS when the owner or operator can demonstrate that installation at alternate locations will enable accurate and representative measurements;

(v) Alternate methods for converting pollutant concentration measurements to units of the relevant standard;

(vi) Alternate procedures for performing daily checks of zero (low-level) and high-level drift that do not involve use of high-level gases or test cells;

(vii) Alternatives to the American Society for Testing and Materials (ASTM) test methods or sampling procedures specified by any relevant standard;

(viii) Alternative CMS that do not meet the design or performance requirements in this part, but adequately demonstrate a definite and consistent relationship between their measurements and the measurements of opacity by a system complying with the requirements as specified in the relevant standard. The Administrator may require that such demonstration be performed for each affected source; or

(ix) Alternative monitoring requirements when the effluent from a single affected source or the combined effluent from two or more affected sources is released to the atmosphere through more than one point.

(3) If the Administrator finds reasonable grounds to dispute the results obtained by an alternative monitoring method, requirement, or procedure, the Administrator may require the use of a method, requirement, or procedure specified in this section or in the relevant standard. If the results of the specified and alternative method, requirement, or procedure do not agree, the results obtained by the specified method, requirement, or procedure shall prevail.

(4) (i) Request to use alternative monitoring method. An owner or operator who wishes to use an alternative monitoring method shall submit an application to the Administrator as described in paragraph (f)(4)(ii) of this section, below. The application may be submitted at any time provided that the monitoring method is not used to demonstrate compliance with a relevant standard or other requirement. If the alternative monitoring method is to be used to demonstrate compliance with a relevant standard, the application shall be submitted not later than with the site-specific test plan required in § 63.7(c) (if requested) or with the site-specific performance evaluation plan (if requested) or at least 60 days before the performance evaluation is scheduled to begin.

(ii) The application shall contain a description of the proposed alternative monitoring system and a performance evaluation test plan, if required, as specified in paragraph (e)(3) of this section. In addition, the application shall include information justifying the owner or operator's request for an alternative monitoring method, such as the technical or economic infeasibility, or the impracticality, of the affected source using the required method.

(iii) The owner or operator may submit the information required in this paragraph well in advance of the submittal dates specified in paragraph (f)(4)(i) above to ensure a timely review by the Administrator in order to meet the compliance demonstration date specified in this section or the relevant standard.

(5) Approval of request to use alternative monitoring method.

(i) The Administrator will notify the owner or operator of approval or intention to deny approval of the request to use an alternative monitoring method within 30 calendar days after receipt of the original request and within 30 calendar days after receipt of any supplementary information that is submitted. Before disapproving any request to use an alternative monitoring method, the Administrator will notify the applicant of the Administrator's intention to disapprove the request together with -

(A) Notice of the information and findings on which the intended disapproval is based; and

(B) Notice of opportunity for the owner or operator to present additional information to the Administrator before final action on the request. At the time the Administrator notifies the applicant of his or her intention to disapprove the request, the Administrator will specify how much time the owner or operator will have after being notified of the intended disapproval to submit the additional information.

(ii) The Administrator may establish general procedures and criteria in a relevant standard to accomplish the requirements of paragraph (f)(5)(i) of this section.

(iii) If the Administrator approves the use of an alternative monitoring method for an affected source under paragraph (f)(5)(i) of this section, the owner or operator of such source shall continue to use the alternative monitoring method until he or she receives approval from the Administrator to use another monitoring method as allowed by § 63.8(f).

(6) Alternative to the relative accuracy test. An alternative to the relative accuracy test for CEMS specified in a relevant standard may be requested as follows:

(i) *Criteria for approval of alternative procedures.* An alternative to the test method for determining relative accuracy is available for affected sources with emission rates demonstrated to be less than 50 percent of the relevant standard. The owner or operator of an affected source may petition the Administrator under paragraph (f)(6)(ii) of this section to substitute the relative accuracy test in section 7 of Performance Specification 2 with the procedures in section 10 if the results of a performance test conducted according to the requirements in § 63.7, or other tests performed following the criteria in § 63.7, demonstrate that the emission rate of the pollutant of interest in the units of the relevant standard is less than 50 percent of the relevant standard. For affected sources subject to emission limitations expressed as control efficiency levels, the owner or operator may petition the Administrator to substitute the relative accuracy test with the procedures in section 10 of Performance Specification 2 if the control device exhaust emission rate is less than 50 percent of the level needed to meet the control efficiency requirement. The alternative procedures do not apply if the CEMS is used continuously to determine compliance with the relevant standard.

(ii) *Petition to use alternative to relative accuracy test.* The petition to use an alternative to the relative accuracy test shall include a detailed description of the procedures to be applied, the location and the procedure for conducting the alternative, the concentration or response levels of the alternative relative accuracy materials, and the other equipment checks included in the alternative procedure(s). The Administrator will review the petition for completeness and applicability. The Administrator's determination to approve an alternative will depend on the intended use of the CEMS data and may require specifications more stringent than in Performance Specification 2.

(iii) *Rescission of approval to use alternative to relative accuracy test.* The Administrator will review the permission to use an alternative to the CEMS relative accuracy test and may rescind such permission if the CEMS data from a successful completion of the alternative relative accuracy procedure indicate that the affected source's emissions are approaching the level of the relevant standard. The criterion for reviewing the permission is that the collection of CEMS data shows that emissions have exceeded 70 percent of the relevant standard for any averaging period, as specified in the relevant standard. For affected sources subject to emission limitations expressed as control efficiency levels, the criterion for reviewing the permission is that the collection of CEMS data shows that exhaust emissions have exceeded 70 percent of the level needed to meet the control efficiency requirement for any averaging period, as specified in the relevant standard. The owner or operator of the affected source shall maintain records and determine the level of emissions relative to the criterion for permission to use an alternative for relative accuracy testing. If this criterion is exceeded, the owner or operator shall notify the Administrator within 10 days of such occurrence and include a description of the nature and cause of the increased emissions. The Administrator will review the notification and may rescind permission to use an alternative and require the owner or operator to conduct a relative accuracy test of the CEMS as specified in section 7 of Performance Specification 2.

(g) *Reduction of monitoring data.*

(1) The owner or operator of each CMS shall reduce the monitoring data as specified in this paragraph. In addition, each relevant standard may contain additional requirements for reducing monitoring data. When additional requirements are specified in a relevant standard, the standard will identify any unnecessary or duplicated requirements in this paragraph that the owner or operator need not comply with.

(2) The owner or operator of each COMS shall reduce all data to 6-minute averages calculated from 36 or more data points equally spaced over each 6-minute period. Data from CEMS for measurement other than opacity, unless otherwise specified in the relevant standard,

shall be reduced to 1-hour averages computed from four or more data points equally spaced over each 1-hour period, except during periods when calibration, quality assurance, or maintenance activities pursuant to provisions of this part are being performed. During these periods, a valid hourly average shall consist of at least two data points with each representing a 15-minute period. Alternatively, an arithmetic or integrated 1-hour average of CEMS data may be used. Time periods for averaging are defined in § 63.2.

(3) The data may be recorded in reduced or nonreduced form (e.g., ppm pollutant and percent $O_2$ or ng/J of pollutant).

(4) All emission data shall be converted into units of the relevant standard for reporting purposes using the conversion procedures specified in that standard. After conversion into units of the relevant standard, the data may be rounded to the same number of significant digits as used in that standard to specify the emission limit (e.g., rounded to the nearest 1 percent opacity).

(5) Monitoring data recorded during periods of unavoidable CMS breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level adjustments shall not be included in any data average computed under this part. For owners or operators complying with the requirements of Sec. 63.10(b)(2)(vii)(A) or (B), data averages must include any data recorded during periods of monitor breakdown or malfunction.

**§ 63.9 Notification requirements.**

(a) *Applicability and general information.*

(1) The requirements in this section apply to owners and operators of affected sources that are subject to the provisions of this part, unless specified otherwise in a relevant standard.

(2) For affected sources that have been granted an extension of compliance under subpart D of this part, the requirements of this section do not apply to those sources while they are operating under such compliance extensions.

(3) If any State requires a notice that contains all the information required in a notification listed in this section, the owner or operator may send the Administrator a copy of the notice sent to the State to satisfy the requirements of this section for that notification.

(4) (i) Before a State has been delegated the authority to implement and enforce notification requirements established under this part, the owner or operator of an affected source in such State subject to such requirements shall submit notifications to the appropriate Regional Office of the EPA (to the attention of the Director of the Division indicated in the list of the EPA Regional Offices in § 63.13).

(ii) After a State has been delegated the authority to implement and enforce notification requirements established under this part, the owner or operator of an affected source in such State subject to such requirements shall submit notifications to the delegated State authority (which may be the same as the permitting authority). In addition, if the delegated (permitting) authority is the State, the owner or operator shall send a copy of each notification submitted to the State to the appropriate Regional Office of the EPA, as specified in paragraph (a)(4)(i) of this section. The Regional Office may waive this requirement for any notifications at its discretion.

(b) *Initial notifications.*

(1) (i) The requirements of this paragraph apply to the owner or operator of an affected source when such source becomes subject to a relevant standard.

(ii) If an area source that otherwise would be subject to an emission standard or other requirement established under this part if it were a major source subsequently increases its emissions of hazardous air pollutants (or its potential to emit hazardous air pollutants) such that the source is a major source that is subject to the emission standard or other requirement, such source shall be subject to the notification requirements of this section.

(iii) Affected sources that are required under this paragraph to submit an initial notification may use the application for approval of construction or reconstruction under § 63.5(d) of this subpart, if relevant, to fulfill the initial notification requirements of this paragraph.

(2) The owner or operator of an affected source that has an initial startup before the effective date of a relevant standard under this part shall notify the Administrator in writing that the source is subject to the relevant standard. The notification, which shall be submitted not later than 120 calendar days after the effective date of the relevant standard (or within 120 calendar days after the source becomes subject to the relevant standard), shall provide the following information:

(i) The name and address of the owner or operator;

(ii) The address (i.e., physical location) of the affected source;

(iii) An identification of the relevant standard, or other requirement, that is the basis of the notification and the source's compliance date;

(iv) A brief description of the nature, size, design, and method of operation of the source, including its operating design capacity and an identification of each point of emission for each hazardous air pollutant, or if a definitive identification is not yet possible, a preliminary identification of each point of emission for each hazardous air pollutant; and

(v) A statement of whether the affected source is a major source or an area source.

(3) The owner or operator of a new or reconstructed affected source, or a source that has been reconstructed such that it is an affected source, that has an initial startup after the effective date of a relevant standard under this part and for which an application for approval of construction or reconstruction is not required under § 63.5(d), shall notify the Administrator in writing that the source is subject to the relevant standard no later than 120 days after initial startup. The notification shall provide all the information required in paragraphs (b)(2)(i) through (b)(2)(v) of this section, delivered or postmarked with the notification required in paragraph (b)(5).

(4) The owner or operator of a new or reconstructed major affected source that has an initial startup after the effective date of a relevant standard under this part and for which an application for approval of construction or reconstruction is required under § 63.5(d) shall provide the following information in writing to the Administrator:

(i) A notification of intention to construct a new major affected source, reconstruct a major affected source, or reconstruct a major source such that the source becomes a major affected source with the application for approval of construction or reconstruction as specified in § 63.5(d)(1)(i);

(ii) A notification of the date when construction or reconstruction was commenced, submitted simultaneously with the application for approval of construction or reconstruction, if construction or reconstruction was commenced before the effective date of the relevant standard;

(iii) A notification of the date when construction or reconstruction was commenced, delivered or postmarked not later than 30 days after such date, if construction or reconstruction was commenced after the effective date of the relevant standard;

(iv) [Reserved]; and

(v) A notification of the actual date of startup of the source, delivered or postmarked within 15 calendar days after that date.

(5) After the effective date of any relevant standard established by the Administrator under this part, whether or not an approved permit program is effective in the State in which an affected source is (or would be) located, an owner or operator who intends to construct a new affected source or reconstruct an affected source subject to such standard, or reconstruct a source such that it becomes an affected source subject to such standard, shall notify the Administrator, in writing, of the intended construction or reconstruction. The notification shall be submitted as soon as practicable before the construction or reconstruction is planned to commence (but no sooner than the effective date of the relevant standard) if the construction or reconstruction commences after the effective date of a relevant standard promulgated in this part. The notification shall be submitted as soon as practicable before startup but no later than 60 days after the effective date of a relevant standard promulgated in this part if the construction or reconstruction had commenced and initial startup had not occurred before the standard's effective date. The notification shall include all the information required for an application for approval of construction or reconstruction as specified in § 63.5(d). For major sources, the application for approval of construction or reconstruction may be used to fulfill the requirements of this paragraph.

(c) *Request for extension of compliance.* If the owner or operator of an affected source cannot comply with a relevant standard by the applicable compliance date for that source, or if the owner or operator has installed BACT or technology to meet LAER consistent with § 63.6(i)(5) of this subpart, he/she may submit to the Administrator (or the State with an approved permit program) a request for an extension of compliance as specified in § 63.6(i)(4) through § 63.6(i)(6).

(d) *Notification that source is subject to special compliance requirements.* An owner or operator of a new source that is subject to special compliance requirements as specified in § 63.6(b)(3) and § 63.6(b)(4) shall notify the Administrator of his/her compliance obligations not later than the notification dates established in paragraph (b) of this section for new sources that are not subject to the special provisions.

(e) *Notification of performance test.* The owner or operator of an affected source shall notify the Administrator in writing of his or her intention to conduct a performance test at least 60 calendar days before the performance test is scheduled to begin to allow the Administrator to review and approve the site-specific test plan required under § 63.7(c), if requested by the Administrator, and to have an observer present during the test.

(f) *Notification of opacity and visible emission observations.* The owner or operator of an affected source shall notify the Administrator in writing of the anticipated date for conducting the opacity or visible emission observations specified in § 63.6(h)(5), if such observations are required for the source by a relevant standard. The notification shall be submitted with the notification of the performance test date, as specified in paragraph (e) of this section, or if no performance test is required or visibility or other conditions prevent the opacity or visible emission observations from being conducted concurrently with the initial performance test required under § 63.7, the owner or operator shall deliver or postmark the notification not less than 30 days before the opacity or visible emission observations are scheduled to take place. **[Notification not required for VE/opacity test under § 63.1350(e) and (j) of 40 CFR 63 Subpart LLL.]**

(g) *Additional notification requirements for sources with continuous monitoring systems.* The owner or operator of an affected source required to use a CMS by a relevant standard shall furnish the Administrator written notification as follows:

(1) A notification of the date the CMS performance evaluation under § 63.8(e) is scheduled to begin, submitted simultaneously with the notification of the performance test date required under § 63.7(b). If no performance test is required, or if the requirement to conduct a performance test has been waived for an affected source under § 63.7(h), the owner or operator shall notify the Administrator in writing of the date of the performance evaluation at least 60 calendar days before the evaluation is scheduled to begin;

(2) A notification that COMS data results will be used to determine compliance with the applicable opacity emission standard during a performance test required by § 63.7 in lieu of Method 9 or other opacity emissions test method data, as allowed by § 63.6(h)(7)(ii), if compliance with an opacity emission standard is required for the source by a relevant standard. The notification shall be submitted at least 60 calendar days before the performance test is scheduled to begin; and

(3) A notification that the criterion necessary to continue use of an alternative to relative accuracy testing, as provided by § 63.8(f)(6), has been exceeded. The notification shall be delivered or postmarked not later than 10 days after the occurrence of such exceedance, and it shall include a description of the nature and cause of the increased emissions.

(h) *Notification of compliance status.*

(1) The requirements of paragraphs (h)(2) through (h)(4)of this section apply when an affected source becomes subject to a relevant standard.

(2) (i) Before a title V permit has been issued to the owner or operator of an affected source, and each time a notification of compliance status is required under this part, the owner or operator of such source shall submit to the Administrator a notification of compliance status, signed by the responsible official who shall certify its accuracy, attesting to whether the source has complied with the relevant standard. The notification shall list -

(A) The methods that were used to determine compliance;

(B) The results of any performance tests, opacity or visible emission observations, continuous monitoring system (CMS) performance evaluations, and/or other monitoring procedures or methods that were conducted;

(C) The methods that will be used for determining continuing compliance, including a description of monitoring and reporting requirements and test methods;

(D) The type and quantity of hazardous air pollutants emitted by the source (or surrogate pollutants if specified in the relevant standard), reported in units and averaging times and in accordance with the test methods specified in the relevant standard;

(E) An analysis demonstrating whether the affected source is a major source or an area source (using the emissions data generated for this notification);

(F) A description of the air pollution control equipment (or method) for each emission point, including each control device (or method) for each hazardous air pollutant and the control efficiency (percent) for each control device (or method); and

(G) A statement by the owner or operator of the affected existing, new, or reconstructed source as to whether the source has complied with the relevant standard or other requirements.

(ii) The notification shall be sent before the close of business on the 60th day following the completion of the relevant compliance demonstration activity specified in the relevant standard (unless a different reporting period is specified in a relevant standard, in which case the letter shall be sent before the close of business on the day the report of the relevant testing or monitoring results is required to be delivered or postmarked). For example, the notification shall be sent before close of business on the 60th (or other required) day following completion of the initial performance test and again before the close of business on the 60th (or other required) day following the completion of any subsequent required performance test. If no performance test is required but opacity or visible emission observations are required to demonstrate compliance with an opacity or visible emission standard under this part, the notification of compliance status shall be sent before close of business on the 30th day following the completion of opacity or visible emission observations.

(3) After a title V permit has been issued to the owner or operator of an affected source, the owner or operator of such source shall comply with all requirements for compliance status reports contained in the source's title V permit, including reports required under this part. After a title V permit has been issued to the owner or operator of an affected source, and each time a notification of compliance status is required under this part, the owner or operator of such source shall submit the notification of compliance status to the appropriate permitting authority following completion of the relevant compliance demonstration activity specified in the relevant standard.

(4) [Reserved]

(5) If an owner or operator of an affected source submits estimates or preliminary information in the application for approval of construction or reconstruction required in § 63.5(d) in place of the actual emissions data or control efficiencies required in paragraphs (d)(1)(ii)(H) and (d)(2) of § 63.5, the owner or operator shall submit the actual emissions data and other correct information as soon as available but no later than with the initial notification of compliance status required in this section.

(6) Advice on a notification of compliance status may be obtained from the Administrator.

(i) *Adjustment to time periods or postmark deadlines for submittal and review of required communications.*

(1) (i) Until an adjustment of a time period or postmark deadline has been approved by the Administrator under paragraphs (i)(2) and (i)(3) of this section, the owner or operator of an affected source remains strictly subject to the requirements of this part.

(ii) An owner or operator shall request the adjustment provided for in paragraphs (i)(2) and (i)(3) of this section each time he or she wishes to change an applicable time period or postmark deadline specified in this part.

(2) Notwithstanding time periods or postmark deadlines specified in this part for the submittal of information to the Administrator by an owner or operator, or the review of such information by the Administrator, such time periods or deadlines may be changed by mutual agreement between the owner or operator and the Administrator. An owner or operator who wishes to request a change in a time period or postmark deadline for a particular requirement shall request the adjustment in writing as soon as practicable before the subject activity is required to take place. The owner or operator shall include in the request whatever information he or she considers useful to convince the Administrator that an adjustment is warranted.

(3) If, in the Administrator's judgment, an owner or operator's request for an adjustment to a particular time period or postmark deadline is warranted, the Administrator will approve the adjustment. The Administrator will notify the owner or operator in writing of approval or disapproval of the request for an adjustment within 15 calendar days of receiving sufficient information to evaluate the request.

(4) If the Administrator is unable to meet a specified deadline, he or she will notify the owner or operator of any significant delay and inform the owner or operator of the amended schedule.

(j) *Change in information already provided.* Any change in the information already provided under this section shall be provided to the Administrator in writing within 15 calendar days after the change.

**§ 63.10 Recordkeeping and reporting requirements.**

(a) *Applicability and general information.*

(1) The requirements of this section apply to owners or operators of affected sources who are subject to the provisions of this part, unless specified otherwise in a relevant standard.

(2) For affected sources that have been granted an extension of compliance under subpart D of this part, the requirements of this section do not apply to those sources while they are operating under such compliance extensions.

(3) If any State requires a report that contains all the information required in a report listed in this section, an owner or operator may send the Administrator a copy of the report sent to the
State to satisfy the requirements of this section for that report.

(4) (i) Before a State has been delegated the authority to implement and enforce recordkeeping and reporting requirements established under this part, the owner or operator of an affected source in such State subject to such requirements shall submit reports to the appropriate Regional Office of the EPA (to the attention of the Director of the Division indicated in the list of the EPA Regional Offices in § 63.13).

(ii) After a State has been delegated the authority to implement and enforce recordkeeping and reporting requirements established under this part, the owner or operator of an affected source in such State subject to such requirements shall submit reports to the delegated State authority (which may be the same as the permitting authority). In addition, if the delegated (permitting) authority is the State, the owner or operator shall send a copy of each report submitted to the State to the appropriate Regional Office of the EPA, as specified in paragraph (a)(4)(i) of this section. The Regional Office may waive this requirement for any reports at its discretion.

(5) If an owner or operator of an affected source in a State with delegated authority is required to submit periodic reports under this part to the State, and if the State has an established timeline for the submission of periodic reports that is consistent with the reporting frequency(ies) specified for such source under this part, the owner or operator may change the dates by which periodic reports under this part shall be submitted (without changing the frequency of reporting) to be consistent with the State's schedule by mutual agreement between the owner or operator and the State. For each relevant standard established pursuant to section 112 of the Act, the allowance in the previous sentence applies in each State beginning 1 year after the affected source's compliance date for that standard. Procedures governing the implementation of this provision are specified in § 63.9(i).

(6) If an owner or operator supervises one or more stationary sources affected by more than one standard established pursuant to section 112 of the Act, he/she may arrange by mutual agreement between the owner or operator and the Administrator (or the State permitting authority) a common schedule on which periodic reports required for each source shall be submitted throughout the year. The allowance in the previous sentence applies in each State beginning 1 year after the latest compliance date for any relevant standard established pursuant to section 112 of the Act for any such affected source(s). Procedures governing the implementation of this provision are specified in § 63.9(i).

(7) If an owner or operator supervises one or more stationary sources affected by standards established pursuant to section 112 of the Act (as amended November 15, 1990) and standards set under part 60, part 61, or both such parts of this chapter, he/she may arrange by mutual agreement between the owner or operator and the Administrator (or the State permitting authority) a common schedule on which periodic reports required by each relevant (i.e., applicable) standard shall be submitted throughout the year. The allowance in the previous sentence applies in each State beginning 1 year after the stationary source is required to be in compliance with the relevant section 112 standard, or 1 year after the stationary source is required to be in compliance with the applicable part 60 or part 61 standard, whichever is latest. Procedures governing the implementation of this provision are specified in § 63.9(i).

(b) *General recordkeeping requirements.*

(1) The owner or operator of an affected source subject to the provisions of this part shall maintain files of all information (including all reports and notifications) required by this part recorded in a form suitable and readily available for expeditious inspection and review. The files shall be retained for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent 2 years of data shall be retained on site. The remaining 3 years of data may be retained off site. Such files may be maintained on microfilm, on a computer, on computer floppy disks, on magnetic tape disks, or on microfiche.

(2) The owner or operator of an affected source subject to the provisions of this part shall maintain relevant records for such source of -

(i) The occurrence and duration of each startup, shutdown, or malfunction of operation (i.e., process equipment);

(ii) The occurrence and duration of each malfunction of the air pollution control equipment;

(iii) All maintenance performed on the air pollution control equipment;

(iv) Actions taken during periods of startup, shutdown, and malfunction (including corrective actions to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation) when such actions are different from the procedures specified in the affected source's startup, shutdown, and malfunction plan (see § 63.6(e)(3));

(v) All information necessary to demonstrate conformance with the affected source's startup, shutdown, and malfunction plan (see § 63.6(e)(3)) when all actions taken during periods of startup, shutdown, and malfunction (including corrective actions to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation) are consistent with the procedures specified in such plan. (The information needed to demonstrate conformance with the startup, shutdown, and malfunction plan may be recorded using a ''checklist,'' or some other effective form of recordkeeping, in order to minimize the recordkeeping burden for conforming events);

(vi) Each period during which a CMS is malfunctioning or inoperative (including out-of-control periods);

(vii) All required measurements needed to demonstrate compliance with a relevant standard (including, but not limited to, 15-minute averages of CMS data, raw performance testing measurements, and raw performance evaluation measurements, that support data that the source is required to re-port);

(A) This paragraph applies to owners or operators required to install a continuous emissions monitoring system (CEMS) where the CEMS installed is automated, and where the calculated data averages do not exclude periods of CEMS breakdown or malfunction.

An automated CEMS records and reduces the measured data to the form of the pollutant emission standard through the use of a computerized data acquisition system. In lieu of maintaining a file of all CEMS subhourly measurements as required under paragraph (b)(2)(vii) of this section, the owner or operator shall retain the most recent consecutive three averaging periods of subhourly measurements and a file that contains a hard copy of the data acquisition system algorithm used to reduce the measured data into the reportable form of the standard.

(B) This paragraph applies to owners or operators required to install a CEMS where the measured data is manually reduced to obtain the reportable form of the standard, and where the calculated data averages do not exclude periods of CEMS breakdown or malfunction. In lieu of maintaining a file of all CEMS subhourly measurements as required under paragraph (b)(2)(vii) of this sections, the owner or operator shall retain all subhourly measurements for the most recent reporting period. The subhourly measurements shall be retained for 120 days from the date of the most recent summary or excess emission report submitted to the Administrator.

(C) The Administrator or delegated authority, upon notification to the source, may require the owner or operator to maintain all measurements as required by paragraph (b)(2)(vii), if the administrator or the delegated authority determines these records are required to more accurately assess the compliance status of the affected source.

(viii) All results of performance tests, CMS performance evaluations, and opacity and visible emission observations;

(ix) All measurements as may be necessary to determine the conditions of performance tests and performance evaluations;

(x) All CMS calibration checks;

(xi) All adjustments and maintenance performed on CMS;

(xii) Any information demonstrating whether a source is meeting the requirements for a waiver of recordkeeping or reporting requirements under this part, if the source has been granted a waiver under paragraph (f) of this section;

(xiii) All emission levels relative to the criterion for obtaining permission to use an alternative to the relative accuracy test, if the source has been granted such permission under § 63.8(f)(6); and

(xiv) All documentation supporting initial notifications and notifications of compliance status under § 63.9.

(3) Recordkeeping requirement for applicability determinations. If an owner or operator determines that his or her stationary source that emits (or has the potential to emit, without considering controls) one or more hazardous air pollutants is not subject to a relevant standard or other requirement established under this part, the owner or operator shall keep a record of the applicability determination on site at the source for a period of 5 years after the determination, or until the source changes its operations to become an affected source, whichever comes first. The record of the applicability determination shall include an analysis (or other information) that demonstrates why the owner or operator believes the source is unaffected (e.g., because the source is an area source). The analysis (or other information) shall be sufficiently detailed to allow the Administrator to make a finding about the source's applicability status with regard to the relevant standard or other requirement. If relevant, the analysis shall be performed in accordance with requirements established in subparts of this part for this purpose for particular categories of stationary sources. If relevant, the analysis should be performed in accordance with EPA guidance materials published to assist sources in making applicability determinations under section 112, if any.

(c) *Additional recordkeeping requirements for sources with continuous monitoring systems*. **[PS-8A supersedes requirements for THC CEM]** In addition to complying with the requirements specified in paragraphs (b)(1) and (b)(2) of this section, the owner or operator of an affected source required to install a CMS by a relevant standard shall maintain records for such source of -

(1) All required CMS measurements (including monitoring data recorded during unavoidable CMS breakdowns and out-of-control periods);

(2)–(4) [Reserved]

(5) The date and time identifying each period during which the CMS was inoperative except for zero (low-level) and high-level;

(6) The date and time identifying each period during which the CMS was out of control, as defined in § 63.8(c)(7);

(7) The specific identification (i.e., the date and time of commencement and completion) of each period of excess emissions and parameter monitoring exceedances, as defined in the relevant standard(s), that occurs during startups, shutdowns, and malfunctions of the affected source;

(8) The specific identification (i.e., the date and time of commencement and completion) of each time period of excess emissions and parameter monitoring exceedances, as defined in the relevant standard(s), that occurs during periods other than startups, shutdowns, and malfunctions of the affected source;

(9) [Reserved]

(10) The nature and cause of any malfunction (if known);

(11) The corrective action taken or preventive measures adopted;

(12) The nature of the repairs or adjustments to the CMS that was inoperative or out of control;

(13) The total process operating time during the reporting period; and

(14) All procedures that are part of a quality control program developed and implemented for CMS under § 63.8(d).

(15) In order to satisfy the requirements of paragraphs (c)(10) through (c)(12) of this section and to avoid duplicative recordkeeping efforts, the owner or operator may use the affected source's startup, shutdown, and malfunction plan or records kept to satisfy the recordkeeping requirements of the startup, shutdown, and malfunction plan specified in § 63.6(e), provided that such plan and records adequately address the requirements of paragraphs (c)(10) through (c)(12).

(d) *General reporting requirements.*

(1) Not-withstanding the requirements in this paragraph or paragraph (e) of this section, the owner or operator of an affected source subject to reporting requirements under this part shall submit reports to the Administrator in accordance with the reporting requirements in the relevant standard(s).

(2) *Reporting results of performance tests.* Before a title V permit has been issued to the owner or operator of an affected source, the owner or operator shall report the results of any performance test under § 63.7 to the Administrator. After a title V permit has been issued to the owner or operator of an affected source, the owner or operator shall report the results of a required performance test to the appropriate permitting authority. The owner or operator of an affected source shall report the results of the performance test to the Administrator (or the State with an approved permit program) before the close of business on the 60th day following the completion of the performance test, unless specified otherwise in a relevant standard or as

approved otherwise in writing by the Administrator. The results of the performance test shall be submitted as part of the notification of compliance status required under § 63.9(h).

(3) *Reporting results of opacity or visible emission observations*. The owner or operator of an affected source required to conduct opacity or visible emission observations by a relevant standard shall report the opacity or visible emission results (produced using Test Method 9 or Test Method 22, or an alternative to these test methods) along with the results of the performance test required under § 63.7. If no performance test is required, or if visibility or other conditions prevent the opacity or visible emission observations from being conducted concurrently with the performance test required under § 63.7, the owner or operator shall report the opacity or visible emission results before the close of business on the 30th day following the completion of the opacity or visible emission observations.

(4) *Progress reports*. The owner or operator of an affected source who is required to submit progress reports as a condition of receiving an extension of compliance under § 63.6(i) shall submit such reports to the Administrator (or the State with an approved permit program) by the dates specified in the written extension of compliance.

(5) (i) Periodic startup, shutdown, and malfunction reports. If actions taken by an owner or operator during a startup, shutdown, or malfunction of an affected source (including actions taken to correct a malfunction) are consistent with the procedures specified in the source's startup, shutdown, and malfunction plan [see § 63.6(e)(3)], the owner or operator shall state such information in a startup, shutdown, and malfunction report. Reports shall only be required if a startup, shutdown, or malfunction occurred during the reporting period. The startup, shutdown, and malfunction report shall consist of a letter, containing the name, title, and signature of the owner or operator or other responsible official who is certifying its accuracy, that shall be submitted to the Administrator semi-annually (or on a more frequent basis if specified
otherwise in a relevant standard or as established otherwise by the permitting authority in the source's title V permit). The startup, shutdown, and malfunction report shall be delivered or postmarked by the 30th day following the end of each calendar half (or other calendar reporting period, as appropriate). If the owner or operator is required to submit excess emissions and continuous monitoring system performance (or other periodic) reports under this part, the startup, shutdown, and malfunction reports required under this paragraph may be submitted simultaneously with the excess emissions and continuous monitoring system performance (or other) reports. If startup, shutdown, and malfunction reports are submitted with excess emissions and continuous monitoring system performance (or other periodic) reports, and the owner or operator receives approval to reduce the frequency of reporting for the latter under paragraph (e) of this section, the frequency of reporting for the startup, shutdown, and malfunction reports also may be reduced if the Administrator does not object to the intended change. The procedures to implement the allowance in the preceding sentence shall be the same as the procedures specified in paragraph (e)(3) of this section.

(ii) Immediate startup, shutdown, and malfunction reports. Notwithstanding the allowance to reduce the frequency of reporting for periodic startup, shutdown, and malfunction reports under paragraph (d)(5)(i) of this section, any time an action taken by an owner or operator during a startup, shutdown, or malfunction (including actions taken to correct a malfunction) is not consistent with the procedures specified in the affected source's startup, shutdown, and malfunction plan, the owner or operator shall report the actions taken for that event within 2 working days after commencing actions inconsistent with the plan followed by a letter within 7 working days after the end of the event. The immediate report required under this paragraph shall consist of a telephone call (or facsimile (FAX) transmission) to the Administrator within 2 working days after commencing actions inconsistent with the plan, and it shall be followed by a letter, delivered or postmarked within 7 working days after the end of the event, that contains the name, title, and signature of the owner or operator or other responsible official who is certifying its accuracy, explaining the circumstances of the event, the reasons for not following the startup, shutdown, and malfunction plan, and whether any excess emissions and/or parameter monitoring exceedances are believed to have occurred. Notwithstanding the requirements of the previous sentence, after the effective date of an approved permit program in the State in which an affected source is located, the owner or operator may make alternative reporting arrangements, in advance, with the permitting authority in that State. Procedures governing the arrangement of alternative reporting requirements under this paragraph are specified in § 63.9(i).

(e) *Additional reporting requirements for sources with continuous monitoring systems* -

(1) *General.* When more than one CEMS is used to measure the emissions from one affected source (e.g., multiple breechings, multiple outlets), the owner or operator shall report the results as required for each CEMS.

(2) Reporting results of continuous monitoring system performance evaluations.

(i) The owner or operator of an affected source required to install a CMS by a relevant standard shall furnish the Administrator a copy of a written report of the results of the CMS performance evaluation, as required under § 63.8(e), simultaneously with the results of the performance test required under § 63.7, unless otherwise specified in the relevant standard.

(ii) The owner or operator of an affected source using a COMS to determine opacity compliance during any performance test required under § 63.7 and described in § 63.6(d)(6) shall furnish the Administrator two or, upon request, three copies of a written report of the results of the COMS performance evaluation conducted under § 63.8(e). The copies shall be furnished at least 15 calendar days before the performance test required under § 63.7 is conducted.

(3) *Excess emissions and continuous monitoring system performance report and summary report.* **[Exceedences are defined in 40 CFR 63 Subpart LLL.]**

(i) Excess emissions and parameter monitoring exceedances are defined in relevant standards. The owner or operator of an affected source required to install a CMS by a relevant standard shall submit an excess emissions and continuous monitoring system performance report and/or a summary report to the Administrator semiannually, except when -

(A) More frequent reporting is specifically required by a relevant standard;

(B) The Administrator determines on a case-by-case basis that more frequent reporting is necessary to accurately assess the compliance status of the source; or

(C) [Reserved].

(ii) Request to reduce frequency of excess emissions and continuous monitoring system performance reports. Notwithstanding the frequency of reporting requirements specified in paragraph (e)(3)(i) of this section, an owner or operator who is required by a relevant standard to submit excess emissions and continuous monitoring system performance (and summary) reports on a quarterly (or more frequent) basis may reduce the frequency of reporting for that standard to semiannual if the following conditions are met:

(A) For 1 full year (e.g., 4 quarterly or 12 monthly reporting periods) the affected source's excess emissions and continuous monitoring system performance reports continually demonstrate that the source is in compliance with the relevant standard;

(B) The owner or operator continues to comply with all recordkeeping and monitoring requirements specified in this subpart and the relevant standard; and

(C) The Administrator does not object to a reduced frequency of reporting for the affected source, as provided in paragraph (e)(3)(iii) of this section.

(iii) The frequency of reporting of excess emissions and continuous monitoring system performance (and summary) reports required to comply with a relevant standard may be reduced only after the owner or operator notifies the Administrator in writing of his or her intention to make such a change and the Administrator does not object to the intended change. In deciding whether to approve a reduced frequency of reporting, the Administrator may review information concerning the source's entire previous performance history during the 5-year recordkeeping period prior to the intended change, including performance test results, monitoring data, and evaluations of an owner or operator's conformance with operation and maintenance requirements. Such information may be used by the Administrator to make a judgment about the source's potential for noncompliance in the future. If the Administrator disapproves the owner or operator's request to reduce the frequency of reporting, the Administrator will notify the owner or operator in writing within 45 days after receiving notice of the owner or operator's intention. The notification from the Administrator to the owner or operator will specify the grounds on which the disapproval is based. In the absence of a notice of disapproval within 45 days, approval is automatically granted.

(iv) As soon as CMS data indicate that the source is not in compliance with any emission limitation or operating parameter specified in the relevant standard, the frequency of reporting shall revert to the frequency specified in the relevant standard, and the owner or operator shall submit an excess emissions and continuous monitoring system performance (and summary) report for the noncomplying emission points at the next appropriate reporting period following the noncomplying event. After demonstrating ongoing compliance with the relevant standard for another full year, the owner or operator may again request approval from the Administrator to reduce the frequency of reporting for that standard, as provided for in paragraphs (e)(3)(ii) and (e)(3)(iii) of this section.

(v) *Content and submittal dates for excess emissions and monitoring system performance reports*. All excess emissions and monitoring system performance reports and all summary reports, if required, shall be delivered or postmarked by the 30th day following the end of each calendar half or quarter, as appropriate. Written reports of excess emissions or exceedances of process or control system parameters shall include all the information required in paragraphs (c)(5) through (c)(13) of this section, in § 63.8(c)(7) and § 63.8(c)(8), and in the relevant standard, and they shall contain the name, title, and signature of the responsible official who is certifying the accuracy of the report. When no excess emissions or exceedances of a parameter have occurred, or a CMS has not been inoperative, out of control, repaired, or adjusted, such information shall be stated in the report.

(vi) *Summary report*. As required under paragraphs (e)(3)(vii) and (e)(3)(viii) of this section, one summary report shall be submitted for the hazardous air pollutants monitored at each affected source (unless the relevant standard specifies that more than one summary report is required, e.g., one summary report for each hazardous air pollutant monitored). The summary report shall be entitled ''Summary Report - Gaseous and Opacity Excess Emission and Continuous Monitoring System Performance'' and shall contain the following information:

(A) The company name and address of the affected source;

(B) An identification of each hazardous air pollutant monitored at the affected source;

(C) The beginning and ending dates of the reporting period;

(D) A brief description of the process units;

(E) The emission and operating parameter limitations specified in the relevant standard(s);

(F) The monitoring equipment manufacturer(s) and model number(s);

(G) The date of the latest CMS certification or audit;

(H) The total operating time of the affected source during the reporting period;

(I) An emission data summary (or similar summary if the owner or operator monitors control system parameters), including the total duration of excess emissions during the reporting period (recorded in minutes for opacity and hours for gases), the total duration of excess emissions expressed as a percent of the total source operating time during that reporting period, and a breakdown of the total duration of excess emissions during the reporting period into those that are due to startup/shutdown, control equipment problems, process problems, other known causes, and other unknown causes;

(J) A CMS performance summary (or similar summary if the owner or operator monitors control system parameters), including the total CMS downtime during the reporting period (recorded in minutes for opacity and hours for gases), the total duration of CMS downtime expressed as a percent of the total source operating time during that reporting period, and a breakdown of the total CMS downtime during the reporting period into periods that are due to monitoring equipment malfunctions, nonmonitoring equipment malfunctions, quality assurance/quality control calibrations, other known causes, and other unknown causes;

(K) A description of any changes in CMS, processes, or controls since the last reporting period;

(L) The name, title, and signature of the responsible official who is certifying the accuracy of the report; and

(M) The date of the report.

(vii) If the total duration of excess emissions or process or control system parameter exceedances for the reporting period is less than 1 percent of the total operating time for the reporting period, and CMS downtime for the reporting period is less than 5 percent of the total operating time for the reporting period, only the summary report shall be submitted, and the full excess emissions and continuous monitoring system performance report need not be submitted unless required by the Administrator.

(viii) If the total duration of excess emissions or process or control system parameter exceedances for the reporting period is 1 percent or greater of the total operating time for the reporting period, or the total CMS downtime for the reporting period is 5 percent or greater of the total operating time for the reporting period, both the summary report and the excess emissions and continuous monitoring system performance report shall be submitted.

(4) Reporting continuous opacity monitoring system data produced during a performance test. The owner or operator of an affected source required to use a COMS shall record the monitoring data produced during a performance test required under § 63.7 and shall furnish the Administrator a written report of the monitoring results. The report of COMS data shall be submitted simultaneously with the report of the performance test results required in paragraph (d)(2) of this section.

(f) *Waiver of recordkeeping or reporting requirements.*

(1) Until a waiver of a recordkeeping or reporting requirement has been granted by the Administrator under this paragraph, the owner or operator of an affected source remains subject to the requirements of this section.

(2) Recordkeeping or reporting requirements may be waived upon written application to the Administrator if, in the Administrator's judgment, the affected source is achieving the

relevant standard(s), or the source is operating under an extension of compliance, or the owner or operator has requested an extension of compliance and the Administrator is still considering that request.

(3) If an application for a waiver of record-keeping or reporting is made, the application shall accompany the request for an extension of compliance under § 63.6(i), any required compliance progress report or compliance status report required under this part (such as under § 63.6(i) and § 63.9(h)) or in the source's title V permit, or an excess emissions and continuous monitoring system performance report required under paragraph (e) of this section, whichever is applicable. The application shall include whatever information the owner or operator considers useful to convince the Administrator that a waiver of recordkeeping or reporting is warranted.

(4) The Administrator will approve or deny a request for a waiver of recordkeeping or reporting requirements under this paragraph when he/she -

(i) Approves or denies an extension of compliance; or

(ii) Makes a determination of compliance following the submission of a required compliance status report or excess emissions and continuous monitoring systems performance report; or

(iii) Makes a determination of suitable progress towards compliance following the submission of a compliance progress report, whichever is applicable.

(5) A waiver of any recordkeeping or reporting requirement granted under this paragraph may be conditioned on other recordkeeping or reporting requirements deemed necessary by the Administrator.

(6) Approval of any waiver granted under this section shall not abrogate the Administrator's authority under the Act or in any way prohibit the Administrator from later canceling the waiver. The cancellation will be made only after notice is given to the owner or operator of the affected source.

**§ 63.11 Control device requirements. [Flares not applicable.]**

**§ 63.12 State authority and delegations.**

(a) The provisions of this part shall not be construed in any manner to preclude any State or political subdivision thereof from -

(1) Adopting and enforcing any standard, limitation, prohibition, or other regulation applicable to an affected source subject to the requirements of this part, provided that such standard, limitation, prohibition, or regulation is not less stringent than any requirement applicable to such source established under this part;

(2) Requiring the owner or operator of an affected source to obtain permits, licenses, or approvals prior to initiating construction, reconstruction, modification, or operation of such source; or

(3) Requiring emission reductions in excess of those specified in subpart D of this part as a condition for granting the extension of compliance authorized by section 112(i)(5) of the Act.

(b) (1) Section 112(l) of the Act directs the Administrator to delegate to each State, when appropriate, the authority to implement and enforce standards and other requirements pursuant to section 112 for stationary sources located in that State. Because of the unique nature of radioactive material, delegation of authority to implement and enforce standards that control radionuclides may require separate approval.

(2) Subpart E of this part establishes procedures consistent with section 112(l) for the approval of State rules or programs to implement and enforce applicable Federal rules

promulgated under the authority of section 112. Subpart E also establishes procedures for the review and withdrawal of section 112 implementation and enforcement authorities granted through a section 112(l) approval.

(c) All information required to be submitted to the EPA under this part also shall be submitted to the appropriate State agency of any State to which authority has been delegated under section 112(l) of the Act, provided that each specific delegation may exempt sources from a certain Federal or State reporting requirement. The Administrator may permit all or some of the information to be submitted to the appropriate State agency only, instead of to the EPA and the State agency.

**§ 63.13 Addresses of State air pollution control agencies and EPA Regional Offices.**

(a) All requests, reports, applications, submittals, and other communications to the Administrator pursuant to this part shall be submitted to the appropriate Regional Office of the U.S. Environmental Protection Agency indicated as follows:

EPA Region IV; Director; Air, Pesticides and Toxics, Management Division; 61 Forsyth Street; Atlanta, GA 30303.

(b) All information required to be submitted to the Administrator under this part also shall be submitted to the appropriate State agency of any State to which authority has been delegated under section 112(l) of the Act. The owner or operator of an affected source may contact the appropriate EPA Regional Office for the mailing addresses for those States whose delegation requests have been approved.

(c) If any State requires a submittal that contains all the information required in an application, notification, request, report, statement, or other communication required in this part, an owner or operator may send the appropriate Regional Office of the EPA a copy of that submittal to satisfy the requirements of this part for that communication.

**§ 63.14 Incorporations by reference.**

(a) The materials listed in this section are incorporated by reference in the corresponding sections noted. These incorporations by reference were approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. These materials are incorporated as they exist on the date of the approval, and notice of any change in these materials will be published in the FEDERAL REGISTER. The materials are available for purchase at the corresponding addresses noted below, and all are available for inspection at the Office of the Federal Register, 800 North Capitol Street, NW, suite 700, Washington, DC, at the Air and Radiation Docket and Information Center, U.S. EPA, 401 M Street, SW., Washington, DC, and at the EPA Library (MD–35), U.S. EPA, Research Triangle Park, North Carolina.

(b) The materials listed below are available for purchase from at least one of the following addresses: American Society for Testing and Materials (ASTM); 1916 Race Street, Philadelphia, Pennsylvania 19103; or University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106.

(1) ASTM D1946–77, Standard Method for Analysis of Reformed Gas by Gas Chromatography, IBR approved for § 63.11(b)(6).

(2) ASTM D2382–76, Heat of Combustion of Hydrocarbon Fuels by Bomb Calorimeter (High-Precision Method), IBR approved for § 63.11(b)(6).

(3) ASTM D2879–83, Standard Test Method for Vapor Pressure—Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope, IBR approved for § 63.111 of subpart G of this part.

(4) ASTM D 3695–88, Standard Test Method for Volatile Alcohols in Water by Direct Aqueous-Injection Gas Chromatography, IBR approved for § 63.365(e)(1) of subpart O of this part.

(5) ASTM D 1193–77, Standard Specification for Reagent Water, IBR approved for Method 306, section 4.1.1 and section 4.4.2, of appendix A to part 63.

(6) ASTM D 1331–89, Standard Test Methods for Surface and Interfacial Tension of Solutions of Surface Active Agents, IBR approved for Method 306B, section 2.2, section 3.1, and section 4.2, of appendix A to part 63.

(7) ASTM E 260–91, Standard Practice for Packed Column Gas Chromatography, IBR approved for § 63.750(b)(2) of subpart GG of this part.

(8) ASTM D523–89, Standard Test Method for Specular Gloss, IBR approved for § 63.782.

(9) ASTM D1475–90, Standard Test Method for Density of Paint, Varnish, Lacquer, and Related Products, IBR approved for § 63.788 appendix A.

(10) ASTM D2369–93, Standard Test Method for Volatile Content of Coatings, IBR approved for § 63.788 appendix A.

(11) ASTM D3912–80, Standard Test Method for Chemical Resistance of Coatings Used in Light-Water Nuclear Power Plants, IBR approved for § 63.782.

(12) ASTM D4017–90, Standard Test Method for Water and Paints and Paint Materials by Karl Fischer Method, IBR approved for § 63.788 appendix A.

(13) ASTM D4082–89, Standard Test Method for Effects of Gamma Radiation on Coatings for Use in Light-Water Nuclear Power Plants, IBR approved for § 63.782.

(14) ASTM D4256–89 [reapproved 1994], Standard Test Method for Determination of the Decontaminability of Coatings Used in Light-Water Nuclear Power Plants, IBR approved for § 63.782.

(15) ASTM D3792–91, Standard Test Method for Water Content of Water-Reducible Paints by Direct Injection into a Gas Chromatograph, IBR approved for § 63.788 appendix A.

(16) ASTM D3257–93, Standard Test Methods for Aromatics in Mineral Spirits by Gas Chromatography, IBR approved for § 63.786(b).

(17) ASTM E260–91, Standard Practice for Packed Column Gas Chromatography, IBR approved for § 63.786(b).

(18) ASTM E180–93, Standard Practice for Determining the Precision of ASTM Methods for Analysis and Testing of Industrial Chemicals, IBR approved for § 63.786(b).

(19) ASTM D2879-97, Standard Test Method for Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope, IBR approved for Sec. 63.1251 of subpart GGG of this part.

(c) The materials listed below are available for purchase from the American Petroleum Institute (API), 1220 L Street, NW., Washington, DC 20005.

(1) API Publication 2517, Evaporative Loss from External Floating-Roof Tanks, Third Edition, February 1989, IBR approved for § 63.111 of subpart G of this part.

(2) API Publication 2518, Evaporative Loss from Fixed-roof Tanks, Second Edition, October 1991, IBR approved for § 63.150(g)(3)(i)(C) of subpart G of this part.

(3) API Manual of Petroleum Measurement Specifications (MPMS) Chapter 19.2, Evaporative Loss From Floating-Roof Tanks (formerly API Publications 2517 and 2519), First Edition, April 1997, IBR approved for Sec. 63.1251 of subpart GGG of this part.

(d) *State and Local Requirements*. The materials listed below are available at the Air and Radiation Docket and Information Center, U.S. EPA, 401 M Street, SW., Washington, DC.

(1) California Regulatory Requirements Applicable to the Air Toxics Program, April 6, 1998, IBR approved for § 63.99(a)(5)(ii) of subpart E of this part.

(2) [Reserved]

**§ 63.15 Availability of information and confidentiality.**

(a) *Availability of information.*

(1) With the exception of information protected through part 2 of this chapter, all reports, records, and other information collected by the Administrator under this part are available to the public. In addition, a copy of each permit application, compliance plan (including the schedule of compliance), notification of compliance status, excess emissions and continuous monitoring systems performance report, and title V permit is available to the public, consistent with protections recognized in section 503(e) of the Act.

(2) The availability to the public of information provided to or otherwise obtained by the Administrator under this part shall be governed by part 2 of this chapter.

(b) *Confidentiality.*

(1) If an owner or operator is required to submit information entitled to protection from disclosure under section 114(c) of the Act, the owner or operator may submit such information separately. The requirements of section 114(c) shall apply to such information.

(2) The contents of a title V permit shall not be entitled to protection under section 114(c) of the Act; however, information submitted as part of an application for a title V permit may be entitled to protection from disclosure.

Memorandum

# Florida Department of Environmental Protection

**To:** Clair Fancy, P.E.

**From:** Joseph Kahn, P.E. JK

**Date:** May 24, 1999

**Re:** MACT Emissions Comparison for Suwannee American Cement

---

Per Howard's request, I summarized the MACT standards of 40 CFR 63, Subpart LLL and compared them with the applicant's requested emission limits for the MACT pollutants. The following table summarizes this information. The applicant has proposed to meet or exceed the MACT standards for all MACT pollutants.

| Process | Pollutant | MACT Standard | SAC Proposed Limit |
|---|---|---|---|
| In-line Kiln & Raw Mill | PM | 0.15 mg/kg of dry feed (0.30 lb/ton) | 0.065 mg/kg of dry feed (0.13 lb/ton) |
| " | Opacity | 20% | 10% |
| " | Dioxins/furans | 0.40 ng TEQ/dscm @ 7% $O_2$, PM control device inlet ≤ 204 °C (400 °F) | Same |
| " | THC | 50 ppmvd, as propane, @ 7% $O_2$ | 11.6 ppmvd, as propane, at @ 7% $O_2$ * |
| Clinker Cooler | PM | 0.05 mg/kg of dry feed (0.10 lb/ton) | 0.035 mg/kg of dry feed (0.07 lb/ton) |
| " | Opacity | 10% | 10% |

* Based on estimate provided by the applicant. Applicant's proposed emission limit is 0.12 lb/ton clinker.

# Memorandum

# Florida Department of Environmental Protection

**To:** Clair Fancy, P.E.

**From:** Joseph Kahn, P.E. JK

**Date:** May 24, 1999

**Re:** Heat Consumption for Cement Plants

---

Per your request, I have estimated the heat consumption in units of mmBtu/ton of clinker for several of the cement plants in Florida. I based my estimate on the permitted limits of production and heat input, or, where the clinker production rate is not limited by permit, upon the production rates described in the technical evaluation or BACT determination. Although these plants are all dry-process operations, not all utilize the preheater/precalciner design. Differences in design, fuel type and feed material moisture content may account for the difference in results. Note that the Rinker Modernization project netted out of PSD and the Southdown plants are existing preheater design facilities. Additionally, I estimated the NOx produced in units of lb/mmBtu to see how these projects compare. The results are as follows.

| Plant | Design | Clinker Production (TPH) | Heat Input (mmBtu/hr) | Heat Consumption (mmBtu/ton clinker) | NOx (lb/mmBtu) |
|---|---|---|---|---|---|
| Suwannee American Cement | PH/PC | 95.8 | 364 | 3.8 | 0.79 [1] |
| Florida Rock | PH/PC | 95.8 | 364 [2] | 3.8 | 0.75 |
| Florida Crushed Stone #2 | PH/PC | 104.2 | 355 [3] | 3.4 | 0.82 |
| Rinker Modernization | PH/PC | 137 | 437 | 3.2 | 1.5 |
| Southdown #1 | PH | 90 | 300 | 3.3 | 0.92 |
| Southdown #2 | PH | 90 | 300 | 3.3 | 0.86 |

1 Based upon applicant's requested emission limit of 3.0 lb NOx/ton clinker.
2 Includes heat input for raw mill air heater.
3 Includes heat input for dryer heater.

INTEROFFICE MEMORANDUM

Date: 21-May-1999 01:52pm
From: Ellen_Porter
Ellen_Porter@nps.gov
Dept:
Tel No:

To: Kahn_J ( Kahn_J@dep.state.fl.us )
To: holladay_c ( holladay_c@dep.state.fl.
us )
CC: Bud_Rolofson ( Bud_Rolofson@nps.gov )

Subject: Suwannee

I made a few additions to my tech rev doc for Suwannee based on our con
versation
this morning. I added some language about lowering the NOx emission ra
te in the
BACT section. In the visib analysis section, I note that if their revi
sed
analysis predicts a >5% change in light extinction, they can lower thei
r
emission rate or lower production. Or do CALPUFF.

**Technical Review of Additional Information**
**For a New Cement Plant**
**Suwannee American Cement Company**
**Branford, Florida**
**PSD-FL-259**

**by**

**Air Quality Branch, Fish and Wildlife Service – Denver**
**May 19, 1999**

In December 1998 we provided technical comments to the Florida Department of Environmental Protection (FDEP) on the Prevention of Significant Deterioration Permit Application for Suwannee American Cement Company's (Suwannee) proposed new cement plant in Branford, Suwannee County, Florida. We provided additional comments, via fax, in February 1999. The cement plant will be a dry process preheater/precalciner kiln, producing 2,300 tons per day of clinker, and up to 1,191,360 tons per year of various types and grades of Portland cement. The primary fuels will be coal and petroleum coke. Natural gas will be used as a startup fuel and supplemental fuel. Whole tires and/or tire-derived fuel will be used as a supplemental fuel. The facility is located 83 km southwest of Okefenokee Wilderness and 88 km north of Chassahowitzka Wilderness, and 102 km east of St. Marks Wilderness, all Class I air quality areas administered by the U.S. Fish and Wildlife Service (FWS). This project will result in PSD-significant increases in emissions of nitrogen oxides ($NO_X$), sulfur dioxide ($SO_2$), volatile organic compounds (VOC), particulate matter (PM), fine particulate matter less than 10 microns in diameter (PM-10), and carbon monoxide (CO). Emissions (in tons per year – TPY) are summarized below.

| POLLUTANT | EMISSIONS INCREASE (TPY) |
|---|---|
| $NO_X$ | 1175 |
| SO2 | 118 |
| VOC | 50 |
| PM | 267 |
| PM-10 | 228 |
| CO | 1511 |

We recommended in our December 1998 comments that Suwannee re-evaluate its proposed control technology for $NO_X$ emissions. We also asked that Suwannee be required to evaluate potential impacts to visibility at the Class I areas, using the guidance of the Interagency Workgroup on Air Quality Modeling (IWAQM) at: http://www.epa.gov/scram001/; "Model Support"; "6th Modeling Conference"; "IWAQM". In our February fax, we suggested that Suwannee evaluate installation of a wet scrubber for $SO_2$ control. This recommendation was based on recent information from a proposed new portland cement plant in Colorado (Holman).

**Best Available Control Technology (BACT) Analysis**

Suwannee provided additional information in February 1999 that supported its best available control technology (BACT) analysis for $NO_x$ emissions. We agreed with their conclusions, based on this additional information. However, we believe that Suwannee could meet a lower emission limit than that proposed (3.0-3.1 lb/ton clinker). A similar facility, LoneStar Cement (CA) has proposed a limit of 2.5 lb/ton clinker. We understand that LoneStar is using dry limestone, in contrast to the wet limestone that Suwannee proposes to use. Therefore, Suwannee maintains that more heat input will be needed to dry the limestone, resulting in a higher $NO_x$ emission rate. However, Suwannee's limestone could be air-dried, allowing them to meet an emission rate in the range 2.5-2.8 lb/ton clinker.

Suwannee provided additional information regarding its BACT analysis for $SO_2$ emissions in May 1999. We do not agree with Suwannee's conclusion that, because their $SO_2$ emissions are already relatively low, they should not have to consider adding scrubbers for further reductions. A BACT analysis should not discount a potential control technology on the basis that emissions are already low. Suwannee should thoroughly evaluate the use of scrubbers at their proposed facility.

**Regional Haze Analysis**

Suwannee submitted a regional haze analysis in March 1999 that evaluated potential impacts from the project to visibility at St. Marks, Chassahowitzka, and Okefenokee. Suwannee performed the analysis incorrectly, applying a relative humidity value of 80% instead of the 95% recommended in the IWAQM guidance, referred to in our December 1999 comments. (Note that the use of a lower relative humidity value will result in smaller changes in light extinction, i.e., smaller impacts to visibility.) Suwannee stated that, in using the 80% relative humidity value, they were following advice supplied by our office in 1995 and they had used this value in several past analyses without objection by FDEP. They therefore felt justified in using this approach.

However, a more recent examination of meteorological data indicates that relative humidities generally exceed 80% in Florida. Therefore, when we supplied our December 1998 comments, we advised Suwannee to perform the analysis following the IWAQM guidelines, which prescribe a relative humidity value of 95% if actual relative humidity values are not available. Suwannee is not justified in disregarding our recent comments in order to use outdated advice to their advantage. We recommend that Suwannee perform the analysis again, either using a relative humidity value of 95% or actual relative humidity values.

If the analysis predicts that emissions from the project would result in a greater than 5% change in light extinction at a Class I area, Suwannee should reduce emission rates or reduce production. In addition, Suwannee has the option to perform a refined modeling analysis with CALPUFF. In any case, Suwannee must demonstrate that they will not cause a greater than 5% change in light extinction at St. Marks, Chassahowitzka, or Okefenokee wildernesses.

Contact: Ellen Porter, Air Quality Branch (303) 969-2617.

# Department of
# Environmental Protection

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

Jeb Bush
Governor

David B. Struhs
Secretary


May 20, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Joe Anderson, III
President
Suwannee American Cement Company, Inc.
PO Box 410
Branford, Florida 32008

Re: BACT Determination for Sulfur Dioxide
DEP File No. 1210465-001-AC (PSD-FL-259)
Proposed Portland Cement Plant

Dear Mr. Anderson:

On April 21, 1999 the Department received your response to the Department's letter of March 26, 1999 requesting additional information. In your response you requested the Department begin processing your permit application under Section 403.0876(2)(a), F.S. The Department is processing your application in accordance with that provision.

On May 19, 1999, the Department received a technical review from the federal land manager via e-mail. A copy of that review is enclosed for your information. The federal land manager has asked us to request a copy of the computer diskettes with your modeling runs for the regional haze analysis for transmittal to the federal land manager. If you wish to comply with this request, please provide these diskettes to us as soon as possible. This is not a request for additional information pursuant to Rule 62-4.055, F.A.C.

If there are any questions about this matter, please call me at 850/921-9519.

Sincerely,

Joseph Kahn, P.E.
New Source Review Section

/jk

enclosure

cc: Mr. Frank Darabi, P.E.
Mr. Steve Cullen, P.E.
Mr. Gregg Worley, EPA
Mr. John Bunyak, NPS
Mr. Chris Kirts, NED
Mr. Jim Stevenson, DEP Ecosystem Mgmt.
Mr. Tom Workman, DEP Recreation & Parks
Mr. Mark Latch, DEP Recreation and Parks
Ms. December McSherry
Mr. Svenn Lindskold
Mr. Tom Greenhalgh
Mr. Al Mueller
Mr. Dave Bruderly
Mr. Chris Bird, Alachua County DER
Mr. John Mousa, Alachua County DER
Mr. Chuck Clemons, Chairman, Alachua County Commissioners
Mr. J. Calvin Gaddy
Ms. Patrice Boyes, Esq.
Ms. Kathy Cantwell
Mr. Ralph Ashodian
Mr. Craig Pittman
Virginia Seacrist
Dr. Bob and Lynn Milner

Is your RETURN ADDRESS completed on the reverse side?

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "*Return Receipt Requested*" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Joe Anderson III, Pres.
Suwannee American
Cement Co
PO Box 410
Branford, Fl 32008

4a. Article Number
Z 333 618 149

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
5-26-99

5. Received By: *(Print Name)*

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X

PS Form **3811**, December 1994 102595-97-B-0179 Domestic Return Receipt

Thank you for using Return Receipt Service.

Z 333 618 149

US Postal Service
## Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

| | |
|---|---|
| Sent to Joe Anderson | |
| Street & Number Suwannee American | |
| Post Office, State, & ZIP Code Cement Plant | |
| Postage Branford Fl | $ |
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| **TOTAL** Postage & Fees | $ |
| Postmark or Date 5-20-99 1210465-201-AC POD-F1-259 | |

PS Form **3800**, April 1995

**Technical Review of Additional Information**
**For a New Cement Plant**
**Suwannee American Cement Company**
**Branford, Florida**
**PSD-FL-259**

**by**

**Air Quality Branch, Fish and Wildlife Service – Denver**
**May 19, 1999**

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We recommend that Suwannee perform the analysis again, either using a relative humidity value of 95% or actual relative humidity values.

Contact: Ellen Porter, Air Quality Branch (303) 969-2617.

**Memorandum** | **Florida Department of Environmental Protection**

**To:** Kristine Roselius
Office of Communications

**From:** Joseph Kahn, P.E. JK
New Source Review Section

**Date:** May 20, 1999

**Re:** Public Records Request From Gainesville Sun Regarding Suwannee American Cement

---

Accompanying this memo are the photocopies requested by The Gainesville Sun in Ms. Levine's memo of May 19, 1999. I reviewed the air division file and selected the public records that seemed to comport with The Sun's request. Many records from third parties were easy to exclude because they were clearly not in support of the plant. Where I was not sure whether communication was from "persons, organizations or entities supporting the plant", I included such documents.

The photocopies consist of 63 single sided copies at a cost of $0.15 per page and 238 double sided copies at a cost of $0.20 per page. This results in a copy cost of $57.05. Per Directive DEP 375, we should collect costs for labor (Extensive Use Charges) for this request. This is an additional charge of $25.80 per hour for 2.25 hours, for a labor charge of $58.05.

Thus, the total charge for this request is $115.10.

Please let me know if you need anything further regarding this.

# INTEROFFICE MEMORANDUM

**Date:** 20-May-1999 01:01pm
**From:** Kristine Roselius TAL
ROSELIUS_K@a1.epic5.dep.state.fl.us
**Dept:**
**Tel No:**

**To:** See Below
**Subject:** **URGENT**

The Gainesville Sun has demanded the following public records pursuant to Chapter 119, Florida Statutes:

"Any and all letters, faxes, e-mails, recorded phone messages or other correspondences, regarding the cement plant proposed near Branford, FL, between DEP officials and representatives of the Suwannee American Co., Anderson Columbia, Inc. or any other persons, organizations or entities supporting the plant."

I have been told that each of you may have some involvement in this matter and may have records which pertain to this request. I need all documents described above by TOMORROW, May 21st, at noon. The DEP Division of Air is also gathering documents for this request.

If you have any questions or concerns, please call me at 850/488-1073 or Suncom 278-1073.

Kristine Roselius - DEP Office of Communications

**Distribution:**

| | | |
|---|---|---|
| To: | Mark Latch TAL | ( LATCH_M@a1.epic6.dep.state.fl.us ) |
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5/20/99

**Subpart LLL - National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry.**

**Sec.**



**Subpart LLL - National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry**

GENERAL

### §63.1340 Applicability and designation of affected sources.

(a) Except as specified in paragraphs (b) and (c) of this section, the provisions of this subpart apply to each new and existing portland cement plant which is a major source or an area source as defined in §63.2.

(b) The affected sources subject to this subpart are:

(1) Each kiln and each in-line kiln/raw mill at any major or area source, including alkali bypasses, except for kilns and in-line kiln/raw mills that burn hazardous waste and are subject to and regulated under subpart EEE of this part;

(2) Each clinker cooler at any portland cement plant which is a major source;

(3) Each raw mill at any portland cement plant which is a major source;

(4) Each finish mill at any portland cement plant which is a major source;

(5) Each raw material dryer at any portland cement plant which is a major source and each greenfield raw material dryer at any portland cement plant which is a major or area source;

(6) Each raw material, clinker, or finished product storage bin at any portland cement plant which is a major source;

(7) Each conveying system transfer point at any portland cement plant which is a major source;

(8) Each bagging system at any portland cement plant which is a major source; and
(9) Each bulk loading or unloading system at any portland cement plant which is a major source.

(c) For portland cement plants with on-site nonmetallic mineral processing facilities, the first affected source in the sequence of materials handling operations subject to this subpart is the raw material storage, which is just prior to the raw mill. The primary and secondary crushers and any other equipment of the on-site nonmetallic mineral processing plant which precedes the raw material storage are not subject to this subpart. Furthermore, the first conveyor transfer point subject to this subpart is the transfer point associated with the conveyor transferring material from the raw material storage to the raw mill.

(d) The owner or operator of any affected source subject to the provisions of this subpart is subject to title V permitting requirements.

**§63.1341 Definitions.**

All terms used in this subpart that are not defined below have the meaning given to them in the CAA and in subpart A of this part.

*Alkali bypass* means a duct between the feed end of the kiln and the preheater tower through which a portion of the kiln exit gas stream is withdrawn and quickly cooled by air or water to avoid excessive buildup of alkali, chloride and/or sulfur on the raw feed. This may also be referred to as the "kiln exhaust gas bypass".

*Bagging system* means the equipment which fills bags with portland cement.

*Clinker cooler* means equipment into which clinker product leaving the kiln is placed to be cooled by air supplied by a forced draft or natural draft supply system.

*Continuous monitor* means a device which continuously samples the regulated parameter specified in §63.1350 of this subpart without interruption, evaluates the detector response at least once every 15 seconds, and computes and records the average value at least every 60 seconds, except during allowable periods of calibration and except as defined otherwise by the continuous emission monitoring system performance specifications in appendix B to part 60 of this chapter.

*Conveying system* means a device for transporting materials from one piece of equipment or location to another location within a facility. Conveying systems include but are not limited to the following: feeders, belt conveyors, bucket elevators and pneumatic systems.

*Conveying system transfer point* means a point where any material including but not limited to feed material, fuel, clinker or product, is transferred to or from a conveying system, or between separate parts of a conveying system.

*Dioxins and furans (D/F)* means tetra-, penta-, hexa-, hepta-, and octa- chlorinated dibenzo dioxins and furans.

*Facility* means all contiguous or adjoining property that is under common ownership or control, including properties that are separated only by a road or other public right-of-way.

*Feed* means the prepared and mixed materials, which include but are not limited to materials such as limestone, clay, shale, sand, iron ore, mill scale, cement kiln dust and flyash, that are fed to the kiln. Feed does not include the fuels used in the kiln to produce heat to form the clinker product.

*Finish mill* means a roll crusher, ball and tube mill or other size reduction equipment used to grind clinker to a fine powder. Gypsum and other materials may be added to and blended with clinker in a finish mill. The finish mill also includes the air separator associated with the finish mill.

*Greenfield kiln, in-line kiln/raw mill*, or *raw material dryer* means a kiln, in-line kiln/raw mill, or raw material dryer for which construction is commenced at a plant site (where no kilns and no in-line kiln/raw mills were in operation at any time prior to March 24, 1998) after March 24, 1998.

*Hazardous waste* is defined in §261.3 of this chapter.

*In-line kiln/raw mill* means a system in a portland cement production process where a dry kiln system is integrated with the raw mill so that all or a portion of the kiln exhaust gases are used to perform the drying operation of the raw mill, with no auxiliary heat source used. In this system the kiln is capable of operating without the raw mill operating, but the raw mill cannot operate without the kiln gases, and consequently, the raw mill does not generate a separate exhaust gas stream.

*Kiln* means a device, including any associated preheater or precalciner devices, that produces clinker by heating limestone and other materials for subsequent production of portland cement.

*Kiln exhaust gas bypass* means alkali bypass.

*Monovent* means an exhaust configuration of a building or emission control device (e. g. positive pressure fabric filter) that extends the length of the structure and has a width very small in relation to its length (i. e., length to width ratio is typically greater than 5:1). The exhaust may be an open vent with or without a roof, louvered vents, or a combination of such features.

*New brownfield kiln, in-line kiln raw mill,* or *raw material dryer* means a kiln, in-line kiln/raw mill or raw material dryer for which construction is commenced at a plant site (where kilns and/or in-line kiln/raw mills were in operation prior to March 24, 1998) after March 24, 1998.

*One-minute average* means the average of thermocouple or other sensor responses calculated at least every 60 seconds from responses obtained at least once during each consecutive 15 second period.

*Portland cement plant* means any facility manufacturing portland cement.

*Raw material dryer* means an impact dryer, drum dryer, paddle-equipped rapid dryer, air separator, or other equipment used to reduce the moisture content of feed materials.

*Raw mill* means a ball and tube mill, vertical roller mill or other size reduction equipment, that is not part of an in-line kiln/raw mill, used to grind feed to the appropriate size. Moisture may be added or removed from the feed during the grinding operation. If the raw mill is used to remove moisture from feed materials, it is also, by definition, a raw material dryer. The raw mill also includes the air separator associated with the raw mill.

*Rolling average* means the average of all one-minute averages over the averaging period.

*Run average* means the average of the one-minute parameter values for a run.

*TEQ* means the international method of expressing toxicity equivalents for dioxins and furans as defined in U.S. EPA, Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 Update, March 1989.

EMISSION STANDARDS AND OPERATING LIMITS

**§63.1342 Standards: General.**

(a) Table 1 to this subpart provides cross references to the 40 CFR part 63, subpart A, general provisions, indicating the applicability of the general provisions requirements to subpart LLL.

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(b) Table 1 of this section provides a summary of emission limits and operating limits of this subpart.

**Table 1 to §63.1342. Emission Limits and Operating Limits.**

| Affected Source | Pollutant or Opacity | Emission and Operating Limit |
|---|---|---|
| All kilns and in-line kiln/raw mills at major sources (including alkali bypass) | PM | 0.15 kg/Mg of feed (dry basis) |
| | Opacity | 20 percent |
| All kilns and in-line kiln/raw mills at major and area sources (including alkali bypass) | D/F | 0.20 ng TEQ/dscm<br>or<br>0.40 ng TEQ/dscm when the average of the performance test run average particulate matter control device (PMCD) inlet temperatures is 204° C or less.<br>[Corrected to 7 percent oxygen]<br><br>Operate such that the three-hour rolling average PMCD inlet temperature is no greater than the temperature established at performance test.<br>If activated carbon injection is used:<br>Operate such that the three-hour rolling average activated carbon injection rate is no less than rate established at performance test. Operate such that either the carrier gas flow rate or carrier gas pressure drop exceeds the value established at performance test. Inject carbon of equivalent specifications to that used at performance test. |
| New greenfield kilns and in-line kiln/raw mills at major and area sources | THC | 50 ppmvd, as propane, corrected to 7 percent oxygen |
| All clinker coolers at major sources | PM | 0.050 kg/Mg of feed (dry basis) |
| | Opacity | 10 percent |
| All raw mills and finish mills at major sources | Opacity | 10 percent |
| New greenfield raw material dryers at major and area sources | THC | 50 ppmvd, as propane, corrected to 7 percent oxygen |
| All raw material dryers and material handling points at major sources | Opacity | 10 percent |

**§63.1343 Standards for kilns and in-line kiln/raw mills.**

(a) *General.* The provisions in this section apply to each kiln, each in-line kiln/raw mill, and any alkali bypass associated with that kiln or in-line kiln/raw mill.

(b) *Existing, reconstructed, or new brownfield/major sources.* No owner or operator of an existing, reconstructed or new brownfield kiln or an existing, reconstructed or new brownfield in-line kiln/raw mill at a facility that is a major source subject to the provisions of this subpart shall cause to be discharged into the atmosphere from these affected sources, any gases which:

(1) Contain particulate matter (PM) in excess of 0.15 kg per Mg (0.30 lb per ton) of feed (dry basis) to the kiln. When there is an alkali bypass associated with a kiln or in-line kiln/raw mill, the combined particulate matter emissions from the kiln or in-line kiln/raw mill and the alkali bypass are subject to this emission limit.

(2) Exhibit opacity greater than 20 percent.

(3) Contain D/F in excess of:

(i) 0.20 ng per dscm ($8.7 \times 10^{-11}$ gr per dscf)(TEQ) corrected to seven percent oxygen; or

(ii) 0.40 ng per dscm ($1.7 \times 10^{-10}$ gr per dscf)(TEQ) corrected to seven percent oxygen, when the average of the performance test run average temperatures at the inlet to the particulate matter control device is 204° C (400° F) or less.

(c) *Greenfield/major sources.* No owner or operator that commences construction of a greenfield kiln or greenfield inline kiln/raw mill at a facility which is a major source subject to the provisions of this subpart shall cause to be discharged into the atmosphere from these affected sources any gases which:

(1) Contain particulate matter in excess of 0.15 kg per Mg (0.30 lb per ton) of feed (dry basis) to the kiln. When there is an alkali bypass associated with a kiln or in-line kiln/raw mill, the combined particulate matter emissions from the kiln or in-line kiln/raw mill and the bypass stack are subject to this emission limit.

(2) Exhibit opacity greater than 20 percent.

(3) Contain D/F in excess of:

(i) 0.20 ng per dscm ($8.7 \times 10^{-11}$ gr per dscf)(TEQ) corrected to seven percent oxygen; or

(ii) 0.40 ng per dscm ($1.7 \times 10^{-10}$ gr per dscf)(TEQ) corrected to seven percent oxygen, when the average of the performance test run average temperatures at the inlet to the particulate matter control device is 204° C (400° F) or less.

(4) Contain total hydrocarbon (THC), from the main exhaust of the kiln or in-line kiln/raw mill, in excess of 50 ppmvd as propane, corrected to seven percent oxygen.

(d) *Existing, reconstructed, or new brownfield/area sources.* No owner or operator of an existing, reconstructed, or new brownfield kiln or an existing, reconstructed or new brownfield in-line kiln/raw mill at a facility that is an area source subject to the provisions of this subpart shall cause to be discharged into the atmosphere from these affected sources any gases which contain D/F in excess of:

(1) 0.20 ng per dscm ($8.7 \times 10^{-11}$ gr per dscf)(TEQ) corrected to seven percent oxygen; or

(2) 0.40 ng per dscm ($1.7 \times 10^{-10}$ gr per dscf)(TEQ) corrected to seven percent oxygen, when the average of the performance test run average temperatures at the inlet to the particulate matter control device is 204° C (400° F) or less.

(e) *Greenfield/area sources.* No owner or operator of a greenfield kiln or a greenfield in-line kiln/raw mill at a facility that is an area source subject to the provisions of this subpart shall cause to be discharged into the atmosphere from these affected sources any gases which:

(1) Contain D/F in excess of:

(i) 0.20 ng per dscm ($8.7 \times 10^{-11}$ gr per dscf)(TEQ) corrected to seven percent oxygen; or

(ii) 0.40 ng per dscm (1.7 X $10^{-10}$ gr per dscf)(TEQ) corrected to seven percent oxygen, when the average of the performance test run average temperatures at the inlet to the particulate matter control device is 204° C (400° F) or less.

(2) Contain THC, from the main exhaust of the kiln or in-line kiln/raw mill, in excess of 50 ppmvd as propane, corrected to seven percent oxygen.

**§63.1344 Operating Limits for kilns and in-line kiln/raw mills.**

(a) The owner or operator of a kiln subject to a D/F emission limitation under §63.1343 must operate the kiln such that the temperature of the gas at the inlet to the kiln particulate matter control device (PMCD) and alkali bypass PMCD, if applicable, does not exceed the applicable temperature limit specified in paragraph (b) of this section. The owner or operator of an in-line kiln/raw mill subject to a D/F emission limitation under §63.1343 must operate the in-line kiln/raw mill, such that,

(1) When the raw mill of the in-line kiln/raw mill is operating, the applicable temperature limit for the main in-line kiln/raw mill exhaust, specified in paragraph (b) of this section and established during the performance test when the raw mill was operating is not exceeded.

(2) When the raw mill of the in-line kiln/raw mill is not operating, the applicable temperature limit for the main in-line kiln/raw mill exhaust, specified in paragraph (b) of this section and established during the performance test when the raw mill was not operating, is not exceeded.

(3) If the in-line kiln/raw mill is equipped with an alkali bypass, the applicable temperature limit for the alkali bypass, specified in paragraph (b) of this section and established during the performance test when the raw mill was operating, is not exceeded.

(b) The temperature limit for affected sources meeting the limits of paragraph (a) of this section or paragraphs (a)(1) through (a)(3) of this section is determined in accordance with §63.1349(b)(3)(iv).

(c) The owner or operator of an affected source subject to a D/F emission limitation under §63.1343 that employs carbon injection as an emission control technique must operate the carbon injection system in accordance with paragraphs (c)(1) and (c)(2) of this section.

(1) The three-hour rolling average activated carbon injection rate shall be equal to or greater than the activated carbon injection rate determined in accordance with §63.1349(b)(3)(vi).

(2) The owner or operator shall either:

(i) Maintain the minimum activated carbon injection carrier gas flow rate, as a three-hour rolling average, based on the manufacturer's specifications. These specifications must be documented in the test plan developed in accordance with §63.7(c) of this part, or

(ii) Maintain the minimum activated carbon injection carrier gas pressure drop, as a three-hour rolling average, based on the manufacturer's specifications. These specifications must be documented in the test plan developed in accordance with §63.7(c).

(d) Except as provided in paragraph (e) of this section, the owner or operator of an affected source subject to a D/F emission limitation under §63.1343 that employs carbon injection as an emission control technique must specify and use the brand and type of activated carbon used during the performance test until a subsequent performance test is conducted, unless the site-specific performance test plan contains documentation of key parameters that affect adsorption and the owner or operator establishes limits based on those parameters, and the limits on these parameters are maintained.

(e) The owner or operator of an affected source subject to a D/F emission limitation under §63.1343 that employs carbon injection as an emission control technique may substitute, at any time, a different brand or type of activated carbon provided that the replacement has equivalent or improved properties compared to the activated carbon specified in the site-specific performance test plan and used in the performance test. The owner or operator must maintain documentation that the substitute activated carbon will provide the same or better level of control as the original activated carbon.

**§63.1345 Standards for clinker coolers.**

(a) No owner or operator of a new or existing clinker cooler at a facility which is a major source subject to the provisions of this subpart shall cause to be discharged into the atmosphere from the clinker cooler any gases which:

(1) Contain particulate matter in excess of 0.050 kg per Mg (0.10 lb per ton) of feed (dry basis) to the kiln.

(2) Exhibit opacity greater than ten percent.

(b) [Reserved]

**§63.1346 Standards for new and reconstructed raw material dryers.**

(a) *Brownfield/major sources.* No owner or operator of a new or reconstructed brownfield raw material dryer at a facility which is a major source subject to this subpart shall cause to be discharged into the atmosphere from the new or reconstructed raw material dryer any gases which exhibit opacity greater than ten percent.

(b) *Greenfield/area sources.* No owner or operator of a greenfield raw material dryer at a facility which is an area source subject to this subpart shall cause to be discharged into the atmosphere from the greenfield raw material dryer any gases which contain THC in excess of 50 ppmvd, reported as propane, corrected to seven percent oxygen.

(c) *Greenfield/major sources.* No owner or operator of a greenfield raw material dryer at a facility which is a major source subject to this subpart shall cause to be discharged into the atmosphere from the greenfield raw material dryer any gases which:

(1) Contain THC in excess of 50 ppmvd, reported as propane, corrected to seven percent oxygen.

(2) Exhibit opacity greater than ten percent.

**§63.1347 Standards for raw and finish mills.**

The owner or operator of each new or existing raw mill or finish mill at a facility which is a major source subject to the provisions of this subpart shall not cause to be discharged from the mill sweep or air separator air pollution control devices of these affected sources any gases which exhibit opacity in excess of ten percent.

**§63.1348 Standards for affected sources other than kilns; in-line kiln/raw mills; clinker coolers; new and reconstructed raw material dryers; and raw and finish mills.**

The owner or operator of each new or existing raw material, clinker, or finished product storage bin; conveying system transfer point; bagging system; and bulk loading or unloading system; and each existing raw material dryer, at a facility which is a major source subject to the provisions of this subpart shall not cause to be discharged any gases from these affected sources which exhibit opacity in excess of ten percent.

MONITORING AND COMPLIANCE PROVISIONS

**§63.1349 Performance Testing Requirements.**

(a) The owner or operator of an affected source subject to this subpart shall demonstrate initial compliance with the emission limits of §63.1343 and §§63.1345 through 63.1348 using the test methods and procedures in paragraph (b) of this section and §63.7. Performance test results shall be documented in complete test reports that contain the information required by paragraphs (a)(1) through (a)(10) of this section, as well as all other relevant information. The plan to be followed during testing shall be made available to the Administrator prior to testing, if requested.

(1) A brief description of the process and the air pollution control system;

(2) Sampling location description(s);

(3) A description of sampling and analytical procedures and any modifications to standard procedures;

(4) Test results;

(5) Quality assurance procedures and results;

(6) Records of operating conditions during the test, preparation of standards, and calibration procedures;

(7) Raw data sheets for field sampling and field and laboratory analyses;

(8) Documentation of calculations;

(9) All data recorded and used to establish parameters for compliance monitoring; and

(10) Any other information required by the test method.

(b) Performance tests to demonstrate initial compliance with this subpart shall be conducted as specified in paragraphs (b)(1) through (b)(4) of this section.

(1) The owner or operator of a kiln subject to limitations on particulate matter emissions shall demonstrate initial compliance by conducting a performance test as specified in paragraphs (b)(1)(i) through (b)(1)(iv) of this section. The owner or operator of an in-line kiln/raw mill subject to limitations on particulate matter emissions shall demonstrate initial compliance by conducting separate performance tests as specified in paragraphs (b)(1)(i) through (b)(1)(iv) of this section while the raw mill of the in-line kiln/raw mill is under normal operating conditions and while the raw mill of the in-line kiln/raw mill is not operating. The owner or operator of a clinker cooler subject to limitations on particulate matter emissions shall demonstrate initial compliance by conducting a performance test as specified in paragraphs (b)(1)(i) through (b)(1)(iii) of this section. The opacity exhibited during the period of the Method 5 of Appendix A to part 60 of this chapter performance tests required by paragraph (b)(1)(i) of this section shall be determined as required in paragraphs (b)(1)(v) through (vi) of this section.

(i) EPA Method 5 of appendix A to part 60 of this chapter shall be used to determine PM emissions. Each performance test shall consist of three separate runs under the conditions that exist when the affected source is operating at the highest load or capacity level reasonably expected to occur. Each run shall be conducted for at least one hour, and the minimum sample volume shall be 0.85 dscm (30 dscf). The average of the three runs shall be used to determine compliance. A determination of the particulate matter collected in the impingers ("back half") of the Method 5 particulate sampling train is not required to demonstrate initial compliance with the PM standards of this subpart. However this shall not preclude the permitting authority from requiring a determination of the "back half" for other purposes.

(ii) Suitable methods shall be used to determine the kiln or inline kiln/raw mill feed rate, except for fuels, for each run.

(iii) The emission rate, E, of PM shall be computed for each run using equation 1:

$$E = (c_s Q_{sd}) / P \qquad \textbf{(Eq 1)}$$

Where: $E$ = emission rate of particulate matter, kg/Mg of kiln feed.

$c_s$ = concentration of PM, kg/dscm.

$Q_{sd}$ = volumetric flow rate of effluent gas, dscm/hr.

$P$ = total kiln feed (dry basis), Mg/hr.

(iv) When there is an alkali bypass associated with a kiln or in-line kiln/raw mill, the main exhaust and alkali bypass of the kiln or in-line kiln/raw mill shall be tested simultaneously and the combined emission rate of particulate matter from the kiln or in-line kiln/raw mill and alkali bypass shall be computed for each run using equation 2,

$$E_c = (c_{sk}Q_{sdk} + c_{sb}Q_{sdb})/P \qquad \textbf{(Eq 2)}$$

Where: $E_c$ = the combined emission rate of particulate matter from the kiln or in-line kiln/raw mill and bypass stack, kg/Mg of kiln feed.

$c_{sk}$ = concentration of particulate matter in the kiln or in-line kiln/raw mill effluent, kg/dscm.

$Q_{sdk}$ = volumetric flow rate of kiln or in-line kiln/raw mill effluent, dscm/hr.

$c_{sb}$ = concentration of particulate matter in the alkali bypass gas, kg/dscm.

$Q_{sdb}$ = volumetric flow rate of alkali bypass gas, dscm/hr.

P = total kiln feed (dry basis), Mg/hr.

(v) Except as provided in paragraph (b)(1)(vi) of this section the opacity exhibited during the period of the Method 5 performance tests required by paragraph (b)(1)(i) of this section shall be determined through the use of a continuous opacity monitor (COM). The maximum six-minute average opacity during the three Method 5 test runs shall be determined during each Method 5 test run, and used to demonstrate initial compliance with the applicable opacity limits of §63.1343(b)(2), §63.1343(c)(2), or §63.1345(a)(2).

(vi) Each owner or operator of a kiln, in-line kiln/raw mill, or clinker cooler subject to the provisions of this subpart using a fabric filter with multiple stacks or an electrostatic precipitator with multiple stacks may, in lieu of installing the continuous opacity monitoring system required by paragraph (b)(1)(v) of this section, conduct an opacity test in accordance with Method 9 of appendix A to part 60 of this chapter during each Method 5 performance test required by paragraph (b)(1)(i) of this section. If the control device exhausts through a monovent, or if the use of a COM in accordance with the installation specifications of Performance Specification 1 (PS-1) of appendix B to part 60 of this chapter is not feasible, a test shall be conducted in accordance with Method 9 of appendix A to part 60 of this chapter during each Method 5 performance test required by paragraph (b)(1)(i) of this section. The maximum six-minute average opacity shall be determined during the three Method 5 test runs, and used to demonstrate initial compliance with the applicable opacity limits of §63.1343(b)(2), §63.1343(c)(2), or §63.1345(a)(2).

(2) The owner or operator of any affected source subject to limitations on opacity under this subpart that is not subject to paragraph (b)(1) of this section shall demonstrate initial compliance with the affected source opacity limit by conducting a test in accordance with Method 9 of appendix A to part 60 of this chapter. The performance test shall be conducted under the conditions that exist when the affected source is operating at the highest load or capacity level reasonably expected to occur. The maximum six-minute average opacity exhibited during the test period shall be used to determine whether the affected source is in initial compliance with the standard. The duration of the Method 9 performance test shall be 3-hours (30 6-minute averages), except that the duration of the Method 9 performance test may be reduced to 1-hour if the conditions of paragraphs (b)(2)(i) through (ii) of the section apply:

(i) There are no individual readings greater than 10 percent opacity;

(ii) There are no more than three readings of 10 percent for the first 1-hour period.

(3) The owner or operator of an affected source subject to limitations on D/F emissions shall demonstrate initial compliance with the D/F emission limit by conducting a performance test using Method 23 of appendix A to part 60 of this chapter. The owner or operator of an in-line kiln/raw mill shall demonstrate initial compliance by conducting separate performance tests while the raw mill of the in-line kiln/raw mill is under normal operating conditions and while the raw mill of the in-line kiln/raw mill is not operating. The owner or operator of a kiln or in-line kiln/raw mill equipped with an alkali bypass shall conduct simultaneous performance tests of the kiln or in-line kiln/raw mill exhaust and the alkali bypass,

however the owner or operator of an in-line kiln/raw mill is not required to conduct a performance test of the alkali bypass exhaust when the raw mill of the in-line kiln/raw mill is not operating.

(i) Each performance test shall consist of three separate runs; each run shall be conducted under the conditions that exist when the affected source is operating at the highest load or capacity level reasonably expected to occur. The duration of each run shall be at least three hours and the sample volume for each run shall be at least 2.5 dscm (90 dscf). The concentration shall be determined for each run and the arithmetic average of the concentrations measured for the three runs shall be calculated and used to determine compliance.

(ii) The temperature at the inlet to the kiln or in-line kiln/raw mill PMCD, and where applicable, the temperature at the inlet to the alkali bypass PMCD, must be continuously recorded during the period of the Method 23 test, and the continuous temperature record(s) must be included in the performance test report.

(iii) One-minute average temperatures must be calculated for each minute of each run of the test.

(iv) The run average temperature must be calculated for each run, and the average of the run average temperatures must be determined and included in the performance test report and will determine the applicable temperature limit in accordance with §63.1344(b).

(v) If activated carbon injection is used for D/F control, the rate of activated carbon injection to the kiln or in-line kiln/raw mill exhaust, and where applicable, the rate of activated carbon injection to the alkali bypass exhaust, must be continuously recorded during the period of the Method 23 test, and the continuous injection rate record(s) must be included in the performance test report. In addition, the performance test report must include the brand and type of activated carbon used during the performance test and a continuous record of either the carrier gas flow rate or the carrier gas pressure drop for the duration of the test. Activated carbon injection rate parameters must be determined in accordance with paragraphs (b)(3)(vi) of this section.

(vi) The run average injection rate must be calculated for each run, and the average of the run average injection rates must be determined and included in the performance test report and will determine the applicable injection rate limit in accordance with §63.1344(c)(1).

(4) The owner or operator of an affected source subject to limitations on emissions of THC shall demonstrate initial compliance with the THC limit by operating a continuous emission monitor in accordance with Performance Specification 8A of appendix B to part 60 of this chapter. The duration of the performance test shall be three hours, and the average THC concentration (as calculated from the one-minute averages) during the three hour performance test shall be calculated. The owner or operator of an in-line kiln/raw mill shall demonstrate initial compliance by conducting separate performance tests while the raw mill of the in-line kiln/raw mill is under normal operating conditions and while the raw mill of the in-line kiln/raw mill is not operating.

(c) Except as provided in paragraph (e) of this section, performance tests required under paragraphs (b)(1) and (b)(2) of this section shall be repeated every five years, except that the owner or operator of a kiln, in-line kiln/raw mill or clinker cooler is not required to repeat the initial performance test of opacity for the kiln, in-line kiln/raw mill or clinker cooler.

(d) Performance tests required under paragraph (b)(3) of this section shall be repeated every 30 months.

(e) The owner or operator is required to repeat the performance tests for kilns or in-line kiln/raw mills as specified in paragraphs (b)(1) and (b)(3) of this section within 90 days of initiating any significant change in the feed or fuel from that used in the previous performance test.

(f) Table 1 of this section provides a summary of the performance test requirements of this subpart.

**TABLE 1 to §63.1349. SUMMARY OF PERFORMANCE TEST REQUIREMENTS**

| Affected source and pollutant | Performance Test |
|---|---|
| New and existing kiln and in-line kiln/raw mill[b,c] PM | EPA Method 5[a] |
| New and existing kiln and in-line kiln/raw mill[b,c] Opacity | COM if feasible[d,e] or EPA Method 9 visual opacity readings. |
| New and existing kiln and in-line kiln/raw mill[b,c,f,g] D/F | EPA Method 23[h] |
| New greenfield kiln and in-line kiln/raw mill[c] THC | THC CEM (EPA PS-8A)[i] |
| New and existing clinker cooler PM | EPA Method 5[a] |
| New and existing clinker cooler opacity | COM[d,j] or EPA Method 9 visual opacity readings |
| New and existing raw and finish mill opacity | EPA Method 9[a,j] |
| New and existing raw material dryer and materials handling processes (raw material storage, clinker storage, finished product storage, conveyor transfer points, bagging, and bulk loading and unloading systems) opacity | EPA Method 9[a,j] |
| New greenfield raw material dryer THC | THC CEM (EPA PS-8A)[i] |

[a] Required initially and every 5 years thereafter.
[b] Includes main exhaust and alkali bypass.
[c] In-line kiln/raw mill to be tested with and without raw mill in operation.
[d] Must meet COM performance specification criteria. If the fabric filter or electrostatic precipitator has multiple stacks, daily EPA Method 9 visual opacity readings may be taken instead of using a COM.
[e] Opacity limit is 20 percent.
[f] Alkali bypass is tested with the raw mill on.
[g] Temperature and (if applicable) activated carbon injection parameters determined separately with and without the raw mill operating.
[h] Required initially and every 30 months thereafter.
[i] EPA Performance Specification (PS)-8A of appendix B to 40 CFR part 60.
[j] Opacity limit is 10 percent.

**§63.1350 Monitoring requirements.**

(a) The owner or operator of each portland cement plant shall prepare for each affected source subject to the provisions of this subpart, a written operations and maintenance plan. The plan shall be submitted to the Administrator for review and approval as part of the application for a part 70 permit and shall include the following information:

(1) Procedures for proper operation and maintenance of the affected source and air pollution control devices in order to meet the emission limits and operating limits of §§63.1343 through 63.1348;

(2) Corrective actions to be taken when required by paragraph (e) of this section;

(3) Procedures to be used during an inspection of the components of the combustion system of each kiln and each in-line kiln raw mill located at the facility at least once per year; and

(4) Procedures to be used to periodically monitor affected sources subject to opacity standards under §§63.1346 and 63.1348. Such procedures must include the provisions of paragraphs (a)(4)(i) through (a)(4)(iv) of this section.

(i) The owner or operator must conduct a monthly 1-minute visible emissions test of each affected source in accordance with Method 22 of Appendix A to part 60 of this chapter. The test must be conducted while the affected source is in operation.

(ii) If no visible emissions are observed in six consecutive monthly tests for any affected source, the owner or operator may decrease the frequency of testing from monthly to semi-annually for that affected source. If visible emissions are observed during any semi-annual test, the owner or operator must resume testing of that affected source on a monthly basis and maintain that schedule until no visible emissions are observed in six consecutive monthly tests.

(iii) If no visible emissions are observed during the semi-annual test for any affected source, the owner or operator may decrease the frequency of testing from semi-annually to annually for that affected source. If visible emissions are observed during any annual test, the owner or operator must resume testing of that affected source on a monthly basis and maintain that schedule until no visible emissions are observed in six consecutive monthly tests.

(iv) If visible emissions are observed during any Method 22 test, the owner or operator must conduct a 6-minute test of opacity in accordance with Method 9 of appendix A to part 60 of this chapter. The Method 9 test must begin within one hour of any observation of visible emissions.

(b) Failure to comply with any provision of the operations and maintenance plan developed in accordance with paragraph (a) of this section shall be a violation of the standard.

(c) The owner or operator of a kiln or in-line kiln/raw mill shall monitor opacity at each point where emissions are vented from these affected sources including alkali bypasses in accordance with paragraphs (c)(1) through (c)(3) of this section.

(1) Except as provided in paragraph (c)(2) of this section, the owner or operator shall install, calibrate, maintain, and continuously operate a continuous opacity monitor (COM) located at the outlet of the PM control device to continuously monitor the opacity. The COM shall be installed, maintained, calibrated, and operated as required by subpart A, general provisions of this part, and according to PS-1 of appendix B to part 60 of this chapter.

(2) The owner or operator of a kiln or in-line kiln/raw mill subject to the provisions of this subpart using a fabric filter with multiple stacks or an electrostatic precipitator with multiple stacks may, in lieu of installing the continuous opacity monitoring system required by paragraph (c)(1) of this section, monitor opacity in accordance with paragraphs (c)(2)(i) through (ii) of this section. If the control device exhausts through a monovent, or if the use of a COM in accordance with the installation specifications of PS-1 of appendix B to part 60 of this chapter is not feasible, the owner or operator must monitor opacity in accordance with paragraphs (c)(2)(i) through (ii) of this section.

(i) Perform daily visual opacity observations of each stack in accordance with the procedures of Method 9 of appendix A of part 60 of this chapter. The Method 9 test shall be conducted while the affected source is operating at the highest load or capacity level reasonably expected to occur within the day. The duration of the Method 9 test shall be at least 30 minutes each day.

(ii) Use the Method 9 procedures to monitor and record the average opacity for each six-minute period during the test.

(3) To remain in compliance, the opacity must be maintained such that the 6-minute average opacity for any 6-minute block period does not exceed 20 percent. If the average opacity for any 6-minute block period exceeds 20 percent, this shall constitute a violation of the standard.

(d) The owner or operator of a clinker cooler shall monitor opacity at each point where emissions are vented from the clinker cooler in accordance with paragraphs (d)(1) through (d)(3) of this section.

(1) Except as provided in paragraph (d)(2) of this section, the owner or operator shall install, calibrate, maintain, and continuously operate a COM located at the outlet of the clinker cooler PM control device to continuously monitor the opacity. The COM shall be installed, maintained, calibrated, and operated as required by subpart A, general provisions of this part, and according to PS-1 of appendix B to part 60 of this chapter.

(2) The owner or operator of a clinker cooler subject to the provisions of this subpart using a fabric filter with multiple stacks or an electrostatic precipitator with multiple stacks may, in lieu of installing the continuous opacity monitoring system required by paragraph (d)(1) of this section, monitor opacity in accordance with paragraphs (d)(2)(i) through (ii) of this section. If the control device exhausts through a monovent, or if the use of a COM in accordance with the installation specifications of PS-1 of appendix B to part 60 of this chapter is not feasible, the owner or operator must monitor opacity in accordance with paragraphs (d)(2)(i) through (ii) of this section.

(i) Perform daily visual opacity observations of each stack in accordance with the procedures of Method 9 of appendix A of part 60 of this chapter. The Method 9 test shall be conducted while the affected source is operating at the highest load or capacity level reasonably expected to occur within the day. The duration of the Method 9 test shall be at least 30 minutes each day.

(ii) Use the Method 9 procedures to monitor and record the average opacity for each six-minute period during the test.

(3) To remain in compliance, the opacity must be maintained such that the 6-minute average opacity for any 6-minute block period does not exceed 10 percent. If the average opacity for any 6-minute block period exceeds 10 percent, this shall constitute a violation of the standard.

(e) The owner or operator of a raw mill or finish mill shall monitor opacity by conducting daily visual emissions observations of the mill sweep and air separator PMCDs of these affected sources, in accordance with the procedures of Method 22 of appendix A of part 60 of this chapter. The Method 22 test shall be conducted while the affected source is operating at the highest load or capacity level reasonably expected to occur within the day. The duration of the Method 22 test shall be six minutes. If visible emissions are observed during any Method 22 visible emissions test, the owner or operator must:

(1) Initiate, within one-hour, the corrective actions specified in the site specific operating and maintenance plan developed in accordance with paragraphs (a)(1) and (a)(2) of this section; and

(2) Within 24 hours of the end of the Method 22 test in which visible emissions were observed, conduct a visual opacity test of each stack from which visible emissions were observed in accordance with Method 9 of appendix A of part 60 of this chapter. The duration of the Method 9 test shall be thirty minutes.

(f) The owner or operator of an affected source subject to a limitation on D/F emissions shall monitor D/F emissions in accordance with paragraphs (f)(1) through (f)(6) of this section.

(1) The owner or operator shall install, calibrate, maintain, and continuously operate a continuous monitor to record the temperature of the exhaust gases from the kiln, in-line kiln/raw mill and alkali bypass, if applicable, at the inlet to, or upstream of, the kiln, in-line kiln/raw mill and/or alkali bypass PM control devices.

(i) The recorder response range must include zero and 1.5 times either of the average temperatures established according to the requirements in §63.1349(b)(3)(iv).

(ii) The reference method must be a National Institute of Standards and Technology calibrated reference thermocouple-potentiometer system or alternate reference, subject to approval by the Administrator.

(2) The owner or operator shall monitor and continuously record the temperature of the exhaust gases from the kiln, in-line kiln/raw mill and alkali bypass, if applicable, at the inlet to the kiln, in-line kiln/raw mill and/or alkali bypass PMCD.

(3) The three-hour rolling average temperature shall be calculated as the average of 180 successive one-minute average temperatures.

(4) Periods of time when one-minute averages are not available shall be ignored when calculating three-hour rolling averages. When one-minute averages become available, the first one-minute average is added to the previous 179 values to calculate the three-hour rolling average.

(5) When the operating status of the raw mill of the in-line kiln/raw mill is changed from off to on, or from on to off the calculation of the three-hour rolling average temperature must begin anew, without considering previous recordings.

(6) The calibration of all thermocouples and other temperature sensors shall be verified at least once every three months.

(g) The owner or operator of an affected source subject to a limitation on D/F emissions that employs carbon injection as an emission control technique shall comply with the monitoring requirements of paragraphs (f)(1) through (f)(6) and (g)(1) through (g)(6) of this section to demonstrate continuous compliance with the D/F emission standard.

(1) Install, operate, calibrate and maintain a continuous monitor to record the rate of activated carbon injection. The accuracy of the rate measurement device must be $\pm$ 1 percent of the rate being measured.

(2) Verify the calibration of the device at least once every three months.

(3) The three-hour rolling average activated carbon injection rate shall be calculated as the average of 180 successive one-minute average activated carbon injection rates.

(4) Periods of time when one-minute averages are not available shall be ignored when calculating three-hour rolling averages. When one-minute averages become available, the first one-minute average is added to the previous 179 values to calculate the three-hour rolling average.

(5) When the operating status of the raw mill of the in-line kiln/raw mill is changed from off to on, or from on to off the calculation of the three-hour rolling average activated carbon injection rate must begin anew, without considering previous recordings.

(6) The owner or operator must install, operate, calibrate and maintain a continuous monitor to record the activated carbon injection system carrier gas parameter (either the carrier gas flow rate or the carrier gas pressure drop) established during the D/F performance test in accordance with paragraphs (g)(6)(i) through (g)(6)(iii) of this section.

(i) The owner or operator shall install, calibrate, operate and maintain a device to continuously monitor and record the parameter value.

(ii) The owner or operator must calculate and record three-hour rolling averages of the parameter value.

(iii) Periods of time when one-minute averages are not available shall be ignored when calculating three-hour rolling averages. When one-minute averages become available, the first one-minute average shall be added to the previous 179 values to calculate the three-hour rolling average.

(h) The owner or operator of an affected source subject to a limitation on THC emissions under this subpart shall comply with the monitoring requirements of paragraphs (h)(1) through (h)(3) of this section to demonstrate continuous compliance with the THC emission standard:

(1) The owner or operator shall install, operate and maintain a THC continuous emission monitoring system in accordance with Performance Specification 8A, of appendix B to part 60 of this chapter

and comply with all of the requirements for continuous monitoring systems found in the general provisions, subpart A of this part.

(2) The owner or operator is not required to calculate hourly rolling averages in accordance with section 4.9 of Performance Specification 8A.

(3) Any thirty-day block average THC concentration in any gas discharged from a greenfield raw material dryer, the main exhaust of a greenfield kiln, or the main exhaust of a greenfield in-line kiln/raw mill, exceeding 50 ppmvd, reported as propane, corrected to seven percent oxygen, is a violation of the standard.

(i) The owner or operator of any kiln or in-line kiln/raw mill subject to a D/F emission limit under this subpart shall conduct an inspection of the components of the combustion system of each kiln or in-line kiln raw mill at least once per year.

(j) The owner or operator of an affected source subject to a limitation on opacity under §63.1346 or §63.1348 shall monitor opacity in accordance with the operation and maintenance plan developed in accordance with paragraph (a) of this section.

(k) The owner or operator of an affected source subject to a particulate matter standard under §63.1343 shall install, calibrate, maintain and operate a particulate matter continuous emission monitoring system (PM CEMS) to measure the particulate matter discharged to the atmosphere. The compliance deadline for installing the PM CEMS and all requirements relating to performance of the PM CEMS and implementation of the PM CEMS requirement is deferred pending further rulemaking.

(l) An owner or operator may submit an application to the Administrator for approval of alternate monitoring requirements to demonstrate compliance with the emission standards of this subpart, except for emission standards for THC, subject to the provisions of paragraphs (l)(1) through (l)(6) of this section.

(1) The Administrator will not approve averaging periods other than those specified in this section, unless the owner or operator documents, using data or information, that the longer averaging period will ensure that emissions do not exceed levels achieved during the performance test over any increment of time equivalent to the time required to conduct three runs of the performance test.

(2) If the application to use an alternate monitoring requirement is approved, the owner or operator must continue to use the original monitoring requirement until approval is received to use another monitoring requirement.

(3) The owner or operator shall submit the application for approval of alternate monitoring requirements no later than the notification of performance test. The application must contain the information specified in paragraphs (l)(3)(i) through (l)(3)(iii) of this section:

(i) Data or information justifying the request, such as the technical or economic infeasibility, or the impracticality of using the required approach;

(ii) A description of the proposed alternative monitoring requirement, including the operating parameter to be monitored, the monitoring approach and technique, the averaging period for the limit, and how the limit is to be calculated; and

(iii) Data or information documenting that the alternative monitoring requirement would provide equivalent or better assurance of compliance with the relevant emission standard.

(4) The Administrator will notify the owner or operator of the approval or denial of the application within 90 calendar days after receipt of the original request, or within 60 calendar days of the receipt of any supplementary information, whichever is later. The Administrator will not approve an alternate monitoring application unless it would provide equivalent or better assurance of compliance with the relevant emission standard. Before disapproving any alternate monitoring application, the Administrator will provide:

(i) Notice of the information and findings upon which the intended disapproval is based; and

(ii) Notice of opportunity for the owner or operator to present additional supporting information before final action is taken on the application. This notice will specify how much additional time is allowed for the owner or operator to provide additional supporting information.

(5) The owner or operator is responsible for submitting any supporting information in a timely manner to enable the Administrator to consider the application prior to the performance test. Neither submittal of an application, nor the Administrator's failure to approve or disapprove the application relieves the owner or operator of the responsibility to comply with any provision of this subpart.

(6) The Administrator may decide at any time, on a case-by-case basis that additional or alternative operating limits, or alternative approaches to establishing operating limits, are necessary to demonstrate compliance with the emission standards of this subpart.

(m) A summary of the monitoring requirements of this subpart is given in Table 1 to this section.

**Table 1 to §63.1350. Monitoring Requirements.**

| Affected Source/Pollutant or Opacity | Monitor Type/ Operation/Process | Monitoring Requirements |
|---|---|---|
| All affected sources | Operations and maintenance plan | Prepare written plan for all affected sources and control devices |
| All kilns and in-line kiln raw mills at major sources (including alkali bypass)/opacity | Continuous opacity monitor, if applicable | Install, calibrate, maintain and operate in accordance with general provisions and with PS-1 |
| | Method 9 opacity test, if applicable | Daily test of at least 30-minutes, while kiln is at highest load or capacity level |
| Kilns and in-line kiln raw mills at major sources (including alkali bypass)/particulate matter | Particulate matter continuous emission monitoring system | Deferred |
| Kilns and in-line kiln raw mills at major and area sources (including alkali bypass)/ D/F | Combustion system inspection | Conduct annual inspection of components of combustion system |
| | Continuous temperature monitoring at PMCD inlet | Install, operate, calibrate and maintain continuous temperature monitoring and recording system; calculate three-hour rolling averages; verify temperature sensor calibration at least quarterly |
| Kilns and in-line kiln raw mills at major and area sources (including alkali bypass)/ D/F (continued) | Activated carbon injection rate monitor, if applicable | Install, operate, calibrate and maintain continuous activated carbon injection rate monitor; calculate three-hour rolling averages; verify calibration at least quarterly; install, operate, calibrate and maintain carrier gas flow rate monitor or carrier gas pressure drop monitor; calculate three-hour rolling averages; document carbon specifications |
| New greenfield kilns and in-line kiln raw mills at major and area sources/THC | Total hydrocarbon continuous emission monitor | Install, operate, and maintain THC CEM in accordance with PS-8A; calculate 30-day block average THC concentration |
| Clinker coolers at major sources/opacity | Continuous opacity monitor, if applicable | Install, calibrate, maintain and operate in accordance with general provisions and with PS-1 |
| | Method 9 opacity test, if applicable | Daily test of at least 30-minutes, while kiln is at highest load or capacity level. |
| Raw mills and finish mills at major sources/opacity | Method 22 visible emissions test | Conduct daily 6-minute Method 22 visible emissions test while mill is operating at highest load or capacity level; if visible emissions are observed, initiate corrective action within one hour and conduct 30-minute Method 9 test within 24 hours |
| New greenfield raw material dryers at major and area sources/THC | Total hydrocarbon continuous emission monitor | Install, operate, and maintain THC CEM in accordance with PS-8A; calculate 30-day block average THC concentration |
| Raw material dryers; raw material, clinker, finished product storage bins; conveying system transfer points; bagging systems; and bulk loading and unloading systems at major sources/opacity | Method 22 visible emissions test | As specified in operation and maintenance plan |

**§63.1351 Compliance dates.**

(a) The compliance date for an owner or operator of an existing affected source subject to the provisions of this subpart is **[insert date 3 years from publication in the FEDERAL REGISTER]**.

(b) The compliance date for an owner or operator of an affected source subject to the provisions of this subpart that commences new construction or reconstruction after March 24, 1998 is ~~[Insert date of publication in the FEDERAL REGISTER] or~~ immediately upon startup of operations~~, whichever is later.~~

**63.1352 Additional Test Methods.**

(a) Owners or operators conducting tests to determine the rates of emission of hydrogen chloride (HCl) from kilns, in-line kiln/raw mills and associated bypass stacks at portland cement manufacturing facilities, for use in applicability determinations under §63.1340 are permitted to use Method 320 or Method 321 of appendix A of this part.

(b) Owners or operators conducting tests to determine the rates of emission of hydrogen chloride (HCl) from kilns, in-line kiln/raw mills and associated bypass stacks at portland cement manufacturing facilities, for use in applicability determinations under §63.1340 are permitted to use Methods 26 or 26A of appendix A to part 60 of this chapter, except that the results of these tests shall not be used to establish status as an area source.

(c) Owners or operators conducting tests to determine the rates of emission of specific organic HAP from raw material dryers, kilns and in-line kiln/raw mills at portland cement manufacturing facilities, for use in applicability determinations under §63.1340 of this subpart are permitted to use Method 320 of appendix A to this part, or Method 18 of appendix A to part 60 of this chapter.

NOTIFICATION, REPORTING AND RECORDKEEPING

**§63.1353 Notification requirements.**

(a) The notification provisions of 40 CFR part 63, subpart A that apply and those that do not apply to owners and operators of affected sources subject to this subpart are listed in Table 1 of this subpart. If any State requires a notice that contains all of the information required in a notification listed in this section, the owner or operator may send the Administrator a copy of the notice sent to the State to satisfy the requirements of this section for that notification.

(b) Each owner or operator subject to the requirements of this subpart shall comply with the notification requirements in §63.9 as follows:

(1) Initial notifications as required by §63.9(b) through (d). For the purposes of this subpart, a Title V or 40 CFR part 70 permit application may be used in lieu of the initial notification required under §63.9(b), provided the same information is contained in the permit application as required by §63.9(b), and the State to which the permit application has been submitted has an approved operating permit program under part 70 of this chapter and has received delegation of authority from the EPA. Permit applications shall be submitted by the same due dates as those specified for the initial notification.

(2) Notification of performance tests, as required by §§63.7 and 63.9(e).

(3) Notification of opacity and visible emission observations required by §63.1349 in accordance with §§63.6(h)(5) and 63.9(f).

(4) Notification, as required by §63.9(g), of the date that the continuous emission monitor performance evaluation required by §63.8(e) of this part is scheduled to begin.

(5) Notification of compliance status, as required by §63.9(h).

**§63.1354 Reporting requirements.**

(a) The reporting provisions of subpart A of this part that apply and those that do not apply to owners or operators of affected sources subject to this subpart are listed in Table 1 of this subpart. If any State requires a report that contains all of the information required in a report listed in this section, the owner or operator may send the Administrator a copy of the report sent to the State to satisfy the requirements of this section for that report.

(b) The owner or operator of an affected source shall comply with the reporting requirements specified in §63.10 of the general provisions of this part 63, subpart A as follows:

(1) As required by §63.10(d)(2), the owner or operator shall report the results of performance tests as part of the notification of compliance status.

(2) As required by §63.10(d)(3), the owner or operator of an affected source shall report the opacity results from tests required by §63.1349.

(3) As required by §63.10(d)(4), the owner or operator of an affected source who is required to submit progress reports as a condition of receiving an extension of compliance under §63.6(i) shall submit such reports by the dates specified in the written extension of compliance.

(4) As required by §63.10(d)(5), if actions taken by an owner or operator during a startup, shutdown, or malfunction of an affected source (including actions taken to correct a malfunction) are consistent with the procedures specified in the source's startup, shutdown, and malfunction plan specified in §63.6(e)(3), the owner or operator shall state such information in a semiannual report. Reports shall only be required if a startup, shutdown, or malfunction occurred during the reporting period. The startup, shutdown, and malfunction report may be submitted simultaneously with the excess emissions and continuous monitoring system performance reports; and

(5) Any time an action taken by an owner or operator during a startup, shutdown, or malfunction (including actions taken to correct a malfunction) is not consistent with the procedures in the startup, shutdown, and malfunction plan, the owner or operator shall make an immediate report of the actions taken for that event within 2 working days, by telephone call or facsimile (FAX) transmission. The immediate report shall be followed by a letter, certified by the owner or operator or other responsible official, explaining the circumstances of the event, the reasons for not following the startup, shutdown, and malfunction plan, and whether any excess emissions and/or parameter monitoring exceedances are believed to have occurred.

(6) As required by §63.10(e)(2), the owner or operator shall submit a written report of the results of the performance evaluation for the continuous monitoring system required by §63.8(e). The owner or operator shall submit the report simultaneously with the results of the performance test.

(7) As required by §63.10(e)(2), the owner or operator of an affected source using a continuous opacity monitoring system to determine opacity compliance during any performance test required under §63.7 and described in §63.6(d)(6) shall report the results of the continuous opacity monitoring system performance evaluation conducted under §63.8(e).

(8) As required by §63.10(e)(3), the owner or operator of an affected source equipped with a continuous emission monitor shall submit an excess emissions and continuous monitoring system performance report for any event when the continuous monitoring system data indicate the source is not in compliance with the applicable emission limitation or operating parameter limit.

(9) The owner or operator shall submit a summary report semiannually which contains the information specified in §63.10(e)(3)(vi). In addition, the summary report shall include:

(i) All exceedences of maximum control device inlet gas temperature limits specified in §63.1344(a) and (b);

(ii) All failures to calibrate thermocouples and other temperature sensors as required under §63.1350(f)(7) of this subpart; and

(iii) All failures to maintain the activated carbon injection rate, and the activated carbon injection carrier gas flow rate or pressure drop, as applicable, as required under §63.1344(c).

(iv) The results of any combustion system component inspections conducted within the reporting period as required under §63.1350(i).

(v) All failures to comply with any provision of the operation and maintenance plan developed in accordance with §63.1350(a).

(10) If the total continuous monitoring system downtime for any CEM or any continuous monitoring system (CMS) for the reporting period is ten percent or greater of the total operating time for the reporting period, the owner or operator shall submit an excess emissions and continuous monitoring system performance report along with the summary report.

**§63.1355 Recordkeeping requirements.**

(a) The owner or operator shall maintain files of all information (including all reports and notifications) required by this section recorded in a form suitable and readily available for inspection and review as required by §63.10(b)(1). The files shall be retained for at least five years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent two years of data shall be retained on site. The remaining three years of data may be retained off site. The files may be maintained on microfilm, on a computer, on floppy disks, on magnetic tape, or on microfiche.

(b) The owner or operator shall maintain records for each affected source as required by §63.10(b)(2) and (b)(3) of this part; and

(1) All documentation supporting initial notifications and notifications of compliance status under §63.9 of this part;

(2) All records of applicability determination, including supporting analyses; and

(3) If the owner or operator has been granted a waiver under §63.8(f)(6), any information demonstrating whether a source is meeting the requirements for a waiver of recordkeeping or reporting requirements.

(c) In addition to the recordkeeping requirements in paragraph (b) of this section, the owner or operator of an affected source equipped with a continuous monitoring system shall maintain all records required by §63.10(c).

OTHER

**§63.1356 Exemption from new source performance standards.**

(a) Except as provided in paragraphs (a)(1) and (a)(2) of this section, any affected source subject to the provisions of this subpart is exempted from any otherwise applicable new source performance standard contained in 40 CFR part 60, subpart F.

(1) Kilns and in-line kiln/raw mills, as applicable under 40 CFR 60.60(b), located at area sources are subject to PM and opacity limits and associated reporting and recordkeeping, under 40 CFR part 60, subpart F.

(2) Greenfield raw material dryers, as applicable under 40 CFR 60.60(b), located at area sources are subject to opacity limits and associated reporting and recordkeeping under 40 CFR part 60, subpart F.

**§63.1357 Temporary, conditioned exemption from particulate matter and opacity standards.**

(a) Subject to the limitations of paragraphs (b) through (f) of this section, an owner or operator conducting PM CEMS correlation tests (that is, correlation with manual stack methods) is exempt from:

(1) Any particulate matter and opacity standards of part 60 or part 63 of this chapter that are applicable to cement kilns and in-line kiln/raw mills.

(2) Any permit or other emissions or operating parameter or other limitation on workplace practices that are applicable to cement kilns and in-line kiln raw mills to ensure compliance with any particulate matter and opacity standards of this part or part 60 of this chapter.

(b) The owner or operator must develop a PM CEMS correlation test plan. The plan must be submitted to the Administrator for approval at least 90 days before the correlation test is scheduled to be conducted. The plan must include:

(1) The number of test conditions and the number of runs for each test condition;

(2) The target particulate matter emission level for each test condition;

(3) How the operation of the affected source will be modified to attain the desired particulate matter emission rate; and

(4) The anticipated normal particulate matter emission level.

(c) The Administrator will review and approve or disapprove the correlation test plan in accordance with §63.7(c)(3)(i) and (iii). If the Administrator fails to approve or disapprove the correlation test plan within the time period specified in §63.7(c)(3)(iii), the plan shall be considered approved, unless the Administrator has requested additional information.

(d) The stack sampling team must be on-site and prepared to perform correlation testing no later than 24 hours after operations are modified to attain the desired particulate matter emissions concentrations, unless the correlation test plan documents that a longer period is appropriate.

(e) The particulate matter and opacity standards and associated operating limits and conditions will not be waived for more than 96 hours, in the aggregate, for a correlation test, including all runs and conditions.

(f) The owner or operator must return the affected source to operating conditions indicative of compliance with the applicable particulate matter and opacity standards as soon as possible after correlation testing is completed.

**§63.1358 Delegation of Authority.**

(a) In delegating implementation and enforcement authority to a State under subpart E of this part, the authorities contained in paragraph (b) of this section shall be retained by the Administrator and not transferred to a State.

(b) Authority which will not be delegated to States:

(1) Approval of alternative non-opacity emission standards under §63.6(g).

(2) Approval of alternative opacity standards under §63.6(h)(9).

(3) Approval of major changes to test methods under §§63.7(e)(2)(ii) and 63.7(f). A major change to a test method is a modification to a federally enforceable test method that uses unproven technology or procedures or is an entirely new method (sometimes necessary when the required test method is unsuitable).

(4) Approval of major changes to monitoring under §63.8(f). A major change to monitoring is a modification to federally enforceable monitoring that uses unproven technology or procedures, is an entirely new method (sometimes necessary when the required monitoring is unsuitable), or is a change in the averaging period.

(5) Waiver of recordkeeping under §63.10(f).

**§63.1359** [Reserved]

INTEROFFICE MEMORANDUM

Date: 20-May-1999 02:35pm
From: Joseph Kahn TAL
KAHN_J
Dept: Air Resources Management
Tel No: 850/921-9519

To: koogler@worldnet.att.net

Subject: Letter to Suwannee American Cement Company

John & Steve,

We sent out the attached letter and enclosure in today's mail. I disco
vered
too late that the letter has an error in the subject line, as it is not
in
reference to BACT for SO2. Feel free to call if you have any questions
. (By
the way, I was told that Frank Darabi has scheduled a meeting with Howa
rd on
Thursday, May 27th at 10 a.m. Clair and I will also attend.)

-Joe

# INTEROFFICE MEMORANDUM

**Date:** 19-May-1999 04:26pm
**From:** Ellen_Porter
Ellen_Porter@nps.gov
**Dept:**
**Tel No:**

| | | |
|---|---|---|
| **To:** | KAHN_J | ( KAHN_J@A1 ) |
| **To:** | HOLLADAY_C | ( HOLLADAY_C@A1 ) |
| **CC:** | Don_Shepherd | ( Don_Shepherd@nps.gov ) |
| **CC:** | John_Notar | ( John_Notar@nps.gov ) |
| **CC:** | Bud_Rolofson | ( Bud_Rolofson@nps.gov ) |

**Subject:** Suwannee Cement

Our technical review comments on recent information from Suwannee are attached. A letter from our regional director will follow.

Cleve, I am puzzled that Suwannee's regional haze analysis shows the greatest impact at St. Marks, even though it is further (102 km) from Suwannee than Okefenokee (83 km) or Chassahowitkza (88 km). Can Suwannee provide us with a floppy with their modeling runs?

**Technical Review of Additional Information**
**For a New Cement Plant**
**Suwannee American Cement Company**
**Branford, Florida**
**PSD-FL-259**

**by**

**Air Quality Branch, Fish and Wildlife Service – Denver**
**May 19, 1999**

In December 1998 we provided technical comments to the Florida Department of Environmental Protection (FDEP) on the Prevention of Significant Deterioration Permit Application for Suwannee American Cement Company's (Suwannee) proposed new cement plant in Branford, Suwannee County, Florida. We provided additional comments, via fax, in February 1999. The cement plant will be a dry process preheater/precalciner kiln, producing 2,300 tons per day of clinker, and up to 1,191,360 tons per year of various types and grades of Portland cement. The primary fuels will be coal and petroleum coke. Natural gas will be used as a startup fuel and supplemental fuel. Whole tires and/or tire-derived fuel will be used as a supplemental fuel. The facility is located 83 km southwest of Okefenokee Wilderness and 88 km north of Chassahowitzka Wilderness, and 102 km east of St. Marks Wilderness, all Class I air quality areas administered by the U.S. Fish and Wildlife Service (FWS). This project will result in PSD-significant increases in emissions of nitrogen oxides ($NO_X$), sulfur dioxide ($SO_2$), volatile organic compounds (VOC), particulate matter (PM), fine particulate matter less than 10 microns in diameter (PM-10), and carbon monoxide (CO). Emissions (in tons per year – TPY) are summarized below.

| POLLUTANT | EMISSIONS INCREASE (TPY) |
|---|---|
| $NO_X$ | 1175 |
| SO2 | 118 |
| VOC | 50 |
| PM | 267 |
| PM-10 | 228 |
| CO | 1511 |

We recommended in our December 1998 comments that Suwannee re-evaluate its proposed control technology for $NO_X$ emissions. We also asked that Suwannee be required to evaluate potential impacts to visibility at the Class I areas, using the guidance of the Interagency Workgroup on Air Quality Modeling (IWAQM) at: http://www.epa.gov/scram001/; "Model Support"; "6th Modeling Conference"; "IWAQM". In our February fax, we suggested that Suwannee evaluate installation of a wet scrubber for $SO_2$ control. This recommendation was based on recent information from a proposed new portland cement plant in Colorado (Holman).

**Best Available Control Technology (BACT) Analysis**

Suwannee provided additional information in February 1999 that supported its best available control technology (BACT) analysis for $NO_X$ emissions. We agreed with their conclusions, based on this additional information. Suwannee provided additional information regarding its BACT analysis for $SO_2$ emissions in May 1999. We do not agree with Suwannee's conclusion that, because their $SO_2$ emissions are already relatively low, they should not have to consider adding scrubbers for further reductions. A BACT analysis should not discount a potential control technology on the basis that emissions are already low. Suwannee should thoroughly evaluate the use of scrubbers at their proposed facility.

**Regional Haze Analysis**

Suwannee submitted a regional haze analysis in March 1999 that evaluated potential impacts from the project to visibility at St. Marks, Chassahowitzka, and Okefenokee. Suwannee performed the analysis incorrectly, applying a relative humidity value of 80% instead of the 95% recommended in the IWAQM guidance, referred to in our December 1999 comments. (Note that the use of a lower relative humidity value will result in smaller changes in light extinction, i.e., smaller impacts to visibility.) Suwannee stated that, in using the 80% relative humidity value, they were following advice supplied by our office in 1995 and they had used this value in several past analyses without objection by FDEP. They therefore felt justified in using this approach.

However, a more recent examination of meteorological data indicates that relative humidities generally exceed 80% in Florida. Therefore, when we supplied our December 1998 comments, we advised Suwannee to perform the analysis following the IWAQM guidelines, which prescribe a relative humidity value of 95% if actual relative humidity values are not available. Suwannee is not justified in disregarding our recent comments in order to use outdated advice to their advantage.

We recommend that Suwannee perform the analysis again, either using a relative humidity value of 95% or actual relative humidity values.

Contact: Ellen Porter, Air Quality Branch (303) 969-2617.

DEP ROUTING AND TRANSMITTAL SLIP

TO: (NAME, OFFICE, LOCATION)

1. CINDY PHILLIPS

2.

3.

4.

5.

PLEASE PREPARE REPLY FOR:

- ____ SECRETARY'S SIGNATURE
- ____ DIV/DIST DIR SIGNATURE
- ____ MY SIGNATURE
- ____ YOUR SIGNATURE
- ____ DUE DATE ____

ACTION/DISPOSITION

- ____ DISCUSS WITH ME
- ✓ COMMENTS/ADVISE
- ____ REVIEW AND RETURN
- ____ SET UP MEETING
- ✓ FOR YOUR INFORMATION
- ____ HANDLE APPROPRIATELY
- ____ INITIAL AND FORWARD
- ____ SHARE WITH STAFF
- ____ FOR YOUR FILES

COMMENTS: Cindy,

THIS IS THE RESPONSE FROM SUWANNEE AMERICAN REGARDING THE DIOXIN ISSUE. PLEASE LET ME KNOW IF YOU HAVE ANY COMMENTS.

THANKS.

DISCUSSED 5/18/99. FINAL MACT SIGNED BY C. BROWNER 5/14/99 PER JOE KAHN TO CINDY PHILLIPS.

FROM: JOE KAHN DATE: 5/7/99 PHONE: 1-9519

DEP 15-026 (12/93)

4. Provide an estimate of emissions from truck traffic associated with operating the proposed plant. This appears to be a particular concern to the public because there is no available rail line in existence to the proposed location.

*Response:* The applicant notes that the matters inquired of in this request are not related to those matters allowed under Section 403.0876(1), F.S., and therefore requests that the Department begin processing the permit application under Section 403.0876(2)(a), F.S.

5. Regarding the MACT assessment, evaluate the applicability of meeting the dioxin emissions of the best controlled source.

*Response:* The Clean Air Act, at Section 112(d), discusses the National Emission Standards for Hazardous Air Pollutants from source categories. The EPA Administrator is charged with promulgating emissions standards applicable to new or existing sources of hazardous air pollutants and requiring the maximum degree of reduction in emissions of the hazardous air pollutants. In doing so, the Administrator is to take into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, and must determine that the standard is achievable for new or existing sources in the category or subcategory to which the emission standard applies.

Section 112(d)(3) describes the requirements for emission standards for new sources as:

> *The maximum degree of reduction in emissions that is deemed achievable for new sources in a category or subcategory shall not be less stringent than the <u>emission control</u> that is achieved in practice by the best controlled similar source, as determined by the Administrator.* [emphasis added]



KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

Therefore, compliance with the MACT standard for new cement plants is the level of emission control that is achieved in practice by the best controlled similar source.

The Administrator has determined that the control technology of the best controlled similar dry process cement plant is the reduction of kiln exhaust gas temperature at the particulate matter control device inlet[1]. The Administrator further determined that dioxin emissions levels achieved with activated carbon injection (on other "potentially similar sources") are expected to be about the same as that achieved with temperature reduction.

To achieve the control system temperatures that are consistent with MACT requirements in the Suwannee American Cement plant, with the plant operating in the direct mode (bypassing the raw mill), the gas stream leaving the preheater tower will be cooled to approximately 300° F in a quench tower prior to entering the kiln electrostatic precipitator. When the plant is operating in the compound mode (with the raw mill operating), the hot gases from the preheater pass through the raw mill drying the raw feed. In this mode of operation, the temperature of the gas stream is reduced to approximately 230° F prior to entering the kiln electrostatic precipitator. In both cases, the inlet temperature to the kiln electrostatic precipitator is well below temperatures associated with the formation of dioxins and furans. These operating practices are consistent with achievement of the MACT standard promulgated by EPA for Portland

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[1] *Preamble to Propsed NESHAP for the Portland Cement Manufacturing Industry. March 24, 1998, U.S. Environmental Protection Agency.*

cement plants.

6. Estimate $PM_{2.5}$ emissions from the plant and characterize the nature of these emissions, particularly as compared to the $PM_{10}$ emissions.

*Response:* The applicant notes that the matters inquired of in this request are not related to those matters allowed under Section 403.0876(1), F.S., and therefore requests that the Department begin processing the permit application under Section 403.0876(2)(a), F.S. However, in a continuing effort to be responsive to the concerns behind the questions asked, the applicant submits the following information, provided the submittal does not affect the permit processing time clock.

Based on EPA estimates (Compilation of Air Pollutant Emission Factors, EPA Publication AP-42, Version 5, January 1995), 50-60 percent of $PM_{10}$ from Portland cement plants is $PM_{2.5}$. The nature of these particles ranges from raw materials such as limestone, sand and clay through the intermediary products to finished cement. Some portion of the particulate matter will be products of combustion and some portion will be post-combustion products.

7. Consider installing ambient monitors for $PM_{2.5}$ and ozone in locations appropriate for assessing the impacts of the proposed plant at the Ichetucknee Springs State Park and the area around the site.

*Response:* The applicant notes that the matters inquired of in this request are not related to those matters allowed under Section 403.0876(1), F.S., and therefore requests that the Department begin processing the permit application under Section 403.0876(2)(a), F.S.

5/14/99

# FACT SHEET
# FINAL AIR TOXICS RULE FOR
# PORTLAND CEMENT MANUFACTURING PLANTS

## TODAY'S ACTION...

- The Environmental Protection Agency (EPA) is today issuing a final regulation to reduce emissions of toxic air pollutants from portland cement manufacturing plants. Portland cement is an ingredient in concrete, which is a widely used construction material. Air toxics, also referred to as hazardous air pollutants (HAPs), are those pollutants that are known or suspected to cause cancer or other serious health effects.

- EPA developed today's rule in close partnership with representatives of the portland cement industry as well as representatives of state and local agencies.

## WHAT ARE THE HEALTH AND ENVIRONMENTAL BENEFITS OF THIS ACTION?

- EPA's rule will reduce emissions of air toxics from new and existing portland cement manufacturing plants by approximately 90 tons annually, representing a 31 percent reduction from current levels.

- These include reductions in emissions of air toxics, such as arsenic, cadmium, chromium, lead, benzene, toluene, dioxins/furans, hexane, and formaldehyde from portland cement plants. Specifically, this rule will reduce annual emissions of dioxins/furans by 36 percent. Exposure to these compounds may be associated with a number of adverse health effects, including cancer, respiratory illness, and nervous system, dermal, developmental, and/or reproductive effects.

- EPA's rule will also reduce emissions of particulate matter by 5,200 tons annually, a 24 percent reduction from the levels currently emitted by these facilities. Exposure to particulate matter has been linked with adverse health effects, including aggravation of existing respiratory and cardiovascular disease and increased risk of premature death.

- The rule will also reduce emissions of hydrocarbons from new portland cement kilns by 220 tons per year, a 38 percent reduction from projected future emissions levels. Some of these hydrocarbons are volatile organic compounds, which can contribute to the formation of ground-level ozone. Ground-level ozone can cause a variety of health problems because it damages lung tissue, reduces lung function, and makes the lungs susceptible to other irritants.

## BACKGROUND

- Under the Clean Air Act Amendments of 1990, EPA is required to regulate emissions of 188 specific air toxics. ( Note that this list originally referenced 189 pollutants, but EPA has subsequently removed the chemical caprolactum from the list.) On July 16, 1992, EPA published a list of industry groups, known as source categories, that emit one or more of these air toxics. For listed categories of "major" sources (those that have the potential to emit 10 tons/year or more of a listed pollutant or 25 tons/year or more of a combination of pollutants), the Clean Air Act requires EPA to develop standards that are based on stringent air pollution controls, known as maximum achievable control technology (MACT).

- EPA's published list of industry groups to be regulated includes portland cement manufacturing plants.

## HOW DOES THE CEMENT MANUFACTURING PROCESS WORK?

- Portland cement manufacturing is an energy intensive process in which cement is made by grinding and heating a mixture of raw materials such as limestone, clay, sand, and iron ore in a rotary kiln. The kiln is a large furnace that is fueled by coal, oil, gas, coke and/or various waste materials. The product (called clinker) from the kiln is cooled, ground, and then mixed with a small amount of gypsum to produce portland cement.

- The main source of air toxics emissions from a portland cement plant is the kiln. Emissions originate from the burning of fuels and heating of feed materials. Air toxics are also emitted from the grinding, cooling, and materials handling steps in the manufacturing process.

- There are about 210 kilns located at 110 portland cement plants in the U.S.

## WHAT DOES EPA'S THE RULE REQUIRE?

- EPA's rule limits emissions of particulate matter, which contain toxic metals (such as cadmium and chromium), from kilns and clinker coolers. The rule also limits emissions of opacity (a surrogate pollutant for particulate matter and toxic metals) from the kiln, clinker cooler, and materials handling facilities. Finally, the rule places limits on emissions of dioxins/furans and hydrocarbons (a surrogate for toxic organic compounds) from cement kilns.

- EPA based the emission limit for hydrocarbons on the emissions levels that can be achieved through the pollution prevention technique of using clean feed materials. However, the rule does not dictate any particular type of air pollution control. Rather, the rule allows industry to use a variety of techniques to achieve the emissions limits.

- EPA's rule also includes new test methods for measuring emissions of air toxics from cement kilns. These new methods can be used by portland cement plant owners/operators to help determine if their plants are major sources of air toxics.

- The rule also requires continuous monitoring of emissions and/or operating parameters which indicate the emissions of particular pollutants. EPA outlines the details of the monitoring, recordkeeping, and reporting requirements in the rule.

- The rule requires the installation and use of continuous emission monitors to measure particulate matter emitted from the kiln, although the compliance date for the installation of these instruments is deferred pending further testing of this technology and additional rulemaking.

## WHO WILL BE AFFECTED BY EPA'S RULE?

- All portland cement manufacturing plants in the nation will be affected by EPA's final rule. Under the Clean Air Act, MACT standards typically only apply to major sources in the source category. However, under the authority of Section 112 (c)(6) of the Clean Air Act, and due to the high toxicity of dioxins/furans and polycyclic organic matter, the provisions of the rule regarding dioxin/furan and total hydrocarbon (surrogate for polycyclic organic matter) emissions limitations and associated monitoring, recordkeeping, and reporting also apply to "non-major" (known as area) sources of air toxics. Area sources are stationary sources that emit hazardous air pollutants, but are not classified as a major source. EPA estimates that about 20 percent of the portland cement plants may be area sources.

- About 30 out of the 210 cement kilns in the U.S. burn hazardous waste as fuel. It is important to note that kilns that burn hazardous waste will not be covered by this rule. This is due to their different emissions characteristics, different air pollution controls, and separate classification in the Resource Conservation and Recovery Act (section 3004 (q)) . The cement kilns that burn hazardous waste will be covered under an air toxics standard for hazardous waste combustors that EPA proposed on April 19, 1996 and will be promulgated soon.

- However, today EPA is also proposing to address any sources of hazardous air pollutants at a cement plant which are not part of the combustion phase of the process (i.e., emissions associated with the kiln), regardless of whether or not the cement kiln burns hazardous waste.

## HOW MUCH WILL THE FINAL RULE COST?

- EPA estimates the total annual cost to portland cement manufacturers to comply with the rule to be about $37 million. EPA estimates the initial capital cost to portland cement manufacturers to comply with the rule to be about $108 million.

## FOR MORE INFORMATION...

- Interested parties can download the rule from EPA's web site on the Internet under recent actions at the following address: *http://www.epa.gov/ttn/oarpg.* For further information about the rule, contact Joseph Wood, P. E. of EPA's Office of Air Quality Planning and Standards (OAQPS) at (919) 541-5446 or e-mail at wood.joe@epamail.epa.gov. For information about the emission test methods, contact Rima Dishakjian of OAQPS at (919) 541-0443.

- EPA's Office of Air and Radiation's homepage on the Internet contains a wide range of information on the air toxics program, as well as many other air pollution programs and issues. The Office of Air and Radiation's home page address is: *http://www.epa.gov/oar/.*

# Suwannee County

**COUNTY OFFICES**
224 Pine Avenue
Live Oak, Florida 32060

**FAX (904) 362-1032**

*"In The Heart Of The Suwannee River Valley"*

FAX COVER LETTER

Date: 5/11/99

TO: NAME Joe Kahn

FIRM DEP

FAX 850/922-6979

FROM: NAME Robinette C Robinson

FAX 904/362-1032

PHONE 904/364-3401

TOTAL NUMBER OF PAGES INCLUDING THIS COVER LETTER: 4

MESSAGE:

* * * * * * * * * * *

IF ALL PAGES ARE NOT RECEIVED,

PLEASE CALL 364-3401 AS SOON AS POSSIBLE

SUWANNEE COUNTY
RESOLUTION NO. 99-16

A RESOLUTION OF THE BOARD OF COUNTY COMMISSIONERS OF SUWANNEE COUNTY, FLORIDA GRANTING SITE PLAN APPROVAL AS AUTHORIZED UNDER SECTION I.2.4 OF ORDINANCE NO. 91-15, AS AMENDED, ENTITLED SUWANNEE COUNTY COMPREHENSIVE PLAN; APPROVING A SITE PLAN FOR A CEMENT PLANT ON PROPERTY ZONED AGRICULTURAL (A-1) ON CERTAIN LANDS WITHIN THE UNINCORPORATED AREA OF SUWANNEE COUNTY, FLORIDA; REPEALING RESOLUTIONS IN CONFLICT; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, Policy I.2.4 of the Suwannee County Comprehensive Plan permits the Suwannee County Board of County Commissioners to approve a site and development plan for a resource-based facility in the rural areas of the county; and

WHEREAS, Suwannee American Cement Company, Inc., on behalf of Anderson Mining Corporation, in reference to Suwannee American Cement Company, Inc., Branford Plant, has properly filed an application for a site and development plan for the construction and operation of a resource based cement manufacturing plant as a permitted use at an existing excavation; and

WHEREAS, the subject property is located in Section 18, Township 6, South, Range 15, East, described more particularly as:

> Part of the South ½ of the Northeast ¼ and Part of the Southeast ¼ of Section 18, Township 6 South, Range 15 East, Suwannee County, Florida, being more particularly described as follows: for point of beginning commence at the Southwest corner of said Southeast ¼, thence run North 01° 11' 04" West along the West line of the East ½ of said Section 18, a distance of 2970.00 feet; thence run North 88° 38' 15" East, a distance of 1400 feet; thence run South 01° 11' 04" East, a distance of 1650.00 feet; thence run South 88° 38' 15" West, a distance of 540.00 feet; thence run South 01° 11' 04" last, a distance of 1320.00 feet to the South line of said Section 18; thence run South 88° 38' 15" West along said South line, a distance of 860.00 feet to the Point of Beginning together with the West 120.00 feet of the Northeast ¼ of Section 19, lying North of U.S. Highway 27 of said Township and Range, containing 83.3 acres more or less.

WHEREAS, proper authorization has been granted to Suwannee American Cement Company, Inc. by Anderson Mining Corporation, the fee simple owner of the subject property; and

WHEREAS, a site and development plan application was received by the Suwannee County Staff, under Policy I.2.4 of the Suwannee County Comprehensive Plan for a resource based activity, reviewed, determined to be sufficient and consistent with the applicable codes, policies, and ordinances; and

WHEREAS, a site and development plan has been submitted in accordance with the provisions of the Comprehensive Plan and the Suwannee County Land Development Regulations; and

WHEREAS, a public hearing was legally and properly advertised and held before the Suwannee County Board of County Commissioners; and

WHEREAS, as part of the review process the Suwannee County Board of County Commissioners gave full and complete consideration to the application materials, the comments and analysis by the Suwannee County Staff, all documents contained within the application on file with Suwannee County, the Suwannee County Comprehensive Plan, and the testimony of all interested persons; and

WHEREAS, THE FOLLOWING FINDINGS are made in conjunction with this approval:

1. That the proposed use is determined to be a resource based activity as described in Policy I.2.4 of the Comprehensive Plan.
2. That the proposed use is consistent with the applicable Goals, Objectives, and Policies of the Suwannee County Comprehensive Plan.
3. That the proposed use complies with the Suwannee County Land Development Regulations.
4. That the proposed use complies with the other applicable Suwannee County Ordinances or Codes.
5. The project meets the concurrency requirements of the Suwannee Comprehensive Plan.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF SUWANNEE COUNTY, that:

Section 1. The site and development plan, described above, is APPROVED with the following conditions:

a. The final arrangement of structures and improvements may be altered as a result of geotechnical and other considerations including changes needed for regulatory approval by the appropriate state and federal agencies.
b. Required buffers and setbacks will be maintained in the event of a shift or alternate plant layout.
c. Revised final construction plans will be submitted at the time of the building permit application. If the Land Development Regulation Administrator deems such plans a substantial change from the approved site and development plan, the new plan shall be resubmitted in accordance with § 14.12.4 of the Land Development Regulations.
d. Construction of the plant entrance connection with U.S. 27 will require the necessary permits as determined by the Florida Department of Transportation at the time such a connection is constructed.
e. Signage and buffer will be consistent with the requirements of the Suwannee County Land Development Regulations.

f. On-site potable water will be provided by the construction of an on-site potable water well.

g. Wastewater shall be disposed of through the use of an on-site septic system as approved by the Suwannee County Health Department.

h. The facilities will be designed to meet or exceed the requirements of the Suwannee River Water Management District with all storm water retained on-site, and no discharge of storm water to the mining quarry permitted. A copy of the surface water management permit shall be submitted prior to the issuance of the building permit.

i. The facility shall obtain all State and Federal approvals prior to being constructed.

j. Hazardous waste or solvent-contaminated wastes, biomedical wastes or household garbage shall not be used as sources of fuel. Used tires shall be stored in a manner that prevents breeding of mosquitoes.

k. Prior to beginning operation, the Applicant shall have installed street lighting, if allowed by the Florida Department of Transportation, at the cement plant entrance onto U.S. 27 as a safety enhancement for the 24-hour operation of the plant.

l. The Applicant shall comply with all applicable state and federal laws, applicable air and water regulations, and will provide copies of all permits and approvals when applying for construction permits.

m. The Applicant shall have until twelve (12) months after the issuance of all permits or the final resolution of all administrative and/or judicial proceedings, if any, challenging the issuance of any permit or development order to begin construction. Should the Applicant not meet any of the time limitations in this paragraph this site plan approval shall be null and void and the Applicant shall be required to reinitiate this process to construct the facility in question.

n. No nighttime audible alarm for shift changes.

o. Tie-downs must be used on trucks.

p. The applicant shall provide a copy of the stack report to the County prior to start-up of the facility, and shall provide copies of all stack reports conducted thereafter.

q. The applicant shall consent to independent monitoring of emissions from the facility.

Section 2. All resolutions in conflict with this resolution are hereby repealed to the extent of such conflict.

Section 3. This resolution shall become effective upon adoption by the Board of County Commissioners.

DULY ADOPTED in session this 15th day of December, 1998.

BOARD OF COUNTY COMMISSIONERS
SUWANNEE COUNTY, FLORIDA

Chairman

Attest:

W. Randy Henderson, Clerk

Suwannee County Resolution No. 99-16

# INTEROFFICE MEMORANDUM

**Date:** 11-May-1999 03:33pm
**From:** Joseph Kahn TAL
KAHN_J
**Dept:** Air Resources Management
**Tel No:** 850/921-9519

**To:** Clair Fancy TAL ( FANCY_C )

**Subject:** Suwannee County Site Approval for Suwannee American Cement

Clair,

I spoke this afternoon with Ed Harvey (904/364-3400), the County Coordinator for Suwannee County, and with Robinette Robinson of Mr. Harvey's office about the site approval process used for the Suwannee American Cement site. Suwannee County's comprehensive plan provides for resource based activities in areas zoned for agriculture upon approval of a site plan by the county commission. This is the process followed for the Suwannee American Cement plant. The property is zoned for agriculture and has not been rezoned. The county commission held a public meeting December 15th and made a policy decision at that meeting that the proposed activity is a resource based activity. The commission adopted a resolution at that meeting approving the site plan with a number of conditions. Ms. Robinson will fax me a copy of the resolution.

-Joe

# INTEROFFICE MEMORANDUM

**Date:** 10-May-1999 09:31am
**From:** Joseph Kahn TAL
KAHN_J
**Dept:** Air Resources Management
**Tel No:** 850/921-9519

**To:** Clair Fancy TAL ( FANCY_C )

**Subject:** Discussion with DCA re: Suwannee American Cement

Clair,

I spoke with Walker Banning of the Department of Community Affairs (487-4545) on Friday, May 7th, regarding the proposed Suwannee American Cement plant. He told me that DCA does not have any direct authority over this project and that the authority for review of the proposed project lies with the local officials, particularly the Suwannee County commission. He said that DCA's typical involvement with development projects is through review and approval of a county's comprehensive plan, and that the local officials are responsible for determining if any given development is consistent with or allowed by the comprehensive plan. An affected party can challenge the local officials' decision in circuit court as provided by Chapter 163, F.S. He confirmed that issues such as appropriate use of property, industrial siting, and truck traffic are addressed at the local level through the concurrency check and local review.

Per our discussion last Friday, I'll follow up with the local government to see if I can get any additional information about the local approval for the SAC project.

-Joe

**Memorandum** **Florida Department of Environmental Protection**

**To:** Clair Fancy
Bureau of Air Regulation

**From:** Joseph Kahn, P.E.
New Source Review Section

**Date:** May 7, 1999

**Re:** Visibility of Suwannee American Cement Plant

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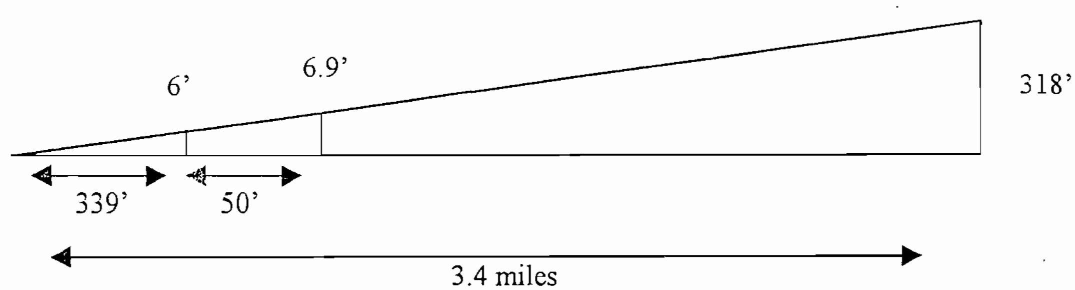
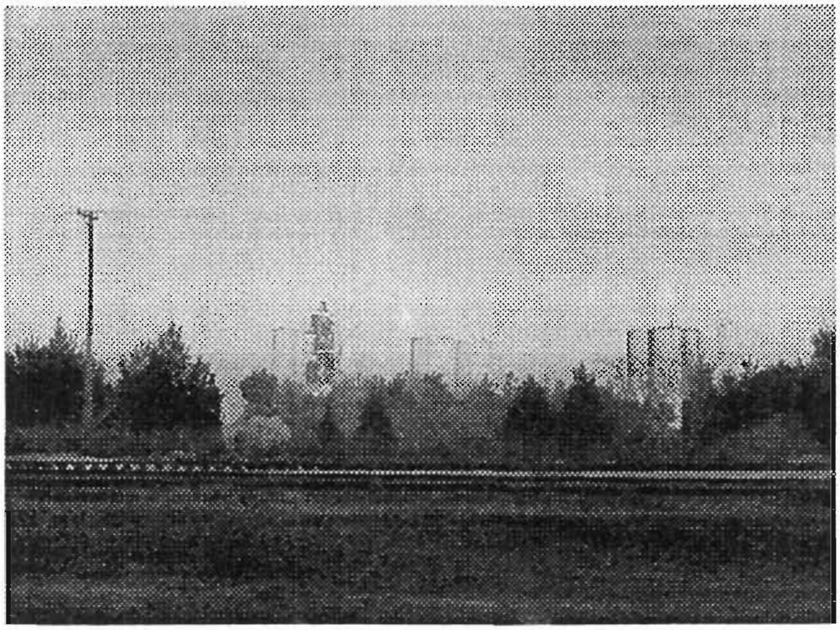
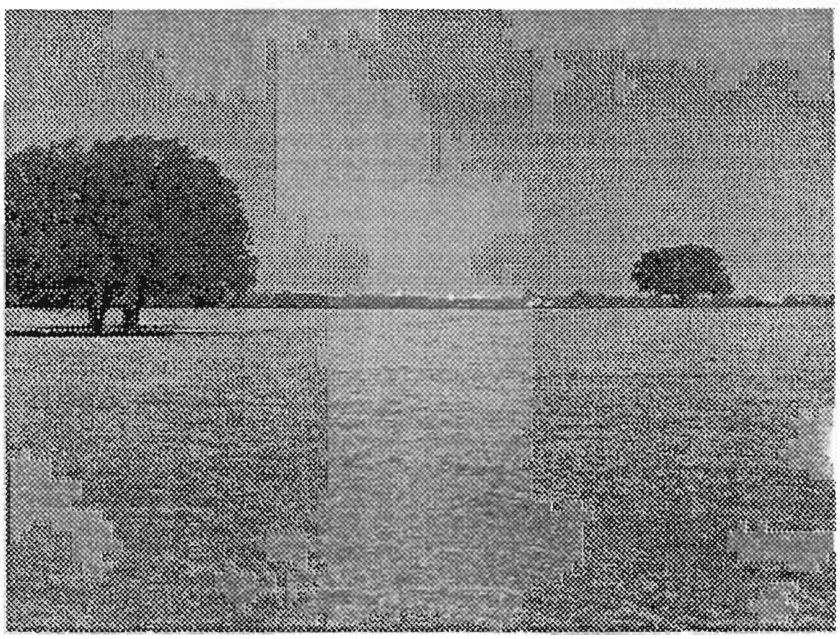
Per your request, I have evaluated the potential visibility of the plant equipment at the Ichetucknee Springs State Park, assuming a distance of 3.4 miles from the plant's preheater tower to the closest park boundary at US 27. I believe the preheater tower is 318 feet tall, and is one of the tallest structures at the proposed plant. Assuming the terrain is relatively flat, a six foot tall person would have his or her view of the preheater tower obscured by a 6.9 foot tall object, if that object were fifty feet in front of the person.




Note that Al took some recent photos of the Florida Rock plant, which is currently under construction. Two photos illustrate the visibility of the plant from about a quarter mile away and about three miles away (see below). It is evident from these photos that most trees will obscure the plant's structures, either partially or completely.





# INTEROFFICE MEMORANDUM

**Date:** 05-May-1999 08:02am
**From:** Joseph Kahn TAL
KAHN_J
**Dept:** Air Resources Management
**Tel No:** 850/921-9519

**To:** Clair Fancy TAL ( FANCY_C )
**To:** Howard Rhodes TAL ( RHODES_H )

**Subject:** Pertinent Timeclock Dates for Suwannee American Cement

Clair asked me to advise you of the timeclock dates for the Suwannee American Cement permit application. As detailed below, the last day for an intent is Friday, July 2nd, but a preliminary determination must be made by Friday, June 18th.

We received the response from the applicant's engineers on April 21, 1999. The last practical date we can send an intent on this project and still allow for the 30 day public comment period is day 74. Because this falls on the weekend of the July 4th holiday, it would be prudent to use the previous Friday as the deadline for the intent. This is Friday, July 2nd. (I believe that OGC has previously determined that when a due date falls on a weekend or holiday, the Department has until the next business day to meet its obligation, but we generally use the preceding business day when possible.)

Note that Rule 62-212.400(5)(a)3., F.A.C., requires, "Within 60 days after receipt of a complete application for a permit to construct ... the Department shall make a preliminary determination as to whether the application should be approved or denied." We typically draft the technical evaluation and preliminary determination document by this date to fulfill the requirements of this rule, although the rule does not require that such a determination be in writing, and it does not prescribe the format. It may be reasonable to assume that although this rule refers to receipt of a complete application, it also applies from the date the applicant requested that we process the application pursuant to statute. The 60 day date will fall on a Saturday, so again it would be prudent to fall back to the previous Friday, June 18th.

Memorandum

# Florida Department of Environmental Protection

**To:** Howard Rhodes

**From:** Joe Kahn JK

**Date:** May 5, 1999

**Re:** Distances for Suwannee American Cement

---

Based on measurements from page 64 of the Florida Atlas & Gazetteer (4th ed., 1997, DeLorme), I estimated the following distances related to the Suwannee American Cement project:

Main stack to the Ichetucknee Springs State Park boundary at US 27: 3.4 miles;

Main stack to the Ichetucknee River at US 27: 3.8 miles;

Main stack to the Ichetucknee River at its junction with the Santa Fe River: 3.6 miles;

Closest site boundary to park boundary at US 27: 2.4 miles;

Main stack to the Ichetucknee Springs: 5.4 miles.

These distances are +/- 0.1 mile, except for the last, which is +/- 0.2 miles because of the difficulty in determining the location of the springs on this map.

Note that John Koogler estimated today that the distance from the main stack to the park boundary at US 27 is 3.5 miles, which is in agreement with my estimate.

INTEROFFICE MEMORANDUM

Sensitivity: COMPANY CONFIDENTIAL Date: 04-May-1999 07:08am
From: Mark Latch TAL
Mark.Latch@dep.state.fl.us
Dept:
Tel No:

To: See Below
Subject: FWD: Re: FWD: Re: FWD: Letter to Suwannee American Cement

See the attached.
If we want to have any comments or input, now is the time.
We should at least formally ask to be notified of the Intent. That wil
l be our
opportunity to object/petition if we want to do that. Presuming that w
e do not
want to get into that mode with another arm of the agency, NOW is the t
ime to
request any conditions that we would want to have included as part of t
he
permit - monitoring stations (air or water), reports copied to us, etc.
Also,
if we want to have face-to-face discussions with Air program, now is th
e time
to do that.
Let me know ASAP. I would like to get our request to Joe Kahn the week
of May
17.

ml
05/04
Distribution:

To: Fran Mainella TAL ( Fran.Mainella@dep.state.
fl.us )
To: Michael Bullock TAL ( Michael.Bullock@dep.stat
e.fl.us )
To: Torrey Johnson GNSV ( Torrey.Johnson@dep.state
.fl.us )
To: Craig Parenteau GNSV ( Craig.Parenteau@dep.stat
e.fl.us )
To: James Stevenson TAL ( James.Stevenson@dep.stat
e.fl.us )
CC: Dana Bryan TAL ( Dana.Bryan@dep.state.fl.
us )
CC: Joseph Kahn TAL ( Joseph.Kahn@dep.state.fl
.us )

INTEROFFICE MEMORANDUM

Date: 03-May-1999 08:33am
From: Joseph Kahn TAL
Joseph.Kahn@dep.state.fl.us
Dept:
Tel No:

Subject: Re: FWD: Re: FWD: Letter to Suwannee American Cement

It looks like management here wants to take the full 60 days to review the submittal. Assuming we will draft an intent to issue, we are required to make our technical evaluation by day 60, which would be about June 18th (Friday). We will not send anything out any earlier than that. To allow for the 30 day public comment period for PSD projects, we generally have to send an intent by about day 74 (say July 2nd to avoid the holiday). Generally, though, we try to send out the intent, draft permit, and technical evaluation at the same time by day 60 if we can. To give us plenty of time, I probably need to get technical comments from you and the other staff sometime this month. We can meet again this month if you want.

# INTEROFFICE MEMORANDUM
(Draft)

**Date:** 03-May-1999 08:29am
**From:** Joseph Kahn TAL
**Dept:**
**Tel No:**

**To:** Mark Latch TAL ( LATCH_M@EPIC6A1@EPIC9 )

**Subject:** Re: FWD: Re: FWD: Letter to Suwannee American Cement

It looks like management here wants to take the full 60 days to review the submittal. Assuming we will draft an intent to issue, we are required to make our technical evaluation by day 60, which would be about June 18th (Friday). We will not send anything out any earlier than that. To allow for the 30 day public comment period for PSD projects, we generally have to send an intent by about day 74 (say July 2nd to avoid the holiday). Generally, though, we try to send out the intent, draft permit, and technical evaluation at the same time by day 60 if we can. To give us plenty of time, I probably need to get technical comments from you and the other staff sometime this month. We can meet again this month if you want.

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 ▪ FAX/377-7158

KA 624-98-01

April 28, 1999

RECEIVED
MAY 04 1999
BUREAU OF
AIR REGULATION

Mr. Joseph Kahn, P.E.
Florida Department of
Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Suwannee American Cement Company, Inc.
FDEP File No. 1210465-001-AC (PSD-FL-259)
Response to FDEP Correspondence Dated
April 19 and 22, 1999

Dear Mr. Kahn:

The applicant notes that the matters inquired of in the referenced requests are not related to those matters allowed under Section 403.0876(1),F.S., and therefore requests that the Department continue processing the permit application under Section 403.0876(2)(a), F.S. as stated would be the case in your letter to Suwannee American Cement Company, Inc. (Suwannee American) dated April 22, 1999.

We further note that this request was conveyed separately from and beyond the 30-day completeness review deadline that resulted in the last RAI dated March 26, 1999. However, in a continuing effort to be responsive to the concerns behind the questions asked, the applicant submits the following information, provided the submittal does not affect the permit processing time clock.

The sulfur dioxide emission limit of 0.28 pounds of $SO_2$ per short ton of clinker proposed by Suwannee American as Best Available Control Technology (BACT) was discussed in detail in Response No. 5 of the additional information we provided the Department on February 25, 1999. In this response, it was pointed out that the BACT $SO_2$ limits for Florida Portland cement plants are 2-30 times lower than limits for other plants around the country. This is due to the fact that there is very little sulfur in the feed materials to the plants which can be released as $SO_2$ in the preheater and/or precalciner.

The fact that there are other cement plants in the U.S. with scrubbers was also discussed. It was pointed out that there are several reasons for scrubbers and when there is a valid reason, scrubbers are justified. This is not the case with Suwannee American. For example, the TXI plant in Midlothian, Texas, reportedly has a sulfur dioxide emission rate of approximately 800 pounds per hour following a scrubber. This would relate to an uncontrolled $SO_2$ emission limit in the range of 4,000 pounds per hour (assuming 80 percent scrubbing efficiency). The Suwannee American plant, in contrast, has an uncontrolled $SO_2$ emission rate of 26.8 pounds per hour. It was also pointed out that the Holnam plant in Dundee, Michigan, is a wet-process plant and that scrubbers and an oxidizer were installed on the 40-year old plant to reduce $SO_2$, odors and a visible non-steam plume.

Based on the request of the National Park Service (NPS), the use of a scrubber to control $SO_2$ at the Holnam cement plant in Florence, Colorado, has also been investigated. The plant and the permitting process were discussed with personnel from the Colorado Department of Health, Air Pollution Control Division and Holnam Cement. The Holnam permit application is still in the review process.

The Holnam, Florence, Colorado, plant will be a dry process precalciner plant replacing three existing wet-process kilns. The production capacity of the plant will be 5400 metric tons (5940 short tons) of clinker per day. In contrast, the Suwannee American plant has a clinker production capacity of 2300 short tons per day. The limestone utilized at the Holnam plant is high in pyritic sulfur and kerogens. This results in a potential uncontrolled $SO_2$ emission rate of approximately 5.8 pounds per short ton of clinker (approximately1435 pounds per hour or 5600 tons per year of $SO_2$) from the proposed plant. The kerogens are suspected of contributing ammonia to the stack gas which reacts with the $SO_2$ to form a visible, but detached ammonium sulfate plume from the existing Holnam plant. This same problem is anticipated with the proposed Holnam plant. Holnam elected to install a scrubber on the proposed plant, not as BACT, but to avoid the PSD permitting process and to reduce the ammonia which contributes to the visible plume.

At the Holnam plant, approximately 92 percent of the gas stream from the kiln and the kiln bypass will be routed through a $SO_2$ scrubber with a design efficiency of 87.5 percent. The resulting $SO_2$ emission rate from the scrubber system will be approximately 650 tons per year. The remaining eight percent of the kiln gases will pass through the coal mill and will be discharged to the atmosphere with no $SO_2$ control. The $SO_2$ emission rate from the coal mill will be approximately 450 tons per year. The combined controlled $SO_2$ emission rate from the coal mill, the kiln and the kiln bypass will be approximately 1100 tons per year; or approximately 1.14 pounds per short ton of clinker.

Thus, even with control, the $SO_2$ emissions from the Holnam plant are over four times greater than the projected emissions from the Suwannee American plant (per ton of clinker) and approximately 10 times greater on a mass (tons per year) basis. Even though the proposed BACT limit for $SO_2$ for the Suwannee American plant is among the lowest in the country, and much lower than the non-BACT limit for $SO_2$ for the Holnam Colorado plant, a cost analysis of a scrubber system for the Suwannee American plant will be provided to be responsive to the NPS.

Based on Holnam costs for scrubbers at their Colorado and Texas plants, an installed scrubber cost of $6.6 million was estimated for Suwannee American. Scrubber water disposal off-site was estimated at $0.15 per gallon or $1.6 million per year as there is no place in plant processes to dispose of the blow-down (per Polysius) and a surface water discharge is out of the question. The total annual cost for a scrubber (including capital recovery) based on EPA guidelines is $2.82 million per year. If a $SO_2$ scrubbing efficiency of 85 percent is assumed (95 ton per year $SO_2$ reduction), a control cost of $29,700 per ton of $SO_2$ is calculated . This is not a cost effective control alternative.

Another $SO_2$ control technology recently brought to our attention by FDEP (correspondence dated April 22, 1999) is a dry scrubbing technology developed by Environmental Elements Corporation. The system consists of a fluidized-bed of a lime-based material through which a gas stream containing $SO_2$ passes. The fluidized-bed, when employed on power plants, is followed by an electrostatic precipitator which removes lime and flyash from the gas stream before discharge to the atmosphere. The lime recovered in the precipitator is recirculated through the fluidized-bed with a fraction of the lime continuously bled off as waste.

In the Suwannee American plant, the precipitator following the kiln and raw mill collects particulate matter that is returned to the blending silo and then to the preheater as kiln feed. This material consists of about 10 percent of the preheater feed. The installation of a fluidized-bed $SO_2$ scrubbing system upstream of the precipitator poses two problems. First, the lime introduced by the fluidized-bed scrubbing system will make it extremely difficult to maintain the required raw meal mix in the blending silo. Secondly, even if the composition of the raw meal could be maintained, the $SO_2$ recovered in the dry scrubbing system as calcium sulfate or sulfite will be reintroduced to the kiln system. As calcium sulfate and sulfite decompose in the range of 1500-1550°F, the sulfur will again be released between the base of the preheater and the kiln inlet. As this zone will be oxygen starved (because of the multi-stage combustion for NOx control), the sulfur will form deposits which could lead to plugging of the preheater. If sufficient oxygen happened to be available, the sulfur would again form $SO_2$ which will again have to be scrubbed. It is quite apparent that the dry scrubbing technology with the scrubber preceding the kiln precipitator is not a feasible technology.

The second alternative would be to install the dry scrubbing technology downstream of the kiln precipitator. In this case, the fluidized-bed scrubbing system and a second precipitator would be required. Without conducting a rigorous cost analysis, it is quite apparent that the cost associated with a fluidized-bed scrubber and a second precipitator would not be cost effective for controlling a gas stream with only 25-30 pounds of $SO_2$ per hour.

It is our professional opinion that the $SO_2$ limit proposed by Suwannee American of 0.28 pounds per short ton of clinker represents the most cost effective and reasonable control technology available and is BACT for the proposed project.

If you have any questions concerning this response, please do not hesitate to contact me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:wa

c: Mr. Frank Darabi
Mr. Tom Reeves, Anderson Columbia
Mr. Segundo Fernandez, Oertel, Hoffman et al
Mr. Ken Oertel, Oertel, Hoffman et al

cc: EPA
NPS
NED

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

# INTEROFFICE MEMORANDUM

**Sensitivity:** COMPANY CONFIDENTIAL

**Date:** 28-Apr-1999 09:54am
**From:** Mark Latch TAL
LATCH_M@EPIC6A1@EPIC9
**Dept:** Recreation/Parks
**Tel No:** SC 278-8666

**To:** Joseph Kahn TAL ( KAHN_J@A1@DER )
**CC:** Fran Mainella TAL ( MAINELLA_F@EPIC6A1@EPIC9 )
**CC:** Michael Bullock TAL ( BULLOCK_M@EPIC6A1@EPIC9 )
**CC:** Dana Bryan TAL ( BRYAN_D@EPIC6A1@EPIC9 )
**CC:** Torrey Johnson GNSV ( JOHNSON_T@EPIC6A1@EPIC9 )

**Subject:** Re: FWD: Re: FWD: Letter to Suwannee American Cement

Thanks. Do you have any schedule yet? Please let me know so that I can pass the information on to the Div. Office.

ml
04/28

The applicant in the latest response requested that we process the application per Section 403.0876(2)(a), F.S., so it doesn't really matter if the file is complete. (The applicant did provide some response anyway to several of the requested items, but not all. I'll make sure we send you a copy.) The clock therefore has started, and we cannot stop the clock by asking for additional information.

We wrote two other letters to the applicant asking for comments about a comment from the federal land manager regarding wet scrubbing for sulfur dioxide and about another control technology for sulfur dioxide emissions, but the applicant is not required to respond to either letter. They are not timely requests for additional information, and the applicant has requested we process the application given the information we have.

# INTEROFFICE MEMORANDUM

**Date:** 27-Apr-1999 09:33am
**From:** Joseph Kahn TAL
KAHN_J
**Dept:** Air Resources Management
**Tel No:** 850/921-9519

**To:** Clair Fancy TAL ( FANCY_C )

**Subject:** Performance Bonds

This morning I discussed the issue of performance bonds and other financial mechanisms (CDs, trust funds, etc.) with Fred Wick of the Division of Waste. He told me that the primary reason the Department requires posting of a financial surety is to provide for closure of a facility that would have an increased public health or environmental risk if the facility is not properly closed or is abandoned. In other words, the bond is set for an amount equal to the cost of closure and would include the cost of cleanup if contamination of the property is likely. The bond amount would account for cases where the property, if improperly closed or abandoned would have little or no residual value. A landfill is a good example of this. A facility with a residual value, particularly one that another company could take over and operate would not typically require a surety bond, or would require much less of a bond than a site that is "worthless" when abandoned. Financial mechanisms that are required for closure of solid waste facilities and hazardous waste treatment and disposal sites are examples that offer protection against improper closure or abandonment.

Financial mechanisms are also required to guarantee long term care and maintenance of a facility that poses a public health risk if not properly monitored and maintained. Landfills are an example of this, and Fred also mentioned gypsum stacks, which could be considered to fall in this category.

Another less frequent use of a bond is to guarantee that some permitted activity will be completed. The financial mechanisms the Department requires for completion of wetlands mitigation and mine land reclamation are examples of this.

Fred told me that we do not require bonds to ensure proper operation of permitted facilities, and we do not have a precedent for bonding of air emissions sources, regardless of potential emissions. Two examples he had to illustrate this point are fossil fuel fired power plants and municipal waste combustors, neither of which is required to post a bond, although they are large emissions sources of combustion pollutants similar to the proposed Suwannee American Cement plant.

Fred did mention that Perry Odom has an attorney on his staff, Jonathan Alden, who is familiar with these financial mechanisms.

DEP ROUTING AND TRANSMITTAL SLIP

TO: (NAME, OFFICE, LOCATION)

1. Fran Mariella
2. Mike Bullock
3. Torrey Johnson
4. Dana
5. Joe Kahn MS - 5505

PLEASE PREPARE REPLY FOR:

____ SECRETARY'S SIGNATURE

____ DIV/DIST DIR SIGNATURE

____ MY SIGNATURE

____ YOUR SIGNATURE

____ DUE DATE ____________

ACTION/DISPOSITION

____ DISCUSS WITH ME

____ COMMENTS/ADVISE

____ REVIEW AND RETURN

____ SET UP MEETING

____ FOR YOUR INFORMATION

____ HANDLE APPROPRIATELY

____ INITIAL AND FORWARD

____ SHARE WITH STAFF

____ FOR YOUR FILES

COMMENTS:

RECEIVED
APR 26 1999
BUREAU OF
AIR REGULATION

TO: File: Ichetucknee Cement Plant

FROM: Mark Latch, Environmental Administrator
Bureau of Natural and Cultural Resources

Date: April 21, 1999

SUBJECT: Meeting with the Division of Air Resources

I met with Joe Kahn and Cleve Holladay from Air Resources (Air) and Jim Stevenson from Ecosystem Management (EM) concerning the cement plant proposed by Suwannee American Cement Company in Suwannee County. Joe Kahn is the project manager and Cleve Holladay is the meteorologist for Air.

The cement plant is proposed on 80 acres located within 700 acres of limestone reserves at the Branford quarry of Suwannee Anderson Cement Company (Anderson). State permits required are a Prevention of Significant Discharge of Air Quality permit (PSD) from the Air program and an environmental resource permit (ERP) from the Suwannee River Water Management District (WMD) or the Department.

The application for the PSD is being processed by Joe Kahn and is incomplete as of April 20, 1999. The PSD is a program that has adopted most EPA standards. The main concerns of the program are NOx and particulate emissions. The modeling that has been done indicated that the emissions would barely be discernible when compared to the background and when combined with the background are well below the standards. The emission standards that are expected to be imposed on this facility through the permit would be some of the most stringent in the country.

Total mercury (Hg) emissions from the plant are expected to total 20 lb./yr. The input of Hg to the plant is expected to be approximately 129 lb./yr., including fuels and raw materials. Hg could be eliminated totally if the plant burned natural gas, with a 30% increase in NOx emissions. The applicant has chosen to keep the NOx levels low.

Other notes of interest:

- FAC Rule 62-4 allows consideration of compliance history when evaluating permit applications. OGC is evaluating the applicability of these provisions to this case.
- There will be approximately 260 truck trips/day to the plant.
- Modeling indicates that particulate deposition and visibility impairment at the park will be negligible.
- Air could not require monitoring devices to be placed at the park as part of the permit, unless the applicant agreed to do so voluntarily. The stations would cost approximately $40,000 to monitor for NOx and particulates, and $1,000/yr. to operate.
- Air expects to go to a hearing no matter what their final evaluation.

ML/dw
cc: Joe Kahn
Fran Mainella
Mike Bullock
Dana C. Bryan
Torrey Johnson

h:\users\latch_m\mark\miscmemo\cemIch

# INTEROFFICE MEMORANDUM

**Date:** 26-Apr-1999 07:50am
**From:** Joseph Kahn TAL
KAHN_J
**Dept:** Air Resources Management
**Tel No:** 850/921-9519

**To:** Mark Latch TAL ( LATCH_M@EPIC6A1@EPIC9 )

**Subject:** Re: FWD: Re: FWD: Letter to Suwannee American Cement

The applicant in the latest response requested that we process the application per Section 403.0876(2)(a), F.S., so it doesn't really matter if the file is complete. (The applicant did provide some response anyway to several of the requested items, but not all. I'll make sure we send you a copy.) The clock therefore has started, and we cannot stop the clock by asking for additional information.

We wrote two other letters to the applicant asking for comments about a comment from the federal land manager regarding wet scrubbing for sulfur dioxide and about another control technology for sulfur dioxide emissions, but the applicant is not required to respond to either letter. They are not timely requests for additional information, and the applicant has requested we process the application given the information we have.

# INTEROFFICE MEMORANDUM

**Sensitivity:** COMPANY CONFIDENTIAL

**Date:** 23-Apr-1999 12:26pm
**From:** Mark Latch TAL
LATCH_M@EPIC6A1@EPIC9
**Dept:** Recreation/Parks
**Tel No:** SC 278-8666

**To:** Joseph Kahn TAL ( KAHN_J@A1@DER )
**CC:** Dana Bryan TAL ( BRYAN_D@EPIC6A1@EPIC9 )

**Subject:** FWD: Re: FWD: Letter to Suwannee American Cement

Please let me know if you determine that the file is complete and the clocks start ticking.

ml
04/23

# INTEROFFICE MEMORANDUM

**Date:** 22-Apr-1999 04:51pm
**From:** Dana Bryan TAL
BRYAN_D@EPIC6A1@EPIC9
**Dept:** Recreation/Parks
**Tel No:** 850/488-8666

**Subject:** Re: FWD: Letter to Suwannee American Cement

When you confirm, please forward this to Jim S., Pam McVety, Diana Sawaya-Crane and advise Mike B. Thanks. - DCB

<<I am trying to confirm, but I think this means that the permitting time clock
<<started ticking yesterday.
<<
<<ml
<<04/22

# Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary


April 22, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Joe Anderson, III
President
Suwannee American Cement Company, Inc.
PO Box 410
Branford, Florida 32008

Re: BACT Determination for Sulfur Dioxide
DEP File No. 1210465-001-AC (PSD-FL-259)
Proposed Portland Cement Plant

Dear Mr. Anderson:

On April 21, 1999 the Department received your response to the Department's letter of March 26, 1999 requesting additional information. In your response you requested the Department begin processing your permit application under Section 403.0876(2)(a), F.S. The Department will process your application in accordance with that provision.

On April 19, 1999, the Department forwarded comments from the federal land manager requesting an evaluation of the economic feasibility of a wet scrubber for sulfur dioxide control. The Department suggests that you provide a response to that request because the Department will consider the federal land manager's comments in the Department's BACT determination. The Department has also learned of a circulating dry scrubber process that has been licensed by Environmental Elements Corporation for sulfur dioxide control. The Department will also evaluate this process in its BACT determination, and we invite you to provide comments about the feasibility of this technology to your project. This is not a request for additional information pursuant to Rule 62-4.055, F.A.C.

If there are any questions about this matter, please call me at 850/921-9519.

Sincerely,

Joseph Kahn, P.E.
New Source Review Section

/jk

cc: Mr. Frank Darabi, P.E.
Mr. Steve Cullen, P.E.
Mr. Gregg Worley, EPA
Mr. John Bunyak, NPS
Mr. Chris Kirts, NED
Mr. Jim Stevenson, DEP Ecosystem Mgmt.
Mr. Tom Workman, DEP Recreation & Parks
Mr. Mark Latch, DEP Recreation and Parks
Ms. December McSherry
Mr. Svenn Lindskold
Mr. Tom Greenhalgh
Mr. Al Mueller
Mr. Dave Bruderly
Mr. Chris Bird, Alachua County DER
Mr. John Mousa, Alachua County DER
Mr. Chuck Clemons, Chairman, Alachua County Commissioners
Mr. J. Calvin Gaddy
Ms. Patrice Boyes, Esq.
Ms. Kathy Cantwell
Mr. Ralph Ashodian
Mr. Craig Pittman
Virginia Seacrist
Dr. Bob and Lynn Milner

Is your RETURN ADDRESS completed on the reverse side?

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "*Return Receipt Requested*" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Joe anderson III, President
Suwannee American Cement
PO Box 410
Branford, Fl
32008

4a. Article Number
Z 333 618 102

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
4-29-99

5. Received By: *(Print Name)*

6. Signature: *(Addressee or Agent)*
X

8. Addressee's Address *(Only if requested and fee is paid)*

PS Form 3811, December 1994 102595-97-B-0179 Domestic Return Receipt

Thank you for using Return Receipt Service.

Z 333 618 102

US Postal Service
## Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

| | |
|---|---|
| Sent to Joe Anderson | |
| Street & Number SACP | |
| Post Office, State, & ZIP Code Branford Fl | |
| Postage | $ |
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| TOTAL Postage & Fees | $ |
| Postmark or Date 4-22-99<br>1210465-001-AC<br>PSD-F1-259 | |

PS Form 3800, April 1995

# INTEROFFICE MEMORANDUM

**Sensitivity:** COMPANY CONFIDENTIAL

**Date:** 22-Apr-1999 03:39pm
**From:** Mark Latch TAL
LATCH_M@EPIC6A1@EPIC9
**Dept:** Recreation/Parks
**Tel No:** SC 278-8666

**To:** Joseph Kahn TAL ( KAHN_J@A1@DER )

**Subject:** Re: Letter to Suwannee American Cement

I presume this means that your clock started ticking 4/21/99????

ml
04/22

In order to avoid costs of photocopying and mailing, we are copying you on the attached letter via e-mail. Please let me know if you have any questions.

# INTEROFFICE MEMORANDUM

**Date:** 22-Apr-1999 09:49am
**From:** Joseph Kahn TAL
KAHN_J
**Dept:** Air Resources Management
**Tel No:** 850/921-9519

**To:** Mark Latch TAL ( LATCH_M @ EPIC6A1 @ EPIC9 )

**Subject:** Suwannee American Response

By the way, we received a response from the applicant yesterday, but I have not had a chance to review that response yet.

# INTEROFFICE MEMORANDUM

**Date:** 22-Apr-1999 09:44am
**From:** Joseph Kahn TAL
KAHN_J
**Dept:** Air Resources Management
**Tel No:** 850/921-9519

**To:** Mark Latch TAL ( LATCH_M@EPIC6A1@EPIC9 )

**Subject:** Re: draft memo

Just a couple of comments for you.

The mercury emissions were originally estimated to be 20 lb/yr. That estimate was later revised to state that 129 lb/yr of mercury would enter the plant through the fuels and raw materials. Burning natural gas would eliminate the contribution from fuels, but not that from raw materials, so mercury emissions can not be eliminated totally.

The cost of monitoring was what we could remember of the estimates from our monitoring group. I think the ratio of NOx monitor cost vs. PM monitor cost will vary depending on size of the PM measured, but as I recall about $40,000 gets you both. Also, the operating cost might be $1000 a month if an operator must be contracted.

# INTEROFFICE MEMORANDUM

**Sensitivity:** COMPANY CONFIDENTIAL

**Date:** 21-Apr-1999 09:10pm
**From:** Mark Latch TAL
LATCH_M@EPIC6A1@EPIC9
**Dept:** Recreation/Parks
**Tel No:** SC 278-8666

**To:** Joseph Kahn TAL ( KAHN_J@A1@DER )

**Subject:** draft memo

Joe - Please look at the attached memo and suggest any changes or additions that you think are appropriate. There is no pride of authorship involved in this document, so do what you think is necessary or makes it better. Call me (8-8666) if you have any questions or want to talk about it.

ml
04/21

April 21, 1999

TO: File: Ichetucknee Cement Plant

FROM: Mark Latch, Environmental Administrator
Bureau of Natural and Cultural Resources

SUBJECT: Meeting with the Division of Air Resources

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The cement plant is proposed on 80 acres located within 700 acres of limestone reserves at the Branford quarry of Suwannee Anderson Cement Company (Anderson). State permits required are a Prevention of Significant Discharge of Air Quality permit (PSD) from the Air program and an environmental resource permit (ERP) from the Suwannee River Water Management District (WMD) or the Department.

The application for the PSD is being processed by Joe Kahn and is incomplete as of April 20, 1999. The PSD is a program that has adopted most EPA standards. The main concerns of the program are NOx and particulate emissions. The modeling that has been done indicated that the emissions would barely be discernible when compared to the background and when combined with the background are well below the standards. The emission standards that are expected to be imposed on this facility through the permit would be some of the most stringent in the country.

Total mercury (Hg) emissions from the plant are expected to total 20 lb./yr. The expected fuel source, coal, would put approximately 120 lb./yr. of Hg into the system, except for the pollution control devices. Hg could be eliminated totally if the plant burned natural gas, with a 30% increase in NOx emissions. The applicant has chosen to keep the NOx levels low.

Other notes of interest:

- FAC Rule 62-4 allows consideration of compliance history when evaluating permit applications. OGC is evaluating the applicability of these provisions to this case.
- There will be approximately 260 truck trips/day to the plant.
- Modeling indicates that particulate deposition and visibility impairment at the park will be negligible.
- Air could not require monitoring devices to be placed at the park as part of the permit, unless the applicant agreed to do so voluntarily. The stations would cost approximately $40,000 to install, $30,000 for NOx and $10,000 for particulates, and $1,000/yr. to operate.
- Air expects to go to a hearing no matter what their final evaluation.

ML/dw

cc: Joe Kahn
Fran
Mike
DCB
Torrey Johnson

h:\users\latch_m\mark\miscmemo\cemIch

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 ▪ FAX/377-7158

RECEIVED
APR 21 1999
BUREAU OF
AIR REGULATION

April 20, 1999

Mr. Joseph Kahn, P.E.
Division of Air Resources Management – New Source Review
**Department of Environmental Protection**
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Subject: Suwannee American Cement Company
DEP File No.: 1210465-001-AC (PSD-FL-259)
Response to Request for Additional Information
Dated March 26, 1999

Dear Mr. Kahn:

This letter shall respond to the referenced request. All of your information request items have been reproduced, preserving your numbering. Responses follow each item.

I am certifying the attached response by certifying this transmittal letter. If you have any further questions, please contact me.

Sincerely,

Steven C. Cullen, P.E.
**Koogler & Associates**

STATE OF FLORIDA
REGISTERED ENGINEER

cc: EPA
NPS
J. Brown, OGC
C. Holladay, BAR
File

1. We received additional comments from the federal land manager regarding response items 23 and 24. Please respond to the following comments.

   The recommendations of the Interagency Workgroup on Air Quality Modeling (at: http://www.epa.gov/scram001/; "Model Support"; 6th Modeling Conference"; "IWAQM") clearly state that "[i]f hourly relative humidity values are not available, assume that the relative humidity is 95%." (Appendix B, "Method", 3b). The applicant's use of an 80% RH value is not acceptable.

***Response:*** The applicant notes that the matters inquired of in this request are not related to those matters allowed under Section 403.0876(1), F.S., and therefore requests that the Department begin processing the permit application under Section 403.0876(2)(a), F.S. However, in a continuing effort to be responsive to the concerns behind the questions asked, the applicant submits the following information, provided the submittal does not affect the permit processing time clock.

The suggested RH value of 95% is from a 1993 document "IWAQM" (app. B Method 3b). The applicant's consultant, however, has personally contacted John Notar, Meteorologist, National Park Service, who advised, on March 29, 1995, that the proper way to address visibility is to use a 24 hour average for emissions and an 80% RH value in Florida. Since that time, these values have been consistently applied to applications to the FDEP without objections. There is no justification to change this approach at this time.



KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

The Department heard significant public comment at the public meeting of March 25, 1999 regarding the following issues related to the permit application. Please respond to the following.

2. Estimate potential mercury emissions from the pyroprocessing system, and characterize the fraction of mercury that will come from the raw materials, coal, petroleum coke and tires. Please evaluate control methods for mercury emissions.

***Response:*** Potential mercury emissions were submitted to the Department on February 25, 1999. Using three different approaches, the projected emissions were in all cases below the 200 pound per year threshold established by Rule 62-212.400(2)(f) and Table 212.400-2, F.A.C. as a significant emission rate increase (for PSD permitting purposes). Because the expected emissions are below the threshold amount, there is no regulatory requirement to apply BACT review for the *de minimis* emissions that are expected. Approximately 40 percent of the mercury will be contributed by fuel (coal) and 60 percent by raw materials. When petroleum coke or tires are used as fuel, the mercury contributed by fuel is expected to decrease.

3. Consider whether combustion of tires is necessary for the proposed project. There is significant public opposition to the combustion of tires in any quantity in the pyroprocessing system.

***Response:*** The applicant notes that the matters inquired of in this request are not related to those matters allowed under Section 403.0876(1), F.S., and therefore requests that the Department begin processing the permit application under Section 403.0876(2)(a), F.S. However, in a continuing effort to be responsive to the concerns behind the questions asked, the applicant submits the following information, provided the submittal does not affect the permit processing time clock.

The use of tires as a supplemental fuel is a viable and proven means of conserving non-renewable fossil fuel resources and a very effective way of disposing of a troublesome solid waste material. The public opposition to the combustion of tires is based on a misperception, not a demonstrated problem. The combustion of tires at this facility will bear no resemblance to the open burning of tires. A review of test data and other scientific literature related to the use of tires as a fuel demonstrates that tire-derived fuel burns cleaner (with less emissions) than coal. Consistent with these findings, the Department (through the Solid Waste Section) supports the use of tires as fuel in cement kilns and the Department's Division of Air Resources Management has permitted cement kilns in Florida (under construction and in operation) to utilize tires and tire-derived fuel. Furthermore, more than 30 percent of the currently operating cement kilns in the U.S. are using tires or tire-derived fuel as partial replacement for other fuels. Based on all available information and Department policy related to the use of tires as fuel, it makes good sense to burn tires as a supplemental fuel if they are available.

4. Provide an estimate of emissions from truck traffic associated with operating the proposed plant. This appears to be a particular concern to the public because there is no available rail line in existence to the proposed location.

***Response:*** The applicant notes that the matters inquired of in this request are not related to those matters allowed under Section 403.0876(1), F.S., and therefore requests that the Department begin processing the permit application under Section 403.0876(2)(a), F.S.

5. Regarding the MACT assessment, evaluate the applicability of meeting the dioxin emissions of the best controlled source.

***Response:*** The Clean Air Act, at Section 112(d), discusses the National Emission Standards for Hazardous Air Pollutants from source categories. The EPA Administrator is charged with promulgating emissions standards applicable to new or existing sources of hazardous air pollutants and requiring the maximum degree of reduction in emissions of the hazardous air pollutants. In doing so, the Administrator is to take into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, and must determine that the standard is achievable for new or existing sources in the category or subcategory to which the emission standard applies.

Section 112(d)(3) describes the requirements for emission standards for new sources as:

> *The maximum degree of reduction in emissions that is deemed achievable for new sources in a category or subcategory shall not be less stringent than the <u>emission control</u> that is achieved in practice by the best controlled similar source, as determined by the Administrator.* [emphasis added]

Therefore, compliance with the MACT standard for new cement plants is the level of emission control that is achieved in practice by the best controlled similar source.

The Administrator has determined that the control technology of the best controlled similar dry process cement plant is the reduction of kiln exhaust gas temperature at the particulate matter control device inlet[1]. The Administrator further determined that dioxin emissions levels achieved with activated carbon injection (on other "potentially similar sources") are expected to be about the same as that achieved with temperature reduction.

To achieve the control system temperatures that are consistent with MACT requirements in the Suwannee American Cement plant, with the plant operating in the direct mode (bypassing the raw mill), the gas stream leaving the preheater tower will be cooled to approximately 300° F in a quench tower prior to entering the kiln electrostatic precipitator. When the plant is operating in the compound mode (with the raw mill operating), the hot gases from the preheater pass through the raw mill drying the raw feed. In this mode of operation, the temperature of the gas stream is reduced to approximately 230° F prior to entering the kiln electrostatic precipitator. In both cases, the inlet temperature to the kiln electrostatic precipitator is well below temperatures associated with the formation of dioxins and furans. These operating practices are consistent with achievement of the MACT standard promulgated by EPA for Portland

---

[1] *Preamble to Propsed NESHAP for the Portland Cement Manufacturing Industry. March 24, 1998, U.S. Environmental Protection Agency.*

cement plants.

6. Estimate $PM_{2.5}$ emissions from the plant and characterize the nature of these emissions, particularly as compared to the $PM_{10}$ emissions.

***Response:*** The applicant notes that the matters inquired of in this request are not related to those matters allowed under Section 403.0876(1), F.S., and therefore requests that the Department begin processing the permit application under Section 403.0876(2)(a), F.S. However, in a continuing effort to be responsive to the concerns behind the questions asked, the applicant submits the following information, provided the submittal does not affect the permit processing time clock.

Based on EPA estimates (Compilation of Air Pollutant Emission Factors, EPA Publication AP-42, Version 5, January 1995), 50-60 percent of $PM_{10}$ from Portland cement plants is $PM_{2.5}$. The nature of these particles ranges from raw materials such as limestone, sand and clay through the intermediary products to finished cement. Some portion of the particulate matter will be products of combustion and some portion will be post-combustion products.

7. Consider installing ambient monitors for $PM_{2.5}$ and ozone in locations appropriate for assessing the impacts of the proposed plant at the Ichetucknee Springs State Park and the area around the site.

***Response:*** The applicant notes that the matters inquired of in this request are not related to those matters allowed under Section 403.0876(1), F.S., and therefore requests that the Department begin processing the permit application under Section 403.0876(2)(a), F.S.

However, in a continuing effort to be responsive to the concerns behind the questions asked, the applicant submits the following information, provided the submittal does not affect the permit processing time clock.

Table 62-212.400-3, FAC provides *de minimis* ambient concentrations for various pollutants. The gathering of ambient air quality data for ozone is only required for facilities with volatile organic compound (VOC) emissions in excess of 100 tons per year. This facility is requesting a VOC permit limit of approximately 50 tons per year. Additionally, there is no regulatory requirement for $PM_{2.5}$ monitoring.

8. What portion of the proposed plant's NOx emissions will be deposited as nitrate through dry and wet deposition within an area 25 miles radius from the site?

   Investigate pollution prevention techniques that may result in lower overall NOx emissions.

***Response:*** The applicant notes that the matters inquired of in this request are not related to those matters allowed under Section 403.0876(1), F.S., and therefore requests that the Department begin processing the permit application under Section 403.0876(2)(a), F.S. However, in a continuing effort to be responsive to the concerns behind the questions asked, the applicant submits the following information, provided the submittal does not affect the permit processing time clock.

Approximately 7% or less of the plant's NOx emissions will be deposited as nitrate through dry and wet deposition within an area 25 miles radius from the site. This is approximately <u>0.1 pounds per acre per year</u>, and is less than one percent of the wet and dry background deposition measured at the Bradford Forest, near Starke, Florida.

This analysis was very conservative, as it assumed nitrate deposition between five miles and 25 miles to be equal to the deposition rate at five miles (i.e., there was no credit taken for the decrease in deposition rate with distance beyond five miles). This approach is also conservative in that it assumed all NOx from the plant would immediately convert to nitrate and be available for deposition. This is a worst case assumption.

Pollution prevention operating procedures that may result in lower overall NOx emissions are being evaluated. One technique planned for the facility is the stockpiling of limestone to allow natural drainage before pyroprocessing. Lower material moisture contents allow for the use of less fuel and hence, less NOx.

9. Describe the compliance history of the applicant with respect to violations of any Department rules at any installation.

***Response:*** The applicant notes that the matters inquired of in this request are not related to those matters allowed under Section 403.0876(1), F.S., and therefore requests that the Department begin processing the permit application under Section 403.0876(2)(a), F.S. However, in a continuing effort to be responsive to the concerns behind the questions asked, the applicant submits the following information, provided the submittal does not affect the permit processing time clock.

Suwannee American Cement Company is the applicant for this permit, and was founded in 1998 and has no history of violations of any Department rules.

Mr. Joe Anderson, III is the President of Suwannee American Cement Company and is also associated with the following business entities:

| Company Name | Years in Business |
|---|---|
| Anderson Mining Corporation | 22 |
| Anderson Materials, Inc. | 2 |
| Anderson Columbia Environmental | 10 |
| Anderson Columbia Co., Inc./Columbia Paving | 11 |

Anderson Mining Corporation signed an industry wide consent order on April 11, 1995, (OGC 95-0776). It admitted to no violations. Anderson Materials has no record of violations or any cases pending with the Department. Anderson Columbia Environmental was involved with the Department in a case in Escambia County that ended with a Consent Agreement signed in 1994.

Anderson Columbia Co., Inc., owns and operates eleven asphalt plants throughout the State of Florida. Anderson Columbia in the past years has signed two Consent Agreements related to their Bagdad, Florida site. The first, dated April 18, 1997, dealt with the operation of a concrete crusher that was operated in Bagdad. The other consent agreement was an attempt to resolve contested issues regarding submerged lands at the

Bagdad site. After this consent order was signed, the DEP revoked it. As a result of that, it is not presently in effect; those issues are in litigation as part of a lawsuit pending in Santa Rosa County. The above is a summary; the DEP has records on all the above.

Suwannee American Cement intends to operate the proposed facility in accordance with all applicable local, state, and Federal regulations, and intends to be a good corporate citizen.

COPY
JT Kahn
Jim P

# INTEROFFICE MEMORANDUM

**Date:** 20-Apr-1999 10:07am
**From:** Mollie Palmer TAL
PALMER_M@EPIC5A1@DER
**Dept:** Executive Offices
**Tel No:** 850/488-4805

**To:** Howard Rhodes TAL ( RHODES_H@A1@DER )
**CC:** Cheryl Bakker TAL ( BAKKER_C@EPIC5A1@DER )
**CC:** Clair Fancy TAL ( FANCY_C@A1@DER )

**Subject:** Suwannee-American

Howard -- sorry to keep you on hold -- David's calls are usually short but he had several items this time! One of them was that he wants a briefing on Suwannee-American. Cheryl will be scheduling with you but following are some specific issues he asked about in addition to basic background on the issue: what are our options? background on the company -- their track record, have they been good corporate citizens? can we take into account past actions in a current permit decision? are there any laws or rules that allow us to be more protective in permitting when state lands might be affected?

thanks, mollie

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

April 19, 1999

Dr. Michael Samuels
Box 910
Ft. White, FL 32038

Re: Suwannee American Cement Company

Dear Dr. Samuels:

Per your request of April 14th to Mr. Clair Fancy, I have summarized the emissions information about this proposed project based on emissions estimates and limits proposed by the applicant. To date, the application is not yet complete because we are awaiting additional information from the applicant.

The applicant's request is to construct a dry process preheater/precalciner type Portland cement plant that will have the capacity to produce up to 2300 tons/day of clinker, which can produce up to 1,191,360 tons/year of Portland cement. The applicant has proposed to burn 5.2 tons of tires or tire derived fuel per hour. A rule from our waste division specifies there are 100 passenger tires per ton, so the applicant's proposal represents the combustion of 520 passenger tires per hour.

The applicant has estimated emissions from the facility, in tons per year, as approximately:

| | |
|---|---|
| $PM_{10}$ | 168 |
| PM | 197 |
| $SO_2$ | 118 |
| NOx | 1260 |
| CO | 1511 |
| VOC | 50 |
| Sulfuric acid mist | 6 |
| Fluorides | 0.38 |

And, for the following pollutants, in pounds per year:

| | |
|---|---|
| Lead | 60 |
| Mercury | 129 |
| Beryllium | 0.6 |
| Dioxin | 0.002 |

Mr. Fancy mentioned to me that you had inquired about EPA's data on dioxin emissions from cement kilns. At Mr. Fancy's request, I have included from EPA's preamble to the federal proposed rule for Portland cement manufacturing (40 CFR 63, Subpart LLL) a copy of Table 8, which summarizes dioxin emissions for cement kilns burning conventional fuels and non-hazardous wastes, including tires.

Please contact me at 850-921-9519 if you have any questions about the above.

Sincerely,

Joseph Kahn, P.E.
New Source Review Section

/jk

enclosure

**Table 8. Average Dioxin/Furan Toxic Equivalent Emissions (at 7 Percent Oxygen) and Average Stack Gas Temperatures for NHW Cement Kilns and Kilns Tested Under NHW Conditions [Docket Item II-B-78]**

| Kiln type | APCD type | Kiln fuel | Avg Gas T (deg. F) | Avg TEQ ng/dscm | Kiln location |
|---|---|---|---|---|---|
| PH/PC........ | FF | Natural gas; main stack tested. | 183 | 0.011 | Capital Aggregates - San Antonio TX. |
| PC............... | FF | Coal,tires, pulp/paper mill sludge. | 220 * | 0.0063 | Calaveras Cement - Redding CA. |
| PH/PC...... | FF | Natural gas; raw mill on | 221 | 0.042 | Ash Grove – Seattle WA (kiln/ in-line mill). |
| PH/PC...... | ESP | Not reported.............. | 226 | 0.00087 | RMC Lonestar - Davenport CA. |
| PC............. | FF | Coal & tires.............. | 233 * | 0.21 | Calaveras Cement - Redding, CA. |
| PH/PC...... | FF | Natural gas; bypass stack tested. | 299 | 0.054 | Capital Aggregates – San Antonio TX. |
| WET........ | ESP | Coal...................... | 305 | 0.0024 | Holnam--Florence CO. |
| WET........... | ESP | Coal & natural gas......... | 315 | 0.072 | Ash Grove – Montana City MT. |
| WET........... | ESP | Coal...................... | 346 ** | 0.37 | Lehigh - Union Bridge MD. |
| WET........... | ESP | coal & tires.............. | 358 ** | 1.2 | Lehigh - Union Bridge MD. |
| WET........... | ESP | Coal/coke................. | 366 | 0.032 | Holnam kiln #1 – Holly Hill SC. |
| DRY.......... | FF | Coal, gas, tire derived fuel. | 396 | 0.0035 | Riverside--Oro Grande CA. |
| WET............ | ESP | Natural gas................ | 397 | 0.020 | Capital Aggregates – San Antonio TX. |
| DRY............ | FF | Coal & natural gas......... | 403 | 0.0084 | Riverside--Oro Grande CA. |
| WET............ | ESP | Coal...................... | 417 | 0.12 | Lone Star--Greencastle IN. |
| WET............ | ESP | Coal/coke................. | 418 | 0.04 | Holnam kiln #2--Holly Hill SC. |
| DRY............ | ESP | Coal, coke, & tires........ | 450 | 0.074 | Lone Star--Oglesby IL. |
| WET............ | ESP | Coal...................... | 482 | 0.55 | Continental Cement-- Hannibal MO. |
| WET............ | ESP | Coal...................... | 518 | 1.0 | Holnam - Clarksville MO. |

Abbreviations:
PH/PC = preheater/precalciner.
ESP = electrostatic precipitator.
PC = precalciner.
FF = fabric filter.

Note: Entries flagged with * and ** are listed in Table 9 and discussed in the text.

RETURN ADDRESS completed on the reverse side?

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "*Return Receipt Requested*" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Joe Anderson, Pres.
Suwannee American
Cement Co.
PO Box 410
Branford, Fl
32008

4a. Article Number
Z 333 618 098

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
4-26-99

5. Received By: *(Print Name)*

6. Signature: *(Addressee or Agent)*
X

8. Addressee's Address *(Only if requested and fee is paid)*

PS Form **3811**, December 1994 102595-97-B-0179 **Domestic Return Receipt**

Thank you for using Return Receipt Service.

Z 333 618 098

US Postal Service
## Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

| | |
|---|---|
| Sent to Joe Anderson | |
| Street & Number SACC | |
| Post Office, State, & ZIP Code Branford Fl | |
| Postage | $ |
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| TOTAL Postage & Fees | $ |
| Postmark or Date 1210465-001-AC PSD-Fl-259 4-19-99 | |

PS Form 3800, April 1995

# Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

April 19, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Joe Anderson, III
President
Suwannee American Cement Company, Inc.
PO Box 410
Branford, Florida 32008

Re: Request for Additional Information
DEP File No. 1210465-001-AC (PSD-FL-259)
Proposed Portland Cement Plant

Dear Mr. Anderson:

On February 25, 1999 the Department received your response to the Department's requests for additional information. The application is still incomplete. In order to continue processing your application, the Department will need the additional information requested below. Should your response to any of the items require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

1. We received additional comments from the federal land manager regarding response item 27. Please respond to the enclosed comments.

Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. If there are any questions, please call me at 850/921-9519.

Sincerely,

Joseph Kahn, P.E.
New Source Review Section

/jk

enclosure

cc: Mr. Frank Darabi, P.E.
Mr. Steve Cullen, P.E.
Mr. Gregg Worley, EPA
Mr. John Bunyak, NPS
Mr. Chris Kirts, NED
Mr. Jim Stevenson, DEP Ecosystem Mgmt.
Mr. Tom Workman, DEP Recreation & Parks
Ms. December McSherry
Mr. Svenn Lindskold
Mr. Tom Greenhalgh
Mr. Al Mueller
Mr. Dave Bruderly
Mr. Chris Bird, Alachua County DER
Mr. John Mousa, Alachua County DER
Mr. Chuck Clemons, Chairman, Alachua County Commissioners
Mr. J. Calvin Gaddy
Ms. Patrice Boyes, Esq.
Ms. Kathy Cantwell
Mr. Ralph Ashodian
Mr. Craig Pittman
Virginia Seacrist
Dr. Bob and Lynn Milner

# INTEROFFICE MEMORANDUM

**Date:** 16-Apr-1999 06:11pm
**From:** Ellen_Porter
Ellen_Porter@nps.gov@PMDF@EPIC66
**Dept:**
**Tel No:**

**To:** Kahn_J ( Kahn_J@Al@DER )
**CC:** Don_Shepherd ( Don_Shepherd@nps.gov@PMDF@EPIC66 )

**Subject:** Fwd[2]:Suwannee American Cement

Joe, when I sent this message to Al, I got a return message saying Al was on vacation and messages should be sent to you. If you have questions, call Don Shepherd at (303) 969-2075.

Ellen Porter
Environmental Specialist
U.S. Fish and Wildlife Service Air Quality Branch
(303) 969-2617
____________________Forward Header____________________
Subject: Fwd:Suwannee American Cement
Author: Ellen Porter
Date: 04/16/1999 2:48 PM

Al, Don Shepherd has reviewed the additional information submitted by Suwannee American Cement and has the following comments:

I agree with Suwannee's conclusion that SNCR is not compatible with its proposed strategy to limit NOx emissions through combustion control techniques, and I agree that the Suwannee approach would result in lower NOx emissions. Therefore, I believe that Suwannee's proposal represents BACT for this kiln for NOx emissions.

However, Suwannee has not evaluated the economic feasibility of adding a scrubber for SO2 as has been proposed by Holnam Cement in Colorado. Suwannee maintains that their emissions would already be very low and that the environmental impacts of a wet scrubber would outweigh the benefits of SO2 reduction. However, Suwannee is required by the BACT "top down" process to evaluate the highest level of SO2 control for its technical, economic, and environmental feasibility, and Suwannee has not done so. Unless Suwannee can demonstrate why it is not technically feasible to install a scrubber, is too expensive, or has unacceptable environmental impacts when compared to Holnam Cement, it must choose the scrubber option. Suwannee should be advised to conduct a full analysis of the feasibility of adding a scrubber to this project.

Don Shepherd, P.E.

# INTEROFFICE MEMORANDUM

**Sensitivity:** COMPANY CONFIDENTIAL

**Date:** 14-Apr-1999 01:10pm
**From:** Mark Latch TAL
LATCH_M@EPIC6A1@EPIC9
**Dept:** Recreation/Parks
**Tel No:** SC 278-8666

**To:** Dana Bryan TAL ( BRYAN_D@EPIC6A1@EPIC9 )
**To:** James Stevenson TAL ( STEVENSON_J@EPIC6A1@EPIC9 )
**CC:** Joseph Kahn TAL ( KAHN_J@A1@DER )

**Subject:** Suwannee Co. cement plant near Ichetucknee

I just spoke with Joe Kahn, project manager in the Air Program, about setting up a meeting. The agreed upon time is 4/20/99 at 130 pm at their office on Magnolia.

ml
04/14

# INTEROFFICE MEMORANDUM

**Sensitivity:** COMPANY CONFIDENTIAL

**Date:** 14-Apr-1999 10:48am
**From:** Mark Latch TAL
LATCH_M@EPIC6A1@EPIC9
**Dept:** Recreation/Parks
**Tel No:** SC 278-8666

**To:** Dana Bryan TAL ( BRYAN_D@EPIC6A1@EPIC9 )
**CC:** James Stevenson TAL ( STEVENSON_J@EPIC6A1@EPIC9 )
**CC:** Joseph Kahn TAL ( KAHN_J@A1@DER )

**Subject:** Suwannee Co. cement plant near Ichetucknee

I spoke with Joe Kahn, project manager in the Air Div., about this project. In summary:
- the application is incomplete pending receipt of material from the applicant in response to the request for information that was sent
- it is expected that the applicant will supply the information this week or early next to make the appl. complete. That will start the time clocks.
- the application is for a permit under the Prevention of Significant Deterioration permit program. This is a delegated federal program.
- once the evaluation if complete, Air will evaluate the application relative to the standards, and issue and Intent, probably an ITI according to Joe.
- the way to challenge the permit is through DOAH and then District Court of Appeals. There is no appeal to the Gov. and Cab.
- There is no public interest test in the review.

Joe offered to meet with R&P to discuss the process, review the materials, etc. I told him that I would call him back to arrange a time to go to his office so he would not have to transport the files.

ml
04/14

# INTEROFFICE MEMORANDUM

**Date:** 14-Apr-1999 10:35am
**From:** Joseph Kahn TAL
KAHN_J
**Dept:** Air Resources Management
**Tel No:** 850/921-9519

**To:** Clair Fancy TAL ( FANCY_C )
**To:** Cleve Holladay TAL ( HOLLADAY_C )

**Subject:** Suwannee American - DEP Rec. and Parks

I spoke this morning with Mark Latch of Recreation and Parks (8-8666) about the status of the Suwannee American Cement permit application. We have agreed to have a meeting of the technical staff to review the permit application so that Rec. and Parks staff can become familiar with the emissions estimates and impacts analysis. Mark will work with me to schedule that meeting for perhaps Monday or Tuesday of next week. Cleve, please keep this in mind so that you can attend with me. Thanks.

# INTEROFFICE MEMORANDUM

**Date:** 09-Apr-1999 01:13pm
**From:** Shari Naftzinger TAL
NAFTZINGER_S@EPIC5A1@DER
**Dept:** Executive Offices
**Tel No:** 850/487-2916

**To:** Joseph Kahn TAL ( KAHN_J@A1@DER )
**CC:** Mary Fillingim TAL ( FILLINGIM_M@A1@DER )

**Subject:** Re: Contact with Legislator's Staff

Thanks. For some reason I am unable to view/print your attachment. Please send me a hard copy, along with a copy of the letter you received. Appreciate it.

Shari

^Pat Kennedy of our air division director's office advised me that you are the
^contact to report contacts with legislators or their staff.
^
^I received a letter dated March 31, 1999 from a legislative assistant to
^Senator Burt L. Saunders forwarding information from one of his constituents,
^Mr. Jack Gaddy, about a site formerly used for mining hard rock phosphate.
^This site is adjacent to the site of a cement plant proposed by Suwannee
^American Cement Company in Suwannee County. I am currently reviewing an
^application for an air construction permit for this facility. I had
previously
^spoken with Mr. Gaddy and referred his information to other department staff
^who could address his concerns. I sent the attached response to Sen.
Saunders'
^assistant describing the action taken. Please let me know if you need any
^further information.

# INTEROFFICE MEMORANDUM

**Date:** 09-Apr-1999 07:37am
**From:** Joseph Kahn TAL
KAHN_J
**Dept:** Air Resources Management
**Tel No:** 850/921-9519

**To:** Shari Naftzinger TAL ( NAFTZINGER_S @ EPIC5A1 @ DER )

**Subject:** Contact with Legislator's Staff

Pat Kennedy of our air division director's office advised me that you are the contact to report contacts with legislators or their staff.

I received a letter dated March 31, 1999 from a legislative assistant to Senator Burt L. Saunders forwarding information from one of his constituents, Mr. Jack Gaddy, about a site formerly used for mining hard rock phosphate. This site is adjacent to the site of a cement plant proposed by Suwannee American Cement Company in Suwannee County. I am currently reviewing an application for an air construction permit for this facility. I had previously spoken with Mr. Gaddy and referred his information to other department staff who could address his concerns. I sent the attached response to Sen. Saunders' assistant describing the action taken. Please let me know if you need any further information.

April 9, 1999

Ms. Randi Rosete
Legislative Assistant to Senator Burt L. Saunders
The Florida Senate, 25th District
Room 120 A & B
1039 Southeast 9th Place
Cape Coral, Florida 33904

Dear Ms. Rosete:

Thank you for your letter of March 31, 1999 referring information from Mr. Jack Gaddy regarding the use of a site previously used for mining hard rock phosphate. I am reviewing an air construction permit application from Suwannee American Cement Company for a proposed Portland cement plant on a site adjacent to Mr. Gaddy's family's property in Suwannee County. I had spoken with Mr. Gaddy shortly before receiving your letter, and I referred Mr. Gaddy's information to Howard Hayes of the Department's Environmental Resource Permitting section and to Jim Stevenson of the Department's Ecosystem Management section. I forwarded copies of information about the site from Mr. Gaddy to Mr. Hayes and Mr. Stevenson, as I understand these gentlemen are following up directly with Mr. Gaddy regarding his concerns about the site.

Please call me at 850/921-9519 if you have any questions or need more information.

Sincerely,

Joseph Kahn, P.E.
New Source Review Section

/jk

cc: Howard Hayes
Jim Stevenson

FLORIDA

# Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

April 9, 1999

Ms. Kandi Rosete
Legislative Assistant to Senator Burt L. Saunders
The Florida Senate, 25th District
Room 120 A & B
1039 Southeast 9th Place
Cape Coral, Florida 33904

Dear Ms. Rosete:

Thank you for your letter of March 31, 1999 referring information from Mr. Jack Gaddy regarding the use of a site previously used for mining hard rock phosphate. I am reviewing an air construction permit application from Suwannee American Cement Company for a proposed Portland cement plant on a site adjacent to Mr. Gaddy's family's property in Suwannee County. I had spoken with Mr. Gaddy shortly before receiving your letter, and I referred Mr. Gaddy's information to Howard Hayes of the Department's Environmental Resource Permitting section and to Jim Stevenson of the Department's Ecosystem Management section. I forwarded copies of information about the site from Mr. Gaddy to Mr. Hayes and Mr. Stevenson, as I understand these gentlemen are following up directly with Mr. Gaddy regarding his concerns about the site.

Please call me at 850/921-9519 if you have any questions or need more information.

Sincerely,

Joseph Kahn, P.E.
New Source Review Section

/jk

cc: Howard Hayes
Jim Stevenson

# INTEROFFICE MEMORANDUM

**Date:** 07-Apr-1999 03:16pm
**From:** Pat Kennedy TAL
KENNEDY_P
**Dept:** Air Resources Management
**Tel No:** 850/488-0114

**To:** Joseph Kahn TAL ( KAHN_J )

**Subject:** Re: Contact for Office of Legislative Affairs

Joe - There is no actual form. You can e-mail the information to Shari Naftzinger, who works in that office and coordinates all this stuff. In this case, more is better - like the Media Hot Sheet.

Later,

Pat

<><>Pat,
<><>
<><>Do we have a form to fill out to advise the Office of Legislative Affairs
about
<><>contact with a senator's office? Something like the media sheet? Or do
you
<><>have someone's name to receive information by e-mail?
<><>
<><>I have to advise of a letter from Sen. Saunders' office regarding Suwannee
<><>American Cement. I'm working now on a brief response.
<><>
<><>-Joe

# INTEROFFICE MEMORANDUM

**Date:** 07-Apr-1999 09:55am
**From:** Joseph Kahn TAL
KAHN_J
**Dept:** Air Resources Management
**Tel No:** 850/921-9519

**To:** Pat Kennedy TAL ( KENNEDY_P )
**To:** Charlotte Hayes TAL ( HAYES_C )
**CC:** Clair Fancy TAL ( FANCY_C )
**CC:** Kim Tober TAL ( TOBER_K )

**Subject:** Correspondence for Suwannee American

This memo is to confirm the approach decided in our meeting with Howard yesterday regarding handling public correspondence related to the Suwannee American Cement application.

Correspondence sent as an action item (correspondence control item) from the governor's office and the secretary's office will be handled using a standardized response letter similar to the one I drafted that was reviewed and edited by Pat and Howard. Charlotte will draft these letters for the governor's or secretary's signature, as appropriate.

Correspondence sent as a "handle appropriately" item from the governor's office will be handled similarly, except that Charlotte will draft these letters for Howard's signature.

E-mail from the governor's office must be responded to individually by e-mail per the governor's request. The e-mail responses will be prepared by Charlotte as a simple cover memo with an attached general response. The response will be similar to those of the above letters, but will not have a signature block, or a reference to contact the Department for further information. The cover memo will read, "The Governor has asked us to respond to e-mail message about the Suwannee American Cement Company's proposed cement plant. Attached is the Department's response to all inquiries regarding this project." E-mails from the secretary's office will be responded to similarly except the cover memo will read, "The Secretary has asked..."

Correspondence directed to me will be filed as part of the record. I will respond generally to all comments as part of the technical evaluation when that is drafted. Copies of all correspondence will be placed in the file in Kim's office so that it will be officially part of the public record.

Please let me know if what I've outlined is incorrect. Thanks for helping me out with this effort.

# INTEROFFICE MEMORANDUM
(Draft)

**Date:** 05-Apr-1999 11:04am
**From:** Joseph Kahn TAL
**Dept:**
**Tel No:**

**To:** ellen_porter@nps.gov@in
**CC:** Kim Tober TAL (TOBER_K)

**Subject:** Suwannee American Cement

Ellen,

Al forwarded your e-mail to me regarding the applicant's response about SNCR and wet scrubbing. We received the response late in February and forwarded a copy to NPS then. Please check to see if it ever arrived. If it didn't we'll send another copy to you. The project is incomplete and we sent another request for additional information, so we have some time for you to review these issues.

-Joe

# INTEROFFICE MEMORANDUM

**Date:** 05-Apr-1999 09:32am
**From:** Joseph Kahn TAL
KAHN_J
**Dept:** Air Resources Management
**Tel No:** 850/921-9519

**To:** Pat Kennedy TAL ( KENNEDY_P )
**CC:** Clair Fancy TAL ( FANCY_C )
**CC:** Alvaro Linero TAL ( LINERO_A )

**Subject:** Draft Response Regarding Suwannee American Cement

Pat,

Attached is a draft e-mail response for Howard to the e-mail message of March 30, 1999 to Secretary Struhs regarding Suwannee American Cement. The e-mail was forwarded to Howard by Cheryl Bakker on March 31st, and by you to me on April 1st. Please look over the attached draft and let me know of any changes that need to be made. I do not have a street address for the author of the message, so it is addressed to the e-mail address. Let me know if you need a copy of the original message.

-Joe

Date

Ms. Julie Cirigliano
Via e-mail at julie@mmrd.com

Dear Ms. Cirigliano:

Secretary Struhs has forwarded your e-mail regarding the proposed Suwannee American Cement Company's plant to me for reply. Thank you for taking the time to express your concerns about this project.

Please be assured that my staff from the Department of Environmental Protection's (DEP) Division of Air Resource Management are thoroughly reviewing Suwannee American Cement Company's air construction permit application, and they will ensure that the project meets all requirements of Florida's air regulations. In fact, a draft permit will not be issued to the company until the company provides assurance that it can comply with the state and federal air pollution rules. The air permitting staff is conducting the review of this permit application pursuant to the DEP's rules for the Prevention of Significant Deterioration of air quality (PSD). This includes a determination of Best Available Control Technology (BACT), which imposes stringent emission limits that the company must meet in order to operate. The air emissions criteria of the PSD and BACT process are established by Florida and the U.S. Environmental Protection Agency to be protective of human health and the environment, and the company's emission impacts are below these criteria. The emission limits imposed by BACT for this project include some of the most stringent limits in the U.S.

I share your regard for the beautiful Ichetucknee Springs State Park and the area around the Santa Fe and Suwannee Rivers. I assure you that my staff will do everything in their legal authority to protect this wonderful ecosystem. In response to public comments received at DEP's public meeting in Branford on March 25th, my staff sent a letter to the company asking them to formally respond to the concerns expressed by the public about air quality and the permit application. These concerns include the proposal to burn tires, the emissions from truck traffic, and the impacts from particulate emissions. No further action will be taken until the company's responses to those questions are carefully evaluated.

I appreciate your comments regarding protecting the environment near the park. If you have any technical questions or need further information, please contact Joseph Kahn at the Division of Air Resource Management, Department of Environmental Protection, Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, or at 850/488-0114.

Sincerely,

Howard L. Rhodes, Director
Division of Air Resource
Management

HLR/jk

# INTEROFFICE MEMORANDUM

**Sensitivity:** COMPANY CONFIDENTIAL

**Date:** 05-Apr-1999 08:56am
**From:** Alvaro Linero TAL
LINERO_A
**Dept:** Air Resources Management
**Tel No:** 850/921-9532

**To:** Joseph Kahn TAL ( KAHN_J )
**To:** Cleve Holladay TAL ( HOLLADAY_C )

**Subject:** FWD: Suwannee Cement

Forward from Fish and Wildlife Service. Al.

# INTEROFFICE MEMORANDUM

**Date:** 02-Apr-1999 06:13pm
**From:** Ellen_Porter
Ellen_Porter@nps.gov@PMDF@EPIC66
**Dept:**
**Tel No:**

**Subject:** Suwannee Cement

We received copies of your letters (12/29/98 and 2/16/99) to Suwannee in which you asked them to respond to our comments regarding SNCR for NOX and a wet scrubber for SO2. Anything new on those issues? Have they responded?

# INTEROFFICE MEMORANDUM

**Date:** 01-Apr-1999 02:39pm
**From:** Howard Hayes TAL
HAYES_H
**Dept:** Environmental Resource Permittin
**Tel No:** 850/488-8217 Suncom 278-8217

**To:** Joseph Kahn TAL ( KAHN_J )
**To:** Joseph Bakker TAL ( BAKKER_J )
**To:** Alan Whitehouse TAL ( WHITEHOUSE_A )
**To:** Harry Neel TAL ( NEEL_H )

**Subject:** Comment Regarding Suwannee American Cement Company

This is in response to your March 31, 1999 e-mail. I talked with Mr. J. Calvin Gaddy. He has some very interesting things to say about the Anderson Mining Company mine near Bradford, and the proposed cement plant for this site. He apparently knows considerable history about this region and the mine.

1) He reports that this mine was a hard-rock phosphate mine, possibly during the 1920's and 30's. This is possible because I know that the literature lists other hard-rock phosphate mines near this site. He also stated that during the late 1940's to early 1950's he traveled to phosphate mines all over the State to record background radiation levels. He alleges that the "slag" (mine tailings) were "as hot as a fox" at the Bradford Mine. He expressed concerns about the potential for incorporation of this radioactive material into the cement that will be produced by the proposed plant. He is also concerned about the washing of this material into the mine pits (see item 2 below).

This bureau cannot deal with this product quality question. This may be within the jurisdiction of the U.S. Environmental Protection Agency, Radiation Protection Division, and/or the Florida Department of Health, Bureau of Radiation Control. The DOH does radiation monitoring at phosphate mines. I am still researching this. When I get the names and telephone numbers of points of contact, they will be forwarded to Mr. Gaddy. One of our phosphate staff has had to deal with this question before. He's in the field this week, but when he returns he may be able to give me the names.

2) Mr. Gaddy also reports that during the mining of the old pit, "a spring opened within the pit." He suspects that this conduit may be connected to local waterways and nearby sinks. This will be a concern for us when the operator applies for an environmental resource permit. They will need this permit before they expand the mine; however, they are not operating at this time, and we do not believe they need this permit for the present conditions. I will keep these notes in the file for future reference.

I will also forward Mr. Gaddy's telephone number to Jim Stevenson, DEP, Office of Ecosystem Management. The Ichetucknee Springs Water Quality Working Group might be interested in what Mr. Gaddy knows about the history of this area, and the alleged conduit in the mine pit. This Mr. Stevenson has discussed conduit problems before with this operator in connection with their mine near Columbia City.

Thank you for referring Mr. Gaddy's concerns to me. Researching this new question brighten up my normally routine workdays. If you have any questions or comments, please send an e-mail or telephone me at SUNCOM 278-8217.

Howard

# INTEROFFICE MEMORANDUM

**Date:** 31-Mar-1999 02:59pm
**From:** Joseph Kahn TAL
KAHN_J
**Dept:** Air Resources Management
**Tel No:** 850/921-9519

**To:** Jeffrey E. Brown TAL ( BROWN_JE )

**Subject:** Call from Ken Oertel

Jeff,

I just had a short phone conversation with Ken Oertel about the latest RFI letter to Suwannee American Cement Co. He said he was working on part of the response and wanted to put the letter in perspective. He asked me if the eight items related to public comments were going to be permitting criteria for this project, and I told him that we asked those questions to be responsive to the public and request a formal response from the company about those issues of public concern. He said that he is inclined to answer the question about the applicant's compliance history by reviewing the history of the applicant's other companies because Suwannee American is a new company with no compliance history. He said he represents Anderson Columbia in current litigation with the Department and wanted to know if he should only provide information about actions that were resolved. I told Ken that he should answer however he thought best, and that we would review the response with you to determine how it met the criteria of 62-4, and how it would relate to the Department's intended agency action.

That was it. Thought I would let you know ASAP.

-Joe

# Department of Environmental Protection


Lawton Chiles
Governor

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Virginia B. Wetherell
Secretary


DIVISION OF RECREATION AND PARKS
BUREAU OF NATURAL AND CULTURAL RESOURCES

FAX: (850) 922-6215 SUNCOM: 292-6215
PHONE: (850) 488-8666 SUNCOM: 278-8666

**URGENT - HAND DELIVER**________ **NORMAL ROUTING**________

DATE: 3-29-99

NUMBER OF PAGES INC. COVER 3

**TO:** Joe Kahn

**FROM:** DANA Bryan 8-4667

**SUBJECT:** Suwannee County Commissioners

**Call me at 488-8666 if you have questions.**

*"Protect, Conserve and Manage Florida's Environment and Natural Resources"*

*Printed on recycled paper.*

# Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

December 14, 1998

The Honorable Jerry Scott
Chairman, Suwannee County
Board of County Commissioners
224 Pine Avenue
Live Oak, Florida 32060

Dear Chairman Scott:

The Division of Recreation and Parks is responsible for over 150 state parks, preserves and recreation areas that comprise the Florida Park Service. Our mission is to provide resource-based recreation while preserving, interpreting and restoring natural and cultural resources.

One of our parks is Ichetucknee Springs State Park located near Branford. The park contains numerous pristine springs which collectively form the Ichetucknee River. As you are aware, the springs and river provide an unusually popular site for swimming, tubing and canoeing in a world class natural setting. Suwannee County should be very proud of this unique state park.

It appears that a rock quarry 3.5 miles west of Ichetucknee Springs State Park has been chosen as a site to construct a cement production facility. Because of prevailing winds in the summer, we expect that smokestack discharges from the plant may be noticeable in the park, and we are concerned for the recreating public as well as about long-term environmental damage. Just as the park is concerned with the quality of the water entering the aquifer upgradient of the park, we are concerned with the quality of air upwind of the park.

The park fully understands that cement plants are needed to supply construction materials and that the proposed cement plant would provide jobs and tax revenue to the county. Our concerns are that this type of industrial development near the park may pose a threat to air, water and scenic qualities in this region and may also set a precedent for further development of sensitive areas near the park. We urge the Suwannee County Commission to give special consideration to the potential consequences of this proposal and to all industrial site plans that are proposed for the area around Ichetucknee Springs State Park.

Sincerely,

Fran P. Mainella

Fran P. Mainella, CLP
Director
Division of Recreation and Parks

FPM/mlw

cc: Torrey Johnson, Chief, Bureau of Parks District Two
Dana Bryan, Chief, Bureau of Natural & Cultural Resources
Jim Stevenson, Office of Ecosystem Management

*"Protect, Conserve and Manage Florida's Environment and Natural Resources"*

# SUWANNEE COUNTY BOARD OF COUNTY COMMISSIONERS

**COUNTY OFFICES**
**224 Pine Avenue**
**Live Oak, Florida 32060**

**(904) 364-3450**
**FAX (904) 362-1032**

*"In the Heart of the Suwannee River Valley"*

RECEIVED
DIRECTOR'S OFFICE
DEC 29 1998
DIV OF RECREATION & PARKS

December 17, 1998

Fran P. Mainella, CLP
Director, Division of Recreation & Parks
Dept. of Environmental Protection
Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, FL 32399-3000

Dear Ms. Mainella:

In response to your letter dated December 14, 1998, which we just received today, please be advised that the Suwannee County Board of County Commissioners unanimously approved the site and development plan for a cement plant near Branford. This action was taken at the end of a very lengthy public hearing which was held beginning at 7:00 P.M. on December 15 and ended in the early morning hours of the 16th.

We understand your concerns about the plant being located in the vicinity of the Ichetucknee Springs State Park. Many of the individuals who attended the public hearing expressed the same concern. It gets more difficult each year for us to balance the budget and provide required services for our citizens. We believe that an industry such as the cement plant will help to increase our tax base and provide for a better economy for our citizens. Please be assured that we did not make this decision without a lot of thought being put into it.

Sincerely yours,

Jerry Scott

Jerry Scott
Chairman, Suwannee County
Board of County Commissioners

JS/er

cc: Members, Suwannee County Commission
Robinette C. Robinson, Planning & Zoning Director

# INTEROFFICE MEMORANDUM
(Draft)

**Date:** 29-Mar-1999 08:57am
**From:** Joseph Kahn TAL
**Dept:**
**Tel No:**

**To:** Jeffrey E. Brown TAL (BROWN_JE)

**Subject:** Suwannee American RFI Letter

Jeff,

Please see the attached letter we sent to the applicant on Friday afternoon requesting more information about the Suwannee American Cement application.

-Joe

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

March 26, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Joe Anderson, III
President
Suwannee American Cement Company, Inc.
PO Box 410
Branford, Florida 32008

Re: Request for Additional Information
DEP File No. 1210465-001-AC (PSD-FL-259)
Proposed Portland Cement Plant

Dear Mr. Anderson:

On February 25, 1999 the Department received your response to the Department's requests for additional information. The application is still incomplete. In order to continue processing your application, the Department will need the additional information requested below. Should your response to any of the items require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

1. We received additional comments from the federal land manager regarding response items 23 and 24. Please respond to the following comments.

   The recommendations of the Interagency Workgroup on Air Quality Modeling (at: http://www.epa.gov/scram001/;"Model Support"; "6th Modeling Conference"; "IWAQM") clearly state that "[i]f hourly relative humidity values are not available, assume that the relative humidity is 95%." (Appendix B, "Method", 3b). The applicant's use of an 80% RH value is not acceptable.

The Department heard significant public comment at the public meeting of March 25, 1999 regarding the following issues related to the permit application. Please respond to the following.

2. Estimate potential mercury emissions from the pyroprocessing system, and characterize the fraction of mercury that will come from the raw materials, coal, petroleum coke and tires. Please evaluate control methods for mercury emissions.

3. Consider whether combustion of tires is necessary for the proposed project. There is significant public opposition to the combustion of tires in any quantity in the pyroprocessing system.

4. Provide an estimate of emissions from truck traffic associated with operating the proposed plant. This appears to be a particular concern to the public because there is no available rail line in existence to the proposed location.

5. Regarding the MACT assessment, evaluate the applicability of meeting the dioxin emissions of the best controlled source.

6. Estimate $PM_{2.5}$ emissions from the plant and characterize the nature of these emissions, particularly as compared to the $PM_{10}$ emissions.

7. Consider installing ambient monitors for $PM_{2.5}$ and ozone in locations appropriate for assessing the impacts of the proposed plant at the Ichetucknee Springs State Park and the area around the site.

8. What portion of the proposed plant's NOx emissions will be deposited as nitrate through dry and wet deposition within an area 25 miles radius from the site?

   Investigate pollution prevention techniques that may result in lower overall NOx emissions.

9. Describe the compliance history of the applicant with respect to violations of any Department rules at any installation.

Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. Permit applicants are advised that Rule 62-4.055(1), F.A.C. now requires applicants to respond to requests for information within 90 days. If there are any questions, please call me at 850/921-9519.

Sincerely,

Joseph Kahn, P.E.
New Source Review Section

/jk

cc: Mr. Frank Darabi, P.E.
Mr. Steve Cullen, P.E.
Mr. Gregg Worley, EPA
Mr. John Bunyak, NPS
Mr. Chris Kirts, NED
Mr. Jim Stevenson, DEP Ecosystem Mgmt.
Mr. Tom Workman, DEP Recreation & Parks
Ms. December McSherry
Mr. Svenn Lindskold
Mr. Tom Greenhalgh
Mr. Al Mueller
Mr. Dave Bruderly
Mr. Chris Bird, Alachua County DER
Mr. John Mousa, Alachua County DER
Mr. Chuck Clemons, Chairman, Alachua County Commissioners
Mr. J. Calvin Gaddy
Ms. Patrice Boyes, Esq.
Ms. Kathy Cantwell
Mr. Ralph Ashodian
Mr. Craig Pittman

Is your RETURN ADDRESS completed on the reverse side?

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "*Return Receipt Requested*" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. Joe Anderson, III
President
Suwannee American Cement Co., Inc.
P. O. Box 410
Branford, FL 32008

4a. Article Number

Z 333 618 090

4b. Service Type

☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery

3-31-99

5. Received By: (*Print Name*)

6. Signature: (*Addressee or Agent*)

X

8. Addressee's Address (*Only if requested and fee is paid*)

Thank you for using Return Receipt Service.

PS Form **3811**, December 1994 102595-97-B-0179 Domestic Return Receipt

Z 333 618 090

US Postal Service
## Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

| | |
|---|---|
| Sent to Mr. Joe Anderson, III | |
| Street & Number Suwannee American P.O. Box 410 | |
| Post Office, State, & ZIP Code Branford, FL 32008 | |
| Postage | $ |
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| TOTAL Postage & Fees | $ |
| Postmark or Date 1210465-001-AC PSD-FL-259 Mailed: 3-26-99 | |

PS Form **3800**, April 1995

FAXES OF MARCH 26, 1999 LETTER

| Post-it® Fax Note 7671 | Date 3/26/99 # of pages ▶ 2 |
|---|---|
| To STEVE CULLEN | From JOE KAHN |
| Co./Dept. K & A | Co. FDEP |
| Phone # | Phone # |
| Fax # 352-377-7158 | Fax # 850-921-9519 |

| Post-it® Fax Note 7671 | Date 3/30/99 # of pages ▶ 2 |
|---|---|
| To LINDA MCKENZIE | From JOE KAHN |
| Co./Dept. OHFC | Co. DEP |
| Phone # | Phone # 921-9519 |
| Fax # 521-0720 | Fax # |

| Post-it® Fax Note 7671 | Date 3/30/99 # of pages ▶ 2 |
|---|---|
| To KELLY MERCER | From JOE KAHN |
| Co./Dept. FL. ALLIGATOR | Co. DEP |
| Phone # 352-376-4458 | Phone # 850/921-9519 |
| Fax # 352-376-4467 | Fax # 850/922-6979 |

| Post-it® Fax Note 7671 | Date 9-27-99 # of pages ▶ 13 |
|---|---|
| To JACK CHISOLM | From JOE KAHN |
| Co./Dept. | Co. |
| Phone # | Phone # 1-9519 |
| Fax # 488-2439 | Fax # |

# INTEROFFICE MEMORANDUM

**Date:** 26-Mar-1999 04:20pm
**From:** Joseph Kahn TAL
KAHN_J
**Dept:** Air Resources Management
**Tel No:** 850/921-9519

**To:** David Struhs TAL ( STRUHS_D @ EPIC5A1 @ DER )
**To:** Howard Rhodes TAL ( RHODES_H )
**CC:** Clair Fancy TAL ( FANCY_C )

**Subject:** Request for Additional Information for Suwannee American Cement Company

Gentlemen,

Clair Fancy asked me to e-mail a copy of the attached letter to you for your information. We mailed the attached letter to the applicant this afternoon requesting additional information, in response to comments we heard from the public at last night's public meeting we held in Branford about this project. Please let me know if you have any questions about this.

-Joe Kahn

March 26, 1999

Certified Mail - Return Receipt Requested

Mr. Joe Anderson, III
President
Suwannee American Cement Company, Inc.
PO Box 410
Branford, Florida 32008

Re: Request for Additional Information
DEP File No. 1210465-001-AC (PSD-FL-259)
Proposed Portland Cement Plant

Dear Mr. Anderson:

On February 25, 1999 the Department received your response to the Department's requests for additional information. The application is still incomplete. In order to continue processing your application, the Department will need the additional information requested below. Should your response to any of the items require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

1. We received additional comments from the federal land manager regarding response items 23 and 24. Please respond to the following comments.

   The recommendations of the Interagency Workgroup on Air Quality Modeling (at: http://www.epa.gov/scram001/;"Model Support"; "6th Modeling Conference"; "IWAQM") clearly state that "[i]f hourly relative humidity values are not available, assume that the relative humidity is 95%." (Appendix B, "Method", 3b). The applicant's use of an 80% RH value is not acceptable.

The Department heard significant public comment at the public meeting of March 25, 1999 regarding the following issues related to the permit application. Please respond to the following.

2. Estimate potential mercury emissions from the pyroprocessing system, and characterize the fraction of mercury that will come from the raw materials, coal, petroleum coke and tires. Please evaluate control methods for mercury emissions.

3. Consider whether combustion of tires is necessary for the proposed project. There is significant public opposition to the combustion of tires in any quantity in the pyroprocessing system.

4. Provide an estimate of emissions from truck traffic associated with operating the proposed plant. This appears to be a particular concern to the public because there is no available rail line in existence to the proposed location.

5. Regarding the MACT assessment, evaluate the applicability of meeting the dioxin emissions of the best controlled source.

6. Estimate $PM_{2.5}$ emissions from the plant and characterize the nature of these emissions, particularly as compared to the $PM_{10}$ emissions.

7. Consider installing ambient monitors for $PM_{2.5}$ and ozone in locations appropriate for assessing the impacts of the proposed plant at the Ichetucknee Springs State Park and the area around the site.

8. What portion of the proposed plant's NOx emissions will be deposited as nitrate through dry and wet deposition within an area 25 miles radius from the site?

   Investigate pollution prevention techniques that may result in lower overall NOx emissions.

9. Describe the compliance history of the applicant with respect to violations of any Department rules at any installation.

Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. Permit applicants are advised that Rule 62-4.055(1), F.A.C. now requires applicants to respond to requests for information within 90 days. If there are any questions, please call me at 850/921-9519.

Sincerely,

Joseph Kahn, P.E.
New Source Review Section

/jk

cc: Mr. Frank Darabi, P.E.
Mr. Steve Cullen, P.E.
Mr. Gregg Worley, EPA
Mr. John Bunyak, NPS
Mr. Chris Kirts, NED
Mr. Jim Stevenson, DEP Ecosystem Mgmt.
Mr. Tom Workman, DEP Recreation & Parks
Ms. December McSherry
Mr. Svenn Lindskold
Mr. Tom Greenhalgh
Mr. Al Mueller
Mr. Dave Bruderly
Mr. Chris Bird, Alachua County DER
Mr. John Mousa, Alachua County DER
Mr. Chuck Clemons, Chairman, Alachua County Commissioners
Mr. J. Calvin Gaddy
Ms. Patrice Boyes, Esq.

Ms. Kathy Cantwell
Mr. Ralph Ashodian
Mr. Craig Pittman

# INTEROFFICE MEMORANDUM

**Date:** 26-Mar-1999 01:12pm
**From:** Ellen_Porter
Ellen_Porter@nps.gov@PMDF@EPIC66
**Dept:**
**Tel No:**

**To:** holladay_c ( holladay_c@Al@DER )
**To:** Kahn_j ( Kahn_j@Al@DER )
**CC:** Bud_Rolofson ( Bud_Rolofson@nps.gov@PMDF@EPIC66 )
**CC:** John_Notar ( John_Notar@nps.gov@PMDF@EPIC66 )

**Subject:** Re: regional haze analysis guidance

In our December 15, 1998 technical review document for Suwannee American Cement Co. (attached), we recommended that the applicant perform a regional haze analysis following the IWAQM Phase I recommendations:

Air Quality Related Values (AQRV) Analysis

Suwannee did not perform visibility analyses to evaluate potential impacts to regional haze at Okefenokee or Chassahowitzka wildernesses. Suwannee incorrectly concluded that because predicted impacts to the Class I increments were less than significant, no air quality related values (AQRV) analyses were required. However, increment analyses are independent of AQRV analyses; Class I increments were never intended to protect Class I AQRVs. Therefore, Suwannee should perform regional haze analyses, following the recommendations of the Interagency Workgroup on Air Quality Modeling at: http://www.epa.gov/scram001/; "Model Support"; "6th Modeling Conference"; "IWAQM".

These recommendations clearly state that "If hourly relative humidity values are not available, assume that the relative humidity is 95%." (Appendix B, "Method", 3b).

The applicant's use of an 80% RH value is not acceptable.

RFC-822-headers:
Received: from oriole.itc.nps.gov by EPIC66.DEP.STATE.FL.US (PMDF V5.1-4 #7204)
with ESMTP id <01J9AC6UPJZ4002RGC@EPIC66.DEP.STATE.FL.US>; Fri,
26 Mar 1999 12:58:17 EST
Received: from ccmail.itd.nps.gov (ccmail.itd.nps.gov [165.83.216.134])
by oriole.itc.nps.gov (8.8.7/8.8.7) with SMTP id OAA06522; Fri,
26 Mar 1999 14:08:42 -0500
Received: from ccMail by ccmail.itd.nps.gov
(IMA Internet Exchange 2.12 Enterprise) id 0017312D; Fri,
26 Mar 1999 12:46:58 -0500
Content-description: cc:Mail note part

# Excerpts (D/F, Hg, HCl) to preamble of proposed rule 40 CFR 63 Subpart LLL – National Emission Standards for the Portland Cement Manufacturing [Source: Federal Register dated 3/24/98]

## D. Selection of Proposed Standards for Existing and New Sources

*1. Background*

After the EPA has identified the specific source categories or subcategories of sources to regulate under section 112, it must develop MACT [Maximum Achievable Control Technology] standards for each category or subcategory. Section 112 establishes a minimum baseline or ``floor" for standards. For new sources, the standards for a source category or subcategory cannot be less stringent than the emission control that is achieved in practice by the best-controlled similar source. [See section 112(d)(3)]. The standards for existing sources may be less stringent than standards for new sources, but they cannot be less stringent than the average emission limitation achieved by the best-performing 12 percent of existing sources for categories and subcategories with 30 or more sources, or the average of the best-performing 5 sources for categories or subcategories with fewer than 30 sources.

After the floor has been determined for a new or existing source in a source category or subcategory, the Administrator must set MACT standards that are technically achievable and no less stringent than the floor. Such standards must then be met by all sources within the category or subcategory. The regulatory alternatives selected for new and existing sources may be different because of different MACT floors, and separate emission limits may be established for new and existing sources.

The EPA also may consider an alternative ``beyond the floor." Here, EPA considers the achievable reductions in emissions of HAPs (and possibly other pollutants that are co-controlled), cost and economic impacts, energy impacts, and other nonair environmental impacts. The objective is to achieve the maximum degree of emission reduction without unreasonable economic, energy or secondary environmental impacts.

*2. MACT Floor Technology, Emission Limits, and Format*

The EPA conducted separate MACT determinations for PM [particulate matter](the surrogate for HAP metals), D/F [dioxins/furans], mercury, THC [total hydrocarbon] (the surrogate for organic HAPs), and HCl [hydrogen chloride] emissions from kilns and inline kiln/raw mills; for PM emissions from clinker coolers; for PM and THC emissions from raw material dryers; and for PM emissions from materials handling facilities. For each combination of pollutant and affected source, MACT floor technologies and beyond-the-floor control options were evaluated.

Several formats are available for establishing the emission limits based on MACT. These include mass concentration (mass per unit volume), volume concentration (volume per unit volume), mass emission rate (mass per unit time), process emission rate (mass per unit of production or other process parameter), and percent reduction.

For the portland cement manufacturing source category, EPA is proposing numerical emission standards expressed as a process emission rate and opacity limits for PM emissions from kilns; as mass per volume of exhaust gas for D/F emissions from kilns; as volume per volume of exhaust gas for THC emissions from kilns and raw material dryers; as a process emission rate and opacity limit for clinker cooler PM emissions; and as an opacity limit for materials handling facilities PM emissions.

The following sections present a discussion of the rationale for selecting the MACT technologies, emission limits, and format of the standard for each affected source and associated pollutant.

***Kiln and in-line kiln/raw mill D/F emissions.*** The EPA has identified two technologies for control of D/F emissions. One technology achieves low D/F emissions by a combination of proper kiln operation, proper combustion, proper control device operation, and a reduction in the kiln gas temperature at the inlet to the PMCD. The other technology is activated carbon injected into the kiln exhaust gas.

The discussion in this section refers to D/F emissions in units of TEQ [toxic equivalent]. Toxic equivalent refers to the international method of expressing toxicity equivalents for dioxins and furans as defined in EPA report, ``Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 Update'' (docket item II-A-8).

Dioxin/furan emissions data were obtained from testing that was conducted at NHW [non-hazardous waste] kilns, with NHW fuels at kilns that normally burn HW [hazardous waste], and under worst-case conditions at kilns that burn HW (as part of Certificate of Compliance [COC] testing). Based on the test results for both NHW and HW kilns, the predominant factor affecting D/F emissions is the temperature of gases at the inlet to the PMCD [particulate matter control device] (docket item II-A-42; docket item II-B-78; docket item II-I-81, pp. 127 to 133; docket item II-I-82, pp. 135 to 175). The highest D/F emissions (near 40 ng TEQ/dscm) occurred at the highest gas temperatures (between 500 deg. F and 700 deg. F) while the lowest emissions (near 0.02 ng TEQ/dscm) occurred at the lowest temperature (at approximately 210 deg. F). [The emission 0.02 ng TEQ/dscm is the average of the four NHW D/F test results that were measured at gas temperatures less than 230 deg. F, as shown in Table 8.]

Dioxin/furan TEQ emissions data and stack temperatures from kilns firing NHW fuels are listed in Table 8. The data are listed in order of ascending stack temperature. Fourteen NHW data points were obtained during normal kiln operation, three points were obtained as NHW baseline runs prior to HW COC testing, one data point (at the 518 deg. F stack temperature) was obtained at maximum combustion temperature, and one point was obtained under unknown test conditions. Stack temperatures are presented, since inlet PMCD temperature data are not typically recorded during stack emissions testing. It is acknowledged that stack temperatures will be lower than inlet PMCD temperatures.

**Table 8. Average Dioxin/Furan Toxic Equivalent Emissions (at 7 Percent Oxygen) and Average Stack Gas Temperatures for NHW Cement Kilns and Kilns Tested Under NHW Conditions [Docket Item II-B-78]**

| Kiln type | APCD type | Kiln fuel | Avg Gas T (deg. F) | Avg TEQ ng/dscm | Kiln location |
|---|---|---|---|---|---|
| PH/PC........ | FF | Natural gas; main stack tested. | 183 | 0.011 | Capital Aggregates - San Antonio TX. |
| PC............... | FF | Coal,tires, pulp/paper mill sludge. | 220 * | 0.0063 | Calaveras Cement - Redding CA. |
| PH/PC...... | FF | Natural gas; raw mill on | 221 | 0.042 | Ash Grove – Seattle WA (kiln/ in-line mill). |
| PH/PC...... | ESP | Not reported.............. | 226 | 0.00087 | RMC Lonestar - Davenport CA. |
| PC............. | FF | Coal & tires.............. | 233 * | 0.21 | Calaveras Cement - Redding, CA. |
| PH/PC...... | FF | Natural gas; bypass stack tested. | 299 | 0.054 | Capital Aggregates – San Antonio TX. |
| WET........ | ESP | Coal...................... | 305 | 0.0024 | Holnam--Florence CO. |
| WET........... | ESP | Coal & natural gas......... | 315 | 0.072 | Ash Grove – Montana City MT. |
| WET........... | ESP | Coal...................... | 346 ** | 0.37 | Lehigh - Union Bridge MD. |
| WET........... | ESP | coal & tires.............. | 358 ** | 1.2 | Lehigh - Union Bridge MD. |
| WET........... | ESP | Coal/coke................. | 366 | 0.032 | Holnam kiln #1 – Holly Hill SC. |
| DRY........... | FF | Coal, gas, tire derived fuel. | 396 | 0.0035 | Riverside--Oro Grande CA. |
| WET............ | ESP | Natural gas............... | 397 | 0.020 | Capital Aggregates – San Antonio TX. |
| DRY............. | FF | Coal & natural gas......... | 403 | 0.0084 | Riverside--Oro Grande CA. |
| WET............ | ESP | Coal...................... | 417 | 0.12 | Lone Star--Greencastle IN. |
| WET............ | ESP | Coal/coke................. | 418 | 0.04 | Holnam kiln #2--Holly Hill SC. |
| DRY............ | ESP | Coal, coke, & tires........ | 450 | 0.074 | Lone Star--Oglesby IL. |
| WET............ | ESP | Coal...................... | 482 | 0.55 | Continental Cement-- Hannibal MO. |
| WET............ | ESP | Coal...................... | 518 | 1.0 | Holnam - Clarksville MO. |

Abbreviations:
PH/PC = preheater/precalciner.
ESP = electrostatic precipitator.
PC = precalciner.
FF = fabric filter.
Note: Entries flagged with * and ** are listed in Table 9 and discussed in the text.

The data in Table 8 show that all NHW D/F emissions were less than 0.2 ng TEQ/dscm at stack temperatures below 340 deg. F, except for one data point which is discussed below. The stack temperature of 340 deg.F corresponds to an estimated inlet PMCD temperature of approximately 400 deg. F after accounting for cooling in the ductwork. The EPA estimates that approximately 50 percent of existing PMCDs used at both wet-and dry-type NHW kilns operate with a maximum inlet PMCD temperature of approximately 400 deg. F (docket item II-B-73). Since the MACT floor is based on the technology in use by the best performing 12 percent of the affected sources, the MACT floor for existing kilns corresponds to reduction of kiln exhaust gas stream temperature at the PMCD inlet to 400 deg. F.

One demonstrated method of temperature reduction is injection of water to provide rapid cooling of kiln exhaust gases upstream of the inlet to the PMCD. Rapid cooling reduces D/F formation that occurs within the temperature window 232 deg. C (450 deg. F) to 343 deg. C (650 deg. F).

As shown in Table 8, D/F emissions from 3 of the 13 tests conducted at stack temperatures below 400 deg. F exceeded 0.2 ng TEQ/dscm. For discussion purposes, the three data points are listed in Table 9 with the corresponding stack temperature. The Calaveras kiln that emitted 0.21 ng TEQ/dscm when tested at a stack temperature of 233 deg. F emitted 97 percent less D/F at a slightly lower stack temperature and with a different mixture of fuels, demonstrating that the kiln could achieve 0.2 ng/dscm through proper kiln combustion.

Table 9 - Data from KILNS at Which Dioxin/Furan TEQ Emissions Exceeded 0.2 ng/dscm

| Average stack gas temperature (°F) | Average D/F TEQ (ng/dscm at 7% $O_2$) | Kiln location |
|---|---|---|
| 233 | 0.21 | Calaveras - Redding CA. |
| 346 | 0.37 | Lehigh - Union Bridge MD. |
| 358 | 1.2 | Lehigh - Union Bridge MD. |

The Lehigh kiln emitted 0.37 ng TEQ/dscm at a stack temperature of 346 deg. F during coal combustion and 1.2 ng TEQ/dscm at a stack temperature of 358 deg. F during coal and tire combustion. The EPA concluded that the high emission (of 1.2 ng TEQ/dscm) resulted from poorly controlled tire combustion/kiln operation, since (as shown in Table 8) three other NHW kilns emitted less than 0.2 ng TEQ/dscm when tested while burning tires. In the absence of detailed information on kiln and APCD operating conditions, fuel firing and combustion control, the Lehigh emission level of 0.37 ng TEQ/dscm at a stack temperature of 346 deg. F cannot be explained.

Temperature reduction to 400 deg. F, in conjunction with proper control of kiln and PMCD operation and efficient combustion will limit D/F emissions to 0.2 ng TEQ/dscm in most (if not all) cases, and the proposed D/F standard for existing kilns is set at this level. The EPA recognizes that the available emissions data show that one kiln (as illustrated by the Lehigh data in Table 9) cannot achieve 0.2 ng TEQ/dscm at an inlet temperature to the PMCD below 400 deg. F, and that parameters consistent with proper equipment operation have not been precisely specified. The proposed standards therefore provide that kilns that cannot meet the 0.2 ng TEQ/dscm limit would be required to maintain the temperature at the inlet to the PMCD at no more than 400 deg. F and to limit the D/F emissions to 0.4 ng TEQ/dscm. This limit of 0.4 ng TEQ/dscm is consistent with the emissions from the Lehigh kiln during coal combustion with an estimated PMCD inlet gas temperature of 400 deg. F.

The Agency has considered whether and how to account for emissions variability in establishing the alternative TEQ limit of 0.4 ng/dscm in conjunction with the 400 deg. F temperature limit at the PMCD. As discussed in this section, available emissions data indicate that most kilns will be able to achieve an emission level of 0.2 ng TEQ/dscm or lower when operating the PMCD at or below 400 deg. F. Even though the Lehigh kiln's emissions were 0.37 ng TEQ/dscm at 346 deg. F (when not burning tires), we believe that a TEQ limit of 0.4 ng/dscm is appropriate given the preponderance of emissions data at or below 0.2 ng TEQ/dscm. These data (given the strong indications that all units will meet the 0.4 ng

TEQ/dscm limit at temperatures of 400 deg. F or below) suggest that using a more specific approach for variability is not needed for this proposed standard. The Agency invites comments on other approaches for accommodating variability in D/F emissions for NHW cement kilns.

Thus, the proposed standard requires that the temperature at the inlet to the PMCD be maintained at a level no greater than either: (1) the higher of 400 deg. F or the temperature established during the successful Method 23 performance test plus five percent (not to exceed 25 deg. F) of the temperature measured in deg. F during the successful compliance test, if D/F emissions were determined to be no greater than 0.15 ng toxic equivalent (TEQ)/dscm ($6.5 \times 10^{-11}$ gr/dscf); (2) the higher of 400 deg. F or the temperature established during the successful Method 23 performance test, if D/F emissions were determined to be greater than 0.15 ng toxic equivalent (TEQ)/dscm ($6.5 \times 10^{-11}$ gr/dscf) but less than 0.2 ng toxic equivalent (TEQ)/dscm ($8.7 \times 10^{-11}$ gr/dscf);, or (3) 400 deg. F if D/F emissions were greater than 0.2 ng TEQ/dscm ($8.7 \times 10^{-11}$ gr/dscf) but less than or equal to 0.4 ng TEQ/dscm ($1.7 \times 10^{-10}$ gr/dscf).

Activated carbon injection (ACI) was investigated as a potential beyond-the-MACT-floor option for existing cement kilns. Activated carbon injection is used at one cement plant on two NHW kilns for the purpose of reducing plume opacity. The total capital cost of an ACI system is estimated to range from $680,000 to $4.9 million per kiln. The total annual costs of an ACI system are estimated to range from $426,000 to $3.3 million per kiln. These costs include the carbon injection system and an additional baghouse to collect the carbon separately from the existing primary particulate collector (docket item II-B-67). Based on these costs, and considering the level of D/F emissions achievable at the floor level of control, the Administrator has determined that this beyond-the-floor (BTF) option for D/F MACT for existing kilns may not be justified. Therefore the Agency is not proposing a BTF standard. Notwithstanding these costs and the limited emissions reductions that a BTF standard would achieve, the Agency solicits comment on whether a BTF standard would be appropriate given the Agency's and the Congress' special concern about D/F. D/F are some of the most toxic compounds known due to their bioaccumulation potential and wide range of health effects at exceedingly low doses, including carcinogenesis. Exposure via indirect pathways was in fact a chief reason that Congress singled out D/F for priority MACT control in section 112(c)(6) of the Act [see S. Rep. No. 128, 101st Cong. 1st Sess. at 154-155 (1989)]. Thus costs to reduce dioxin emissions are frequently justified by the benefits of removing this very toxic HAP. [See 61 FR at 17382, 17392, and 17403 (April 19, 1996) (The EPA proposes BTF standards for D/F emissions from hazardous waste combustion sources).] The EPA is influenced here by the fact that most sources appear to be able to achieve the 0.2 ng TEQ/dscm BTF option through the use of the floor technology alone, i.e. solely through the use of temperature control. Thus, the floor standard (which facially allows the option of 0.4 ng TEQ/dscm) in reality may be virtually equivalent to the BTF level.

Activated carbon injection was also considered as a candidate MACT for new cement kilns. Since no D/F performance data are available on the existing cement kiln ACI system installed to reduce opacity, EPA considered the performance of ACI on other potentially similar sources. Experience with ACI on municipal waste combustors (MWCs) and medical waste incinerators (MWIs) has led EPA to develop emission limits for D/F for these sources in the range of 0.26 to 2.5 ng TEQ/dscm (docket item II-J-3, docket item II-J-7). Assuming the performance level of ACI on MWIs or MWCs to be similar to that of a cement kiln, the D/F emissions levels achieved with ACI are expected to be about the same level that can be achieved with temperature reduction. Therefore, considering the level of D/F emissions achievable by PMCD inlet temperature reduction alone, the Administrator has determined that the temperature reduction plus ACI option for D/F MACT for new kilns may not be justified, and the Agency is not proposing a standard based on ACI. Notwithstanding the limited emissions reduction that such a standard would achieve, the Agency solicits comment on whether or not such a standard would be appropriate, given the Agency's and the Congress' special concern about D/F. The EPA is influenced here, similarly to the situation for existing kilns, by the fact that most new sources appear to be able to achieve a 0.2 ng TEQ/dscm emission level solely through the use of temperature control. Thus the proposed standards (which facially allow a 0.4 ng TEQ/dscm emission level where the implementation of temperature reduction may not achieve a 0.2 ng TEQ/dscm emission level) in reality may be virtually equivalent to a 0.2 ng TEQ/dscm emission level.

For the kiln and in-line kiln/raw mill D/F emission standard, a mass per volume concentration emission limit format was chosen. The specific units of the emission limit are ng of D/F TEQ/dscm, referenced to seven percent oxygen. This emission limit format has historically been used by EPA for many air emission standards. This format is consistent with the format of the OSW [Office of Solid Waste] MACT standard for HW cement kilns.[12] The concentration is corrected to seven percent oxygen to put concentrations measured in stacks with different oxygen concentrations on a common basis. Also, the typical range of oxygen concentrations in cement kiln stack gas is from five to 10 percent oxygen; therefore, seven percent is representative.

A mass per volume concentration emission limit based on total D/F congeners rather than TEQ was also considered. However, the TEQ format was chosen in order to maintain consistency with the rule for cement kilns which burn hazardous waste.

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[12] The EPA proposed regulations for subpart EEE of 40 CFR part 63 on April 19, 1996 at 61 FR 17358.

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***Kiln and in-line kiln/raw mill mercury emissions.*** Activated carbon injection (ACI) was considered a potential control technology for mercury MACT for cement kilns, since a form of this technology has been demonstrated on medical waste incinerators and municipal waste combustors (docket item II-A-36, pp. 98 to 99 and B-7 to B-8; docket item II-A-11; docket item II-A-19; docket item II-A-23), and is being used at one cement plant on two NHW kilns to reduce the opacity (docket item II-B-35). In these applications, the activated carbon (AC) is injected into the uncontrolled exhaust gas stream ahead of the kiln PMCD.

In cement kiln applications for mercury control, the AC would need to be injected downstream from the kiln PMCD and subsequently collected in a separate PMCD, e.g., a baghouse. This is because the PM collected from the kiln exhaust, i.e., cement kiln dust (CKD), is typically recycled from the kiln PMCD back to the kiln, and in some cases may constitute as much as 50 percent of the feed material input to the kiln. If the AC is not injected downstream of the kiln PMCD, and then collected in a separate PMCD downstream of the kiln PMCD, the AC would also be recycled back to the kiln along with the adsorbed mercury. This recycling of mercury back to the cement kiln via the AC would result in the revaporization of the mercury in the kiln gas and ultimately the mercury would be emitted to the atmosphere. The two cement kiln ACI systems cannot be considered as controls for mercury for cement kilns because they do not include provisions for injecting the AC downstream of the kiln PMCD nor do they have the additional PMCD necessary to remove the injected carbon from the exhaust gas stream for disposal, but instead include the AC with the CKD [cement kiln dust] that is recycled to the kiln. Therefore there is no mercury MACT floor for new or existing kilns.

Activated carbon injection (with an additional PMCD) was investigated as a potential beyond-the-MACT-floor option for mercury for new and existing cement kilns. The total capital cost of an ACI system is estimated to range from $680,000 to $4.9 million per kiln. The total annual costs of an ACI system are estimated to range from $430,000 to $3.3 million per kiln. These costs include the carbon injection system and an additional baghouse necessary to collect the carbon separately from the CKD (docket item II-B-67). The cost-effectiveness of ACI applied to cement kilns ranges from $20,000,000 to $50,000,000 per ton of mercury.

It is noted that the Agency has proposed a mercury emissions limit for hazardous waste burning (HW) cement kilns (61 FR 17358), based on the beyond-the-MACT-floor option of ACI. However, mercury levels in hazardous waste fuels per million BTU of heat input are generally higher than mercury levels in coal that is fired in non-hazardous waste burning (NHW) cement kilns. Thus, HW cement kilns generally have higher mercury emissions than NWH cement kilns. Further, the available data indicate that existing mercury emissions from essentially all individual NHW cement kilns are lower than the beyond-the-MACT-floor emission limit that is now being considered by the Agency to be promulgated for HW cement kilns. Based on the relatively low levels of existing mercury emissions from individual NHW cement kilns, and the costs of reducing these emissions by ACI, the Administrator has determined that this beyond-the-MACT-floor option for reducing mercury from new and existing NHW kilns may not be justified. Thus, the Agency is not proposing a mercury standard for new and existing NHW cement kilns.

Notwithstanding the reasons for not proposing a mercury standard for NHW cement kilns, the Agency solicits comment on whether a BTF standard would be appropriate given the Agency's and Congress' special concern about mercury. Mercury is one of the more toxic metals known due to its bioaccumulation potential and the adverse neurological health effects at low concentrations especially to the most sensitive populations at risk (i.e. unborn children, infants and young children). In addition, as with D/F, Congress has singled out mercury in section 112(c)(6) of the Act for prioritized control. Furthermore, the amount of mercury emitted by these sources is not inconsequential, roughly 10,000 pounds annually (or about 60 pounds per kiln annually) making NHW cement kilns a significant source of mercury emissions that may warrant attention under section 112(c)(6) of the Act depending on what other opportunities for controlling mercury from other significant sources are available.

It is EPA's tentative conclusion, however, that concerns as to health risks from mercury emissions from these sources may be appropriately addressed pursuant to the timetable set out in the Act, namely through the residual risk determination process set out in section 112(f) of the Act. A more accelerated determination may be warranted, however, for other mercury-emitting sources, in particular hazardous waste combustion sources, where there are special considerations of immediately protective rules imposed by the Resource Conservation and Recovery Act. [See 61 FR at 17369-17370 (April 19, 1996).]

***Kiln and in-line kiln/raw mill HCl emissions.*** No technologies that control HCl emissions have been identified that are currently being used by more than six percent of the cement kilns in the U.S. For this reason, there is no MACT floor for existing kilns. One technology considered as potential MACT for new kilns was an alkaline scrubber, since two kilns in the U.S. operate scrubbers to control $SO_2$ emissions. However, these $SO_2$ scrubbers are operated only intermittently (docket item II-D-196) and thus cannot be considered best controlled similar source. For this reason there is no MACT floor for new kilns.

Alkaline scrubbers were considered as a beyond-the-floor option for HCl control. Based on engineering assessment of HCl scrubbers used in MWC [municipal waste combustor] and MWI [medical waste incinerator] applications and transfer of similar technology to the cement industry and on vendor design information (docket item II-D-36), an alkaline scrubber could achieve 15 ppmv HCl outlet concentration at low inlet HCl loadings or at least 90 percent removal with an inlet HCl level of 100 ppmv or greater. Based on this estimated performance, annual emission reduction estimates range from 12 tpy of HCl and 27 tpy of $SO_2$ to 200 tpy of HCl and 600 tpy of $SO_2$ per kiln (docket item II-B-67). The total capital cost of installing an alkaline scrubber on an existing kiln is estimated to range from $980,000 to $4.6 million. The total annual cost is estimated to range from $300,000 to $1.5 million per kiln (docket item II-B-67).

Based on the costs of control and the emissions reductions that would be achieved, the Administrator has determined that beyond-the-floor controls are not warranted. Therefore, there is no proposed emission limit for HCl from new and existing NHW kilns and NHW in-line kiln/raw mills. Analyses indicate that the ambient concentrations of HCl produced by emissions from existing NHW kilns and in-line kiln/raw mills are below the health effects reference concentration for HCl (docket item II-B-71).

## E. Selection of Testing and Monitoring Requirements

Testing requirements are being proposed for demonstrating compliance with all standards. Initial performance tests for all affected sources/pollutant combinations would demonstrate compliance with emission limits. These tests would be repeated every 5 years for PM from NHW kilns (including alkali bypasses), NHW in-line kiln/raw mills (including alkali bypasses), clinker coolers, raw material dryers and materials handling processes, and for D/F from kilns and in-line kiln/raw mills. Site-specific monitoring parameters would be established during the initial and subsequent performance tests for D/F from kilns and in-line kiln/raw mill systems. A PMCD inlet temperature parameter would be used to ensure continuous compliance with the D/F emission limit. The following paragraphs present the rationale for the selection of the proposed testing, test methods, and monitoring requirements for each affected source and associated pollutant.

### *2. Kiln D/F Emissions*

The proposed standards would require the owner or operator of an affected kiln or in-line kiln/raw mill to conduct initial and periodic (every five years) performance tests using appropriate existing EPA methods in 40 CFR part 60, appendix A. Method 23 is the established method for determining D/F concentration. Each performance test would consist of three runs conducted under representative operating conditions. Each run must be at least 3 hours duration with a minimum sampling volume of 2.5 dscm. The average of the three runs would be used to determine compliance.

If the kiln is equipped with an alkali bypass, D/F emissions from the alkali bypass would also be subject to Method 23 testing requirements and the emissions from the alkali bypass would be subject to the D/F emission limit. Furthermore, in-line kiln/raw mills would be required to conduct a compliance demonstration with the raw mill in operation and a separate compliance demonstration when the raw mill is not in operation. However, if an in-line kiln/raw mill has an alkali bypass, a compliance demonstration for the alkali bypass would only be required when the raw mill is operating.

There is no CEM available for D/F emissions and no suitable surrogate pollutant that could be monitored continuously. Therefore, for D/F emissions from an affected NHW kiln or NHW in-line kiln/raw mill, the proposed standards would require continuous monitoring and recording of the kiln exhaust gas temperature at the inlet to the kiln PMCD. If the kiln is equipped with an alkali bypass the proposed standards would also require continuous monitoring and recording of the gas temperature at the inlet to the alkali bypass PMCD.

A kiln-specific maximum temperature limit would be established during the performance test. The temperature would be continually measured during the D/F performance test. The average temperature for each of the three runs would be determined, and the average of these three averages would, in some cases, be used to establish the kiln-specific temperature limit. When the D/F performance test emissions were 0.15 ng TEQ/dscm or less (corrected to seven percent oxygen), the kiln-specific maximum temperature would be the higher of 400 deg. F or the average temperature of the performance test plus five percent (not to exceed 25 deg. F) of the temperature measured in deg.F. When the D/F performance test emissions (corrected to seven percent oxygen) were greater than 0.15 ng TEQ/dscm but did not exceed 0.20 ng TEQ/dscm, the kiln-specific maximum temperature would be the higher of 400 deg. F or the average temperature of the performance test. If D/F emissions (corrected to seven percent oxygen) are greater than 0.2 ng/dscm TEQ but less than 0.4 ng/dscm TEQ during the performance test, then the kiln specific temperature limit would be set at 400 deg. F. (If D/F emissions exceed 0.4 ng/dscm, corrected to seven percent oxygen, the performance test would be unsuccessful and the kiln or in-line kiln/raw mill would not be in compliance with the standard.) The temperature would provide a direct indication of D/F emissions from the kiln or in-line kiln/raw mill and would be directly enforceable for compliance determinations.

Owners or operators of kilns and in-line kiln/raw mills equipped with alkali bypasses would establish a separate alkali bypass PMCD inlet temperature limit for the alkali bypass during the performance test. This limit would be based on the temperature at the inlet to the alkali bypass PMCD and would be established in the same manner as the kiln specific temperature limit. Owners or operators of in-line kiln/raw mills equipped with alkali bypasses would establish the temperature limit for the alkali bypass PMCD inlet during the performance test with the raw mill operating.

The proposed averaging period for inlet temperature to the PMCD is 9 hours, because the compliance test for D/F consists of 3-three hour manual tests which are averaged. Thus the inlet temperature limit is established as the average temperature level achieved over the three D/F runs in a performance test.

The Agency specifically requests comment on whether a 9-hour block average site-specific temperature limit is sufficient to ensure compliance with the D/F standard. Because EPA is concerned that D/F emissions emitted during high temperature episodes may not correspondingly be offset by low emissions during lower temperature episodes due to the non-linear relationship between dioxin formation and temperature, a 9-hour block average may not be adequate to ensure compliance with the D/F standard in some instances. The Agency addressed this concern in the proposal for HW combustion sources (cement kilns) [61 FR at 17424, (April 19, 1996)]. There, EPA proposed a site-specific ten-minute rolling average to control perturbations in temperature and a site-specific, one-hour rolling average to control average inlet PMCD temperatures. The ten-minute average was proposed to address the concern that short-term perturbations above the limit may result in D/F emissions that may not be offset by lower emissions at lower temperatures. The one-hour averaging period was proposed to limit average temperatures. Thus, in today's proposal, the Agency requests comment on whether a shorter-term block or rolling average limit (i.e., less than 9 hours) is more appropriate than the one proposed, or whether a short-term limit in conjunction with the proposed 9-hour block average is needed to properly ensure compliance with the D/F standard. The EPA further notes that it may also take these comments into account in considering what averaging time to adopt for hazardous waste combustion sources.

If carbon injection is used for D/F control, a kiln-specific (and where applicable, an alkali bypass-specific) carbon injection rate for each run would be established during the performance test. The average carbon injection rate for the three runs would be calculated. This carbon injection rate would serve as an additional monitoring limit and would be required to be maintained or exceeded for every 9-hour period of kiln operation. The carbon injection rate would provide a direct indication of D/F emissions from the kiln and would be directly enforceable for compliance determinations.

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PROJECT 624-98-01

FAX TRANSMITTAL FORM

TO: Joe Kahn
FDEP Tallahassee

FAX NO.

FROM: John Koogler

DATE: 3/19/99 SENT BY:

The text being transmitted consist s of 3 page(s) PLUS this one. If you do not receive all of the pages or if there are difficulties with this transmission, please call (352) 377-5822.

REMARKS: Joe - Comments on the Gyrotherm burner as we discussed. I plan to meet with Howard Monday morning (3/22/99) and would like to talk with you about a citrus project John

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 ▪ FAX/377-7158

## MEMORANDUM

**TO:** File

**FROM:** John Koogler

**DATE:** March 19, 1999

**SUBJECT:** Application of Gyrotherm Burner Technology to Precalciner Cement Plants

---

The application of Gyrotherm burner technology to a state-of-the-art precalciner Portland cement plant has been evaluated. The Gyrotherm burner is a proprietary burner technology marketed in the U.S. by Fuel and Combustion Technology International, Inc. (Malvern, Pennsylvania, telephone 617-725-8840).

The burner uses a precessing jet to achieve the fuel/air mixing. Precession is a term used to describe the rotation of a body about an axis other than its own center line, similar to a spinning top that is leaning to one side. In the Gyrotherm burner, the jet is directed at an angle to the nozzle axis about which it precesses. The precession creates a much larger scale of mixing of fuel and air than can be achieved in a conventional burner as well as increasing the spreading of the flame.

The precessing jet is produced by natural gas fuel.

In 1996, a Gyrotherm burner was designed to burn natural gas (0-100 percent), pulverized coal (0-100 percent) and waste oil (0-10 percent) with application slated for a preheater Portland cement plant. The project was underwritten by the Gas Research Institute. In this plant, 100 percent of the fossil fuel heat input was provided at the main kiln burner (at the clinker discharge end of the kiln) and up to 20 percent of the total plant heat input could be provided by tires fed at the base of the preheater. There have been other applications of Gyrotherm burner technology to Portland cement plants with long wet or long dry kilns firing 100 percent natural gas but no applications to solid fuel fired precalciner kilns.

For the precessing jet to be effective, 10-15 percent of the fuel fired through the Gyrotherm burner must be natural gas. This natural gas fuel will create the precessing jet which makes the Gyrotherm burner unique. The remaining fuel (pulverized coal or pet coke) is fired through an annular ring surrounding the gas burner. According to Fuel and Combustion Technology, if 100 percent coal or pet coke is fired through the Gyrotherm burner, the performance would be no different from any other burner typically used on cement plant kilns. It is only when the precessing jet is created (through the introduction of natural gas supplying 10-15 percent of the heat input) that performance enhancement can be realized.

For Fuel and Combustion Technology to be able to provide any performance guarantee, a complete process audit and modeling study would have to be conducted. The modeling would include both mathematical modeling and physical modeling of a precalciner kiln system. At the present time, it was estimated by Fuel and Combustion Technology that the audit and modeling study would require approximately 10 weeks from receipt of all required information and would cost approximately $75,000. The deliverable would be a report on the expected performance of a Gyrotherm burner and a statement of expected performance. Prior to this analysis, Fuel Combustion and Technology will not commit to any performance limits.

Fuel and Combustion Technology reported that when a Gyrotherm burner was installed on a four-stage preheater plant burning a "typical fuel mix of oil, gas and tires," the NOx concentration in the stack gas was reduced from approximately 950 ppm to approximately 600 ppm during a three day test[1]. Applying the 600 ppm NOx concentration to the stack gas flow from a precalciner kiln results in an NOx emission rate in the range of 6.5 pounds per ton of clinker. With the multi-stage combustion design available through Polysius, NOx emissions in the range of 3.0 pounds per ton of clinker can be achieved while burning 100 percent coal.

If a company were to consider the Gyrotherm burner, a delay in the permitting/design/construction schedule of at least three months would be encountered to gather data and have the feasibility study prepared. The cost of compiling the data and conducting the study would be in excess of $75,000. The deliverable would be a report assessing the feasibility of a Gyrotherm burner for a specific plant. Prior to this study, no statement can be made regarding the expected performance of the Gyrotherm burner for any specific application. For any Portland cement plant burning 100 percent coal or petroleum coke at the main kiln

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[1] *Gyrotherm-Technology Boosts Cement Kiln Output, Efficiency and Cuts NOx Emissions*, R. Vidergar, D. Rapson and S. Dhanjal. IEEE Cement Industry Technical Conference. April 1997.

burner, the Gyrotherm burner will provide no improvement in performance over burners typically installed on precalciner cement plants. For the Gyrotherm burner to possibly improve performance, at least 10-15 percent natural gas will have to be burned in the main kiln burner. As addressed in our response to FDEP, the use of natural gas as fuel will result in production penalties for the plant and will increase annual fuel costs by about 30 percent.

Although the Gyrotherm burner has been demonstrated in full scale operations on other cement plants, none of the cement plants have been state-of-the-art precalciner plants. The applications cited by Fuel Combustion and Technology have been burner replacements on cement plants with long wet and/or dry kilns and one application on an existing four-stage preheater plant. At best, the Gyrotherm burner can be considered emerging technology; not available technology. Until the burner has been installed and evaluated on a precalciner cement plant or until data are available that will allow the vendor to provide expected performance guarantees without a three month, $75,000 study, the Gyrotherm burner cannot be considered a candidate for best available control technology for a precalciner cement plant.

NITRATE DEPOSITION - SUWANNEE AMERICAN 3/18/99 J. KAHN

ESTIMATE TOTAL DEPOSITION BASED ON K&A MODEL ISOPLETHS.

1. FOR 72 $MI^2$ AREA, 9 MI E TO W, 8 MI N TO S.

a. AVG. DEPOSITION = 0.058 $g/m^2$

TOTAL = $0.058 \frac{g}{m^2} \times 5711 \frac{LB \cdot m^2}{MI^2 \cdot g} = 331.2$ $LB/MI^2$

LOADING = 331.2 $LB/MI^2 \times 72\ MI^2 \times \frac{1\ TON}{2000\ LB}$ = 11.9 TONS

b. INTEGRATE AREA UNDER ISOPLETHS:

TOTAL DEPOSITION = 4.045 $g/m^2$-72 $MI^2$ OR 0.056 $g/m^2$

TOTAL = 0.056 × 5711 = 320.0 $LB/MI^2$

LOADING TONS = 320 × 72 × $\frac{1}{2000}$ = 11.5 TONS

2. ~~ADD~~ USE QUADRANT METHOD TO ESTIMATE DEPOSITION

a. FOR LOWER LEFT QUADRANT OF 6 MI E TO W, 7 MI N TO S → 42 $MI^2$

INTEGRATE AREA UNDER ISOPLETHS

0.01 - 8
0.015 - 10
0.02 - 9
0.025 - 1
0.03 - 5
0.04 - 2
0.07 - 1
0.10 - 2
0.15 - 2
0.20 - 1
0.30 - 1
42 $MI^2$

1.735 $g/m^2$-42 $MI^2$ OR 0.041 $g/m^2$

TOTAL = 0.041 × 5711 = 234.1 $LB/MI^2$

234.1 × 42 × $\frac{1}{2000}$ = 4.9 TONS PER QUADRANT

b. FOR 4 EQUAL SIZED QUADRANTS:

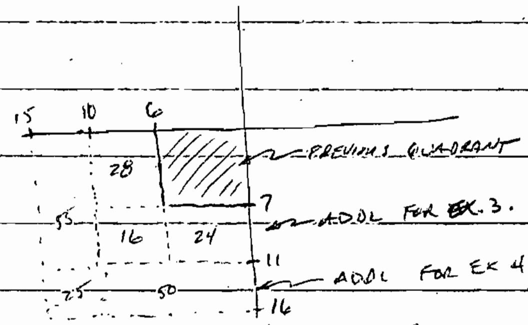
TOTAL AREA = 4 × 42 = 168 $MI^2$

LOADING, TONS = 4.9 × 4 = 19.6 TONS

②

NITRATE DEPO. - SUWANNEE AM. 3/18/99 J KAHN

3. ADD AREA NOT SHOWN ON PLOT OF ISOPLETHS BY EXTRAPOLATION & ESTIMATE TO OBTAIN TOTAL LOADING.




ASSUME 0.005 ISOPLETH CROSSES @ COORD. 0,-11 & -10,0 (MILES)

USE AVG. DEPOSITION OF 0.0075 g/m² FOR ADDL 68 MI².

$0.0075\ g/m^2 \times 5711 = 42.8\ LB/MI^2$

ADDL LOAD = $42.8 \times 68 \times \frac{1}{2000} = 1.5$ TONS

ADDL LOAD, 4 QUADRANTS $(4 \times (68) = 272\ MI^2) = 1.5 \times 4 = 6.0$ TONS

TOTAL LOAD, 4 QUADRANTS $(440\ MI^2) = 19.6 + 6.0 = 25.6$ TONS

AVG. LOADING = $25.6\ TONS \times \frac{2000\ LB}{TON} \times \frac{1}{440\ MI^2} = 116.4\ LB/MI^2$

4. ADD AREA TO ASSUMED 0.001 ISOPLETH.

ASSUME 0.001 CROSSES @ COORD. 0,-16 & -15,0 (MILES)

FOR THIS 130 MI² AREA USE AVG. DEPOSITION OF 0.003 g/m²

ADDL LOAD = $0.003 \times 5711 \times 130 \times \frac{1}{2000} = 1.1$ TONS

ADDL LOAD, 4 QUADS $(4 \times 130 = 520\ MI^2) = 4.4$ TONS

TOTAL LOAD, 4 QUADS $(440 + 520 = 960\ MI^2) = 25.6 + 4.4 = 30$ TONS

AVG. LOADING = $30 \times 2000 \times \frac{1}{960} = 62.5\ LB/MI^2$

5. ADD AREA TO ASSUMED 0.0005 ISOPLETH, @ 0,-21 & -20,0 (MILES)

USE AVG. DEPO. OF 0.00075 g/m² (4.3 LB/MI²)

ADDL AREA = 180 MI² ADD LOAD = $0.00075 \times 5711 \times 180 \times \frac{1}{2000} = 0.4$ TONS

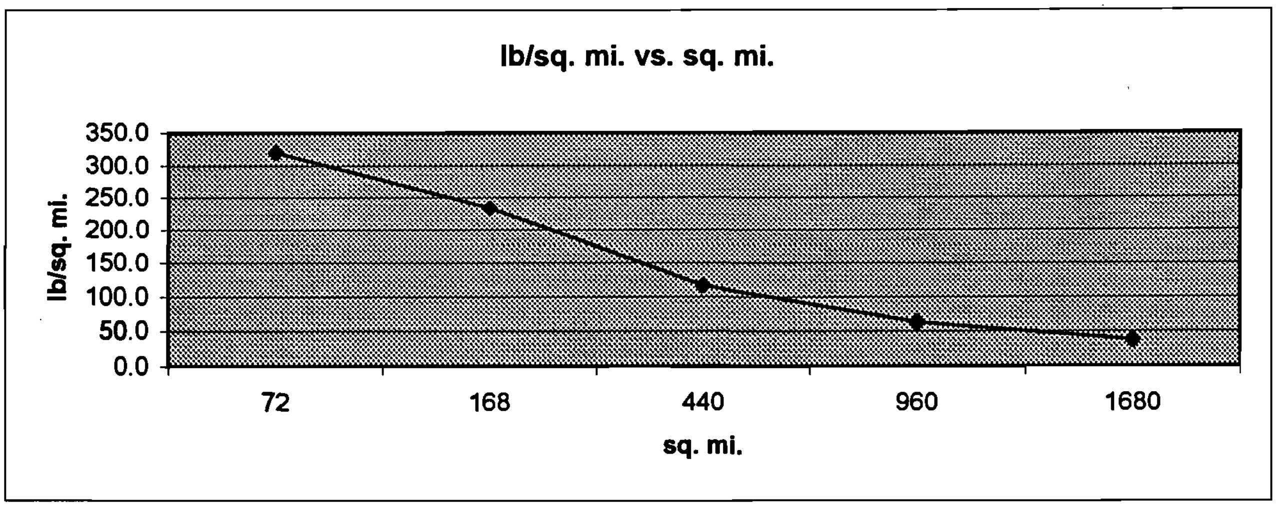
TOTAL LOAD 4 QUADS $(1680\ MI^2) = 30 + 4(0.4) = 31.6$ TONS

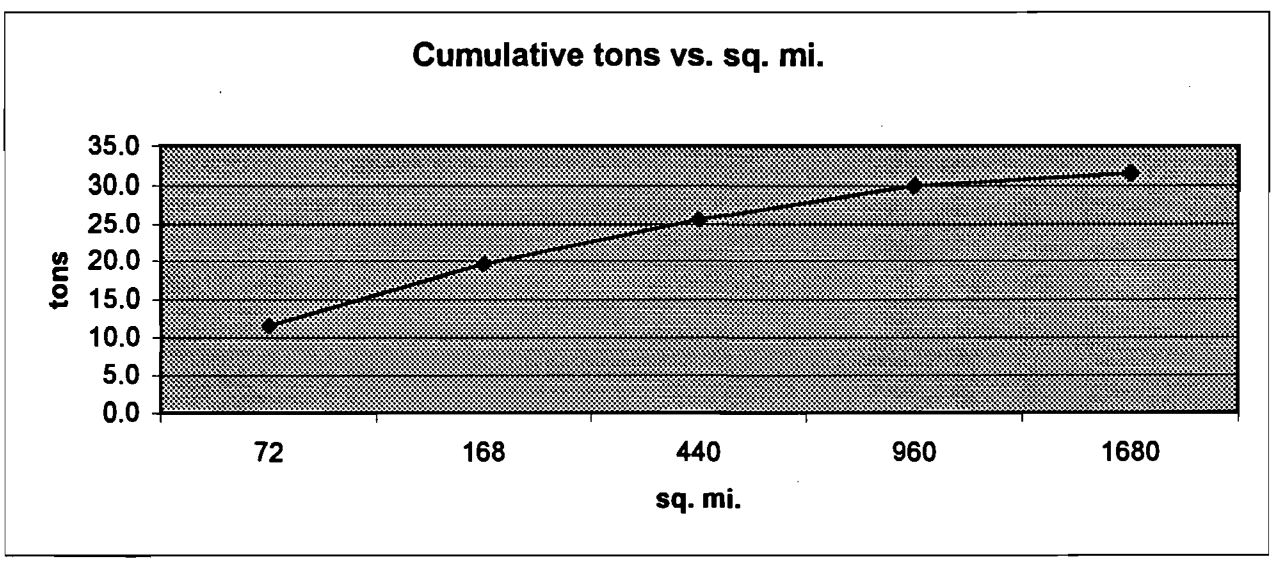
AVG. LOADING = $31.6 \times 2000 \times \frac{1}{1680} = 37.6\ LB/MI^2$

3/18/99

Nitrate Deposition Estimate Summary for Suwannee American Cement
Based on integration of model results provided by Koogler & Associates
and estimation of isopleths not shown on plot by Joe Kahn.
Model based on 1st yr. req. allowable of 3.8 lb/ton. 2nd and subsequent
yrs at 2.9 lb/ton. 1st yr at 1595 tpy, 2nd at 1217 tpy.

| Sq. mi. | avg. lb/sq. mi. | Cum. Tons 1st yr | marginal lb/sq. mi. | Cum. Tons 2nd yr |
|---|---|---|---|---|
| 72 | 320.0 | 11.5 | | |
| 168 | 234.1 | 19.6 | | 15.0 |
| 440 | 116.4 | 25.6 | 42.8 | 19.5 |
| 960 | 62.5 | 30.0 | 17.1 | 22.9 |
| 1680 | 37.6 | 31.6 | 4.3 | 24.1 |



*Cement Kiln NOx Control: Reburn and Enhance Gas Reburn*

**Acurex Environmental Corporation**

**Partners:** U.S. EPA and Coen Company

**ARB Funds:** $192,912

**Acurex Website:** www.gmgw.com ← No info at website

Cement kilns are among the largest, still relatively uncontrolled, sources of oxides of nitrogen (NOx) in California, and currently there is no acceptable method to reduce their NOx emissions. This technology has good potential to provide the needed control of NOx emissions from cement kilns. Acurex is developing enhanced gas reburn technology for use in the dusty environment of a coal-fired cement kiln. The technology is capable of a 40 percent reduction with simple gas reburn and a 70 percent reduction with enhanced gas reburn. This technology has been successfully demonstrated at a pilot scale facility that simulated process conditions of a preheater/precalcine kiln. Acurex is currently looking for a host site to demonstrate this technology in full-scale operation.

ICAT Projects

*Zero-VOC Industrial Maintenance Metal Coating*

**AVES, Inc. and**
**Adhesive Coating Company**

**ARB Funds:** $223,002

**AVES Website:** www.aerovironment.com/area-aves/aves.html

The emissions of volatile organic compounds (VOCs) from coatings operations are a substantial component of total VOC emissions in California. This project is an evaluation and field demonstration of a zero-VOC coating technology for use as a topcoat on parts and products. The resin formulation for the coating was adjusted to provide acceptable drying times, flexibility and hardness, and ultraviolet, chemical, and salt spray resistance. The technology was demonstrated in small-scale testing, and is being followed by full-scale demonstration at manufacturing facilities that coat metal parts and products.

ICAT Projects

*Dynamically Optimized Recirculation Coupled with Fluidized Bed Adsorption to Cost-Effectively*

NOTICE OF PUBLIC MEETING

The Department of Environmental Protection announces a public meeting to which all persons are invited:



DATE AND TIME: Thursday, March 25, 1999 at 6:00 p.m.

PLACE: Hatch Park Community Center, Branford, Suwannee County, Florida

PURPOSE: To receive comments regarding the Department's receipt of an application for an air construction permit subject to the requirements of the Prevention of Significant Deterioration program (PSD permit) from Suwannee American Cement Company, Inc. The applicant's address is P.O. Box 410, Branford, Florida 32008. The application is for the construction of a Portland cement plant, to be located on US Highway 27 at County Road 49, 3.7 miles east of Branford, Suwannee County.

The applicant's proposed project would produce up to 2,300 tons per day of clinker and up to 1,191,360 tons per year of Portland cement. The project includes raw material processing, dry process in-line raw mill and kiln with a preheater/precalciner, clinker cooler, clinker and cement processing, and fuel processing. Proposed fuels are coal, petroleum coke, tires and tire derived fuel and natural gas. Solid fuels will be received by truck and natural gas will be provided by a pipeline on the proposed site. Portland cement will be shipped by truck either in bulk or as a bagged and palletized product. BACT and PSD increment consumption have not been determined yet for this project. This meeting is held, in part, to satisfy the public hearing requirements of Rule 62-210.350(2), F.A.C. The Department will formally receive oral or written comments on issues specifically related to the PSD permit application. At the meeting the Department may impose a limit on the time allowed for oral statements. Written statements are encouraged. All statements will become part of the Department's public record of this project.

The complete application and official file are available for review during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays at the Department's Bureau of Air Regulation, 111 S. Magnolia Drive, Tallahassee. Written comments may be directed to Joseph Kahn, P.E., Department of Environmental Protection, Bureau of Air Regulation, Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

A copy of the agenda may be obtained by writing to: Kim Tober, Department of Environmental Protection, Bureau of Air Regulation at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400 or by calling Kim Tober at (850) 488-0114.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this meeting is asked to advise the agency at least 48 hours before the meeting by contacting the Personnel Service Specialist in the Bureau of Personnel at (850) 488-2996. If you are hearing or speech impaired, please contact the agency by calling 800-955-8771 (TDD).

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
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352/377-5822 • FAX/377-7158

February 24, 1999

Mr. Joseph Kahn, PE
New Source Review Section
Department of Environmental
Protection
2600 Blair Stone Road, MS 5505
Tallahassee, Florida 32399-2400

RECEIVED
FEB 25 1999
BUREAU OF
AIR REGULATION

**Subject:** Suwannee American Cement Company
Response to Requests for Additional Information
DEP File No. 1210465-001-AC (PSD-FL-259)

Dear Mr. Kahn:

This letter shall transmit our report (4 copies) responding to your requests for additional information dated December 29, 1998, January 8, 1999 and February 16, 1999.

The report is titled *Additional Information in Support of an Application for a PSD Construction Permit Review.*

All items from the three letters have been addressed in the report.

As the requests for additional information were of an engineering nature, I am certifying this transmittal letter.

If you require any further information, please do not hesitate to contact me.

Sincerely,

Steven C. Cullen, PE
Koogler & Associates

copies to: Frank Darabi, PE

# ADDITIONAL INFORMATION

## IN SUPPORT OF
## AN APPLICATION FOR A PSD
## CONSTRUCTION PERMIT
## REVIEW

**DEP File No. 1210465-001-AC**
**PSD-FL-259**

**PREPARED FOR:**

SUWANNEE AMERICAN
CEMENT COMPANY
SUWANNEE COUNTY, FLORIDA

**February 1999**


**PREPARED BY:**
KOOGLER & ASSOCIATES
4014 N.W. 13TH STREET
GAINESVILLE, FLORIDA 32609



KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
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# Table of Contents

1. Please finalize the design of the precalciner and submit revised drawings that do not show this process as "on hold". Provide a description of the final process design selected. We understand the applicant is considering utilizing a tire gasification system to fuel the precalciner burner. If this option has been selected, please provide a process description of the gasification system, describe how the solid byproducts of the gasification system will be utilized in the cement process, and discuss the impact of the gasification system on emissions.

***Response:***

The preheater/precalciner system will be a Polysius 4-stage cyclone preheater with a PREPOL MSC-CC Precalciner. The PREPOL MSC-CC Precalciner is a Multi-Stage Combustion (MSC) system with a Combustion Chamber (CC). This system is an adaptation of the power industry's "staged firing" or "stepped combustion" system to the cement industry.

The cyclone preheater with the MSC Precalciner, the rotary kiln and the grate-type clinker cooler comprises Polysius most efficient pyroprocessing system for both heat and electrical energy consumption as the system maximizes heat transfer and minimizes fuel requirements. This results in a low specific exhaust gas volume. With this system, 50-60 percent of the total system fuel is fired at the precalciner and 40-50 percent is fired at the main kiln burner. The 50-60 percent of the fuel fired at the precalciner is split with approximately 10 percent (of total system fuel) being fired at the kiln inlet burner (at the point where the feed enters the kiln) and the remaining 40-50 percent of the total system fuel fired in the Combustion Chamber (CC).

This system was selected for Suwannee American Cement not only because it represents the state-of-the-art in pyroprocessing system technology but also because it provides the most effective means of nitrogen oxides (NOx) reduction available. By minimizing the amount of fuel fired at the main kiln burner (40-50 percent of the total system fuel), the high temperature and high thermal NOx producing combustion necessary for clinkering and maintaining the quality of product is minimized. The fuel fired at the precalciner is burned in a lower temperature reducing zone where very little thermal or fuel NOx is generated. Furthermore, the reducing atmosphere functions to reduce the thermal NOx that was previously produced in the kiln. The combined features make the precalciner kiln with MSC the most efficient pyroprocessing system available from the standpoint of fuel efficiency, low specific exhaust volumes and inherent NOx emission control.

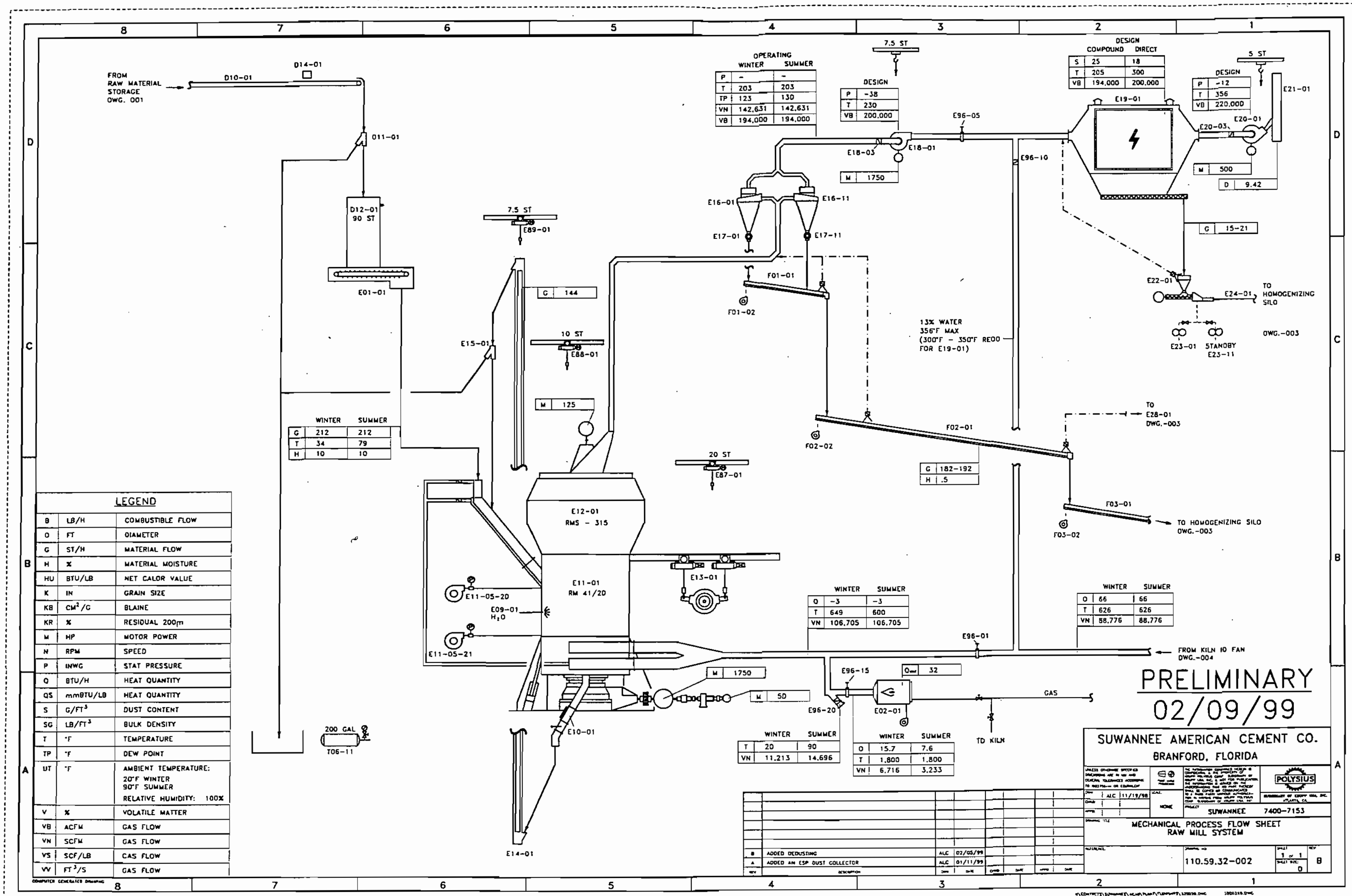
The tire gasification system discussed by Suwannee American will allow the use of tire derived fuel (TDF – as whole tires) to provide up to 40-45 percent of the total system heat input. The gaseous fraction of the fuel is provided to the precalciner burner and the solid fraction of the fuel is introduced at the kiln inlet.

Without the gasifier, approximately 10-15 percent of the total system heat input in the form of TDF (as whole tires) can be fired at the kiln inlet. This TDF will substitute for the fossil fuel that would normally be fired at the kiln inlet burner.

Approximately 10 percent of the total system heat input must be supplied at the kiln inlet in the form of conventional fuels (gas, coal, petcoke) for process control purposes.

The use of TDF will not cause any increase in emissions and will improve the performance of the MSC system for NOx control. The feasibility of the gasifier is dependent on the availability of TDF.

Best Available Copy




LEGEND

| | | |
|---|---|---|
| B | LB/H | COMBUSTIBLE FLOW |
| D | FT | DIAMETER |
| G | ST/H | MATERIAL FLOW |
| H | % | MATERIAL MOISTURE |
| HU | BTU/LB | NET CALOR VALUE |
| K | IN | GRAIN SIZE |
| KB | $CM^2/G$ | BLAINE |
| KR | % | RESIDUAL 200μm |
| M | HP | MOTOR POWER |
| N | RPM | SPEED |
| P | INWG | STAT PRESSURE |
| Q | BTU/H | HEAT QUANTITY |
| QS | mmBTU/LB | HEAT QUANTITY |
| S | $G/FT^3$ | DUST CONTENT |
| SG | $LB/FT^3$ | BULK DENSITY |
| T | °F | TEMPERATURE |
| TP | °F | DEW POINT |
| UT | °F | AMBIENT TEMPERATURE: 20°F WINTER 90°F SUMMER RELATIVE HUMIDITY: 100% |
| V | % | VOLATILE MATTER |
| VB | ACFM | GAS FLOW |
| VN | SCFM | GAS FLOW |
| VS | SCF/LB | GAS FLOW |
| W | $FT^3/S$ | GAS FLOW |

2. The application proposes the use of tires to provide up to 40% of the heat input to the pyroprocessing system. Representatives from Krupp Polysius stated that firing no more than 10% tires is practically achievable without the use of a tire gasification system. Further, the proposed volume of tires may result in no fuel being fed to the precalciner which would provide no supplemental heat in the flue gas downstream of the kiln end feed shelf (which we presume will be the introduction point for tires). Operation of this sort seems to violate the principles of NOx control by process design described on page 49 of the supplemental report, in which more fuel is fired in the precalciner than the kiln. Please propose a volume of amount of tires that comports with the recommendation of the pyroprocessing system's manufacturer, or provide more information to support the requested feed rate. Please verify the location of the feed point for tires or TDF.

***Response:***

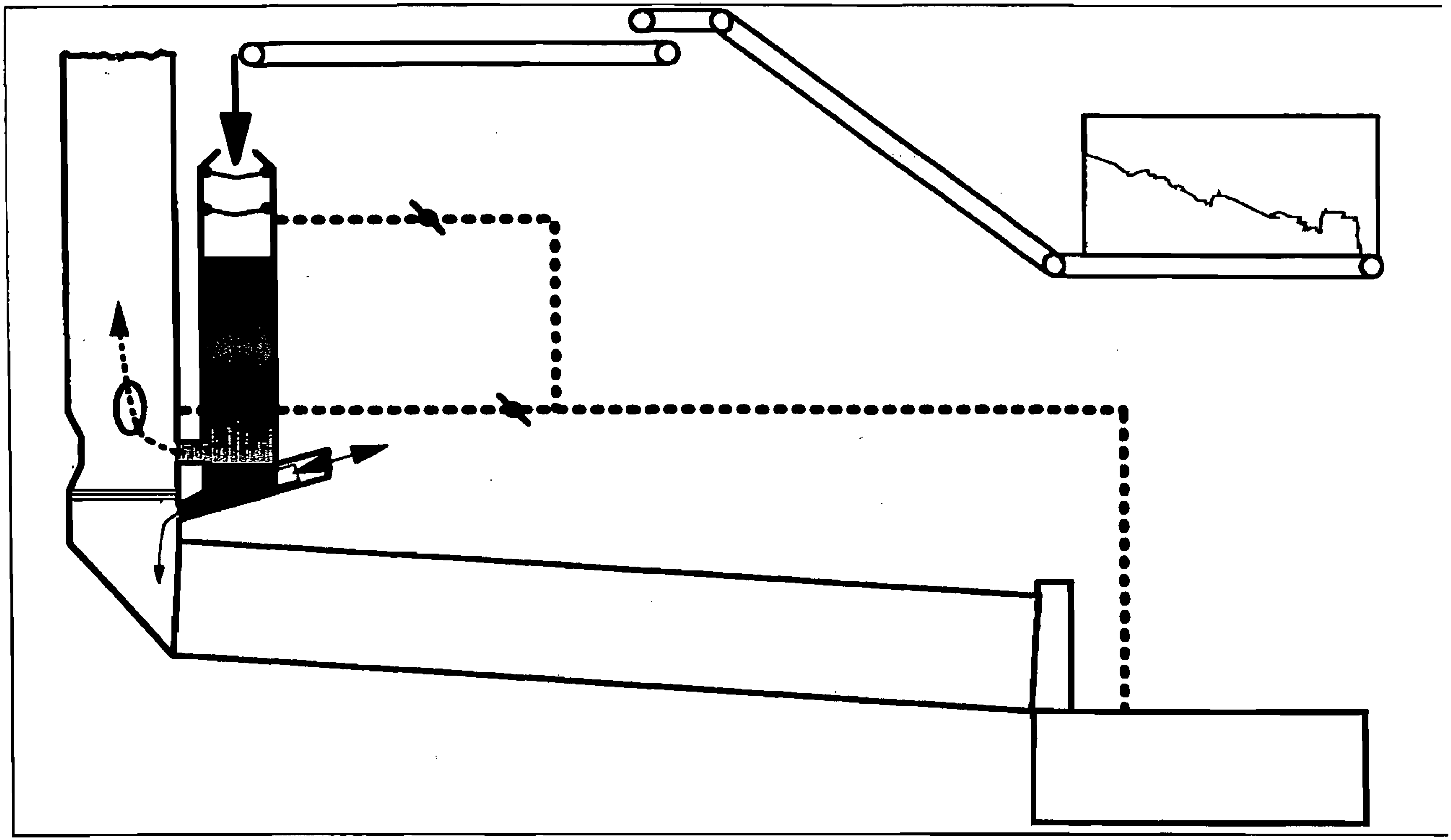
The request in the permit application to use TDF to provide up to 40 percent of the total system heat input was based on the possible use as a tire gasifier.

Without the gasifier, approximately 10-15 percent of the total system fuel can be supplied by TDF. The substituted fuel could be seen as a replacement for fossil fuel that would normally be fired at the kiln inlet burner. For permitting purposes, Suwannee American is requesting that up to 15 percent of the total system heat input be supplied by TDF if the gasifier is not used, and up to 45% of the total system heat input be supplied by TDF if the gasifier is used. The details of the gasifier are described further in the response to Item 1.

The applicant's concern is that the availability of tires may not be adequate to support the full use of the gasifier. Permitting both options however, provides the maximum operational flexibility.

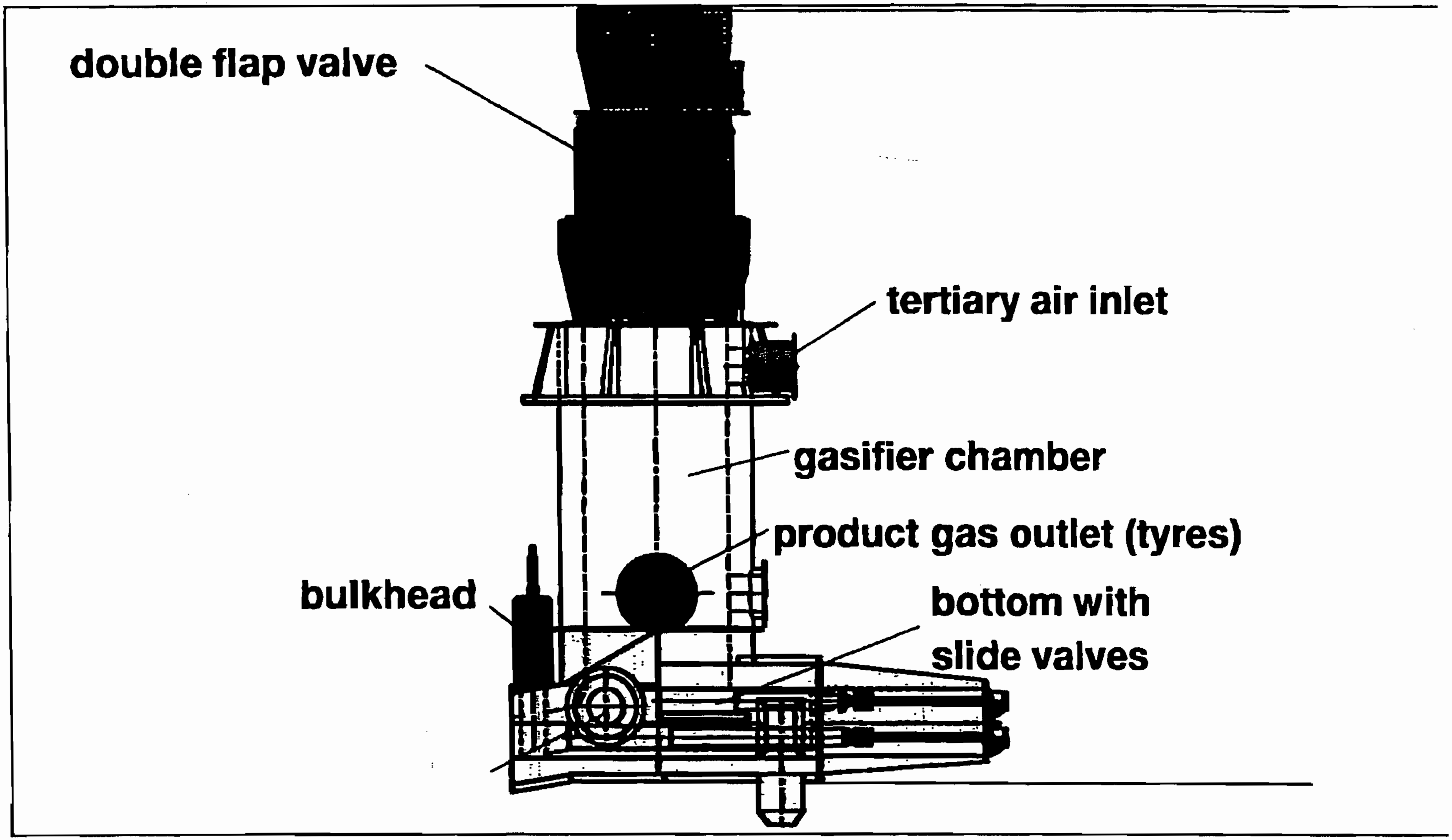
Typically, whole tires (TDF) are fed into the back of the kiln via the kiln inlet housing, roll down the feed shelf and burn out in the inlet of the kiln itself.

When the gasifier is used, the TDF is fed into the gasifier in batches. The gasifier itself is quite simple. Whole tires are fed via an airlock mechanism to a cylindrical reactor. A small portion of the tertiary air (temperature = 750 - 900° C) is injected into the reactor to serve as the gasifying agent. At a excess air factor of 0.2 to 0.4, the tires are decomposed to gas, residual coke and wire. The gas, laden with hydrocarbons and free radicals, is injected into the calciner as fuel to replace the coke or coal. The residual coke and wire is pushed from the bottom of the reactor into the kiln inlet housing at roughly the same place where conventional tire feeding systems introduce the whole tires. The gas is burned in calciner in a staged combustion approach and the residual coke burns out in the entrance to the kiln. The wire melts and is incorporated into the clinker.



# Integration of the gasifier into an AS-plant

POLYSIUS




# Lateral view of the reactor

POLYSIUS

3. Please finalize the design of the particulate control devices for the in line kiln/raw mill and the clinker cooler and submit revised drawings that do not show the control device for the clinker cooler as "under review". Provide a description of the final control devices selected, and specifications for each device.

***Response:***

Particulate matter emissions from both the kiln/raw mill system and the clinker cooler will be controlled by electrostatic precipitators. Identical precipitators will be used at the two locations. The description and technical specifications of a precipitator sized for this specific application by Environmental Elements Corporation is with this response. This precipitator or an equivalent precipitator will be selected by Suwannee American.

# SECTION 2

# DESCRIPTION OF EQUIPMENT

## SECTION 2

## 2. DESCRIPTION OF EQUIPMENT

### A. CASING

The precipitator casing is fabricated from 3/16 inch ASTM A-36 steel plate with external columns and stiffeners. The design utilizes rigid frame construction with no internal struts or bracing thus avoiding ledges for dust buildup and disturbance to uniform gas flow. The roof and all internal loads are supported by fabricated plate girders. The design utilizes a "floating bottom" system where the precipitator is anchored at only one point on the support steel. Lubrite sliding plates are provided for the other support points to allow for thermal expansion in all directions.

Seller's shell design allows 4'-5" head room above the top of the dust plates for interior access to perform maintenance or inspection.

Interlocked single wall doors are provided for penthouse roof access. Access to the area above the collecting plates is gained through non-interlocked double wall doors in the precipitator hot roof.

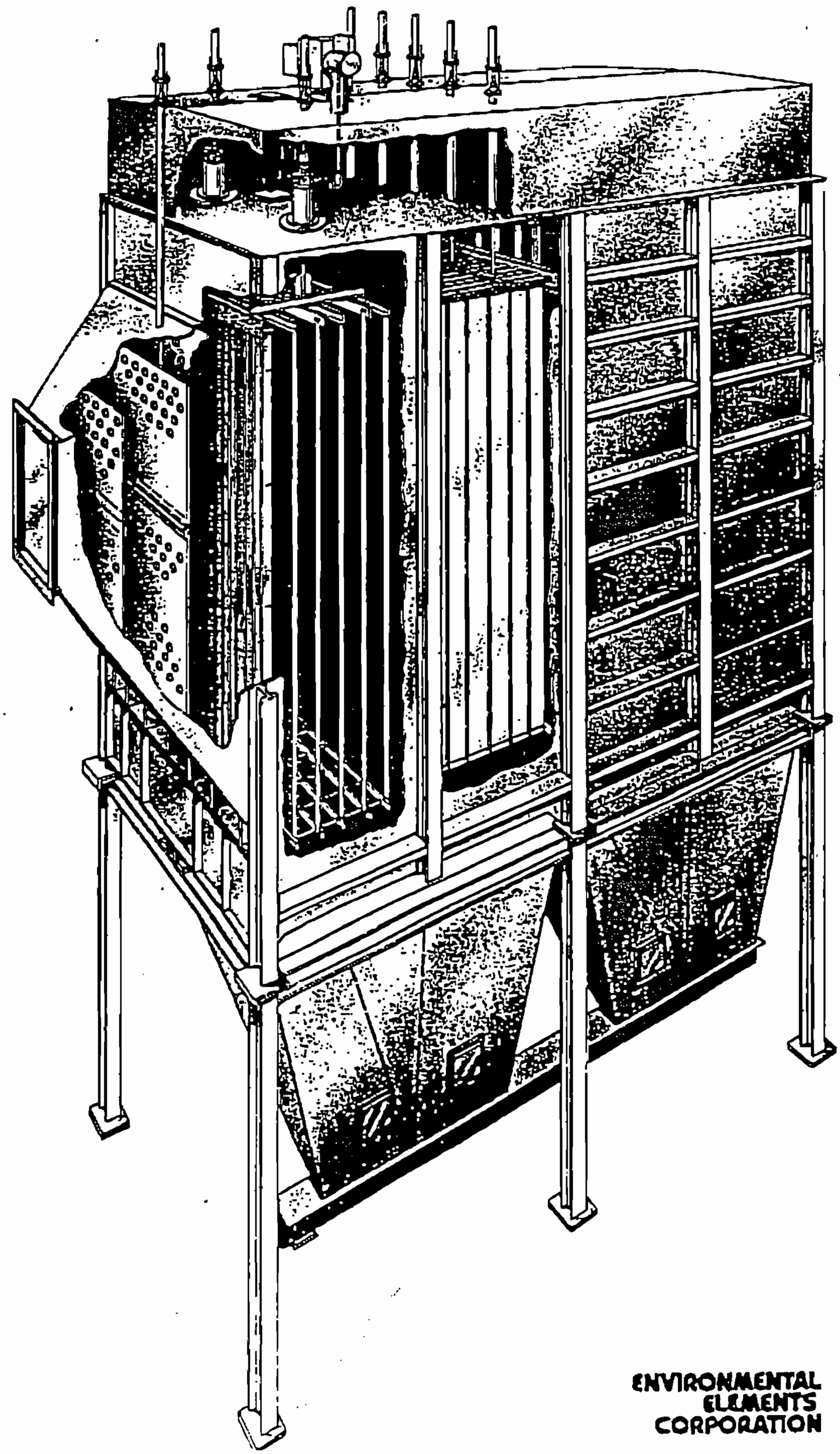
### B. NOZZLES

Inlet and outlet nozzles are fabricated from 3/16 inch ASTM A-36 steel with external structural stiffeners of uniform depth to provide full support for insulation and siding. The bottom of the nozzles are sloped 55° with no horizontal ledges to impede free flow of dust fallout inherent with reduction in gas velocity.

The inlet nozzle is complete with three perforated plates to distribute the gas across the face of the treatment zone. The lower 4 inches of the perforated plates are open to allow any dust that falls out in the nozzle to be carried into the inlet field hopper. A double wall, quick-opening, interlocked door is provided in each nozzle for internal inspection and maintenance. Bolted panels are incorporated into the perforated plates for through access.

### C. HOPPERS

Trough type hoppers are provided fabricated from 1/4 inch ASTM A-36 steel with external stiffeners of uniform depth to provide support for thermal insulation and siding. The hoppers are designed to support a full dust load. The sides and ends are sloped 60° and 75°, respectively, from the horizontal. The valley angle resulting from this design is 57-1/2°. The between field baffles are extended to the hopper outlet to eliminate gas bypassing in the hoppers. A double wall interlocked door is provided as shown to permit access into each baffled section of each hopper. Each hopper is provided with high level alarms, strike plates for manual hopper rapping, and dust removal system. <u>Hoppers should not be used for storage.</u>



ENVIRONMENTAL
ELEMENTS
CORPORATION

D. HOPPER LEVEL DETECTORS

A Bindicator or equal high level switch is provided for each section of each hopper. This system operates by radio frequency oscillation, which is dampened by a high ash level, producing a proportionate A/C signal. The detector operates a DPDT relay for alarm actuation. The probe is mounted in the side wall of the hopper with the electronics mounted in the hopper area away from high temperatures.

E. DUST REMOVAL SYSTEM

The dust removal system consists of hopper screw conveyor sized to operate at 25 rpm maximum to reduce wear. The hopper conveyor is designed for normal rated conditions and powered for flooded operation in the event of hopper dust buildup.

To insure positive dust removal a Sprout Bauer, or equal, motor operated rotary dust valve with Type 2 rotor with ni-hard adjustable tips is furnished at the outlet of the hopper conveyor.

F. PRECIPITATOR SUPPORTING STEEL

Structural steel is provided to support the precipitator as shown on the proposal drawings. All columns, beams, wind bracing and other structural members supplied by Seller for support of the precipitator will be rolled or fabricated from ASTM A-36 steel. Connections will be bolted and the overall structural design will be in accordance with the latest applicable AISC Standard except as noted under Design Conditions. The support steel and bracing is arranged to provide maximum access for maintenance and cleanup.

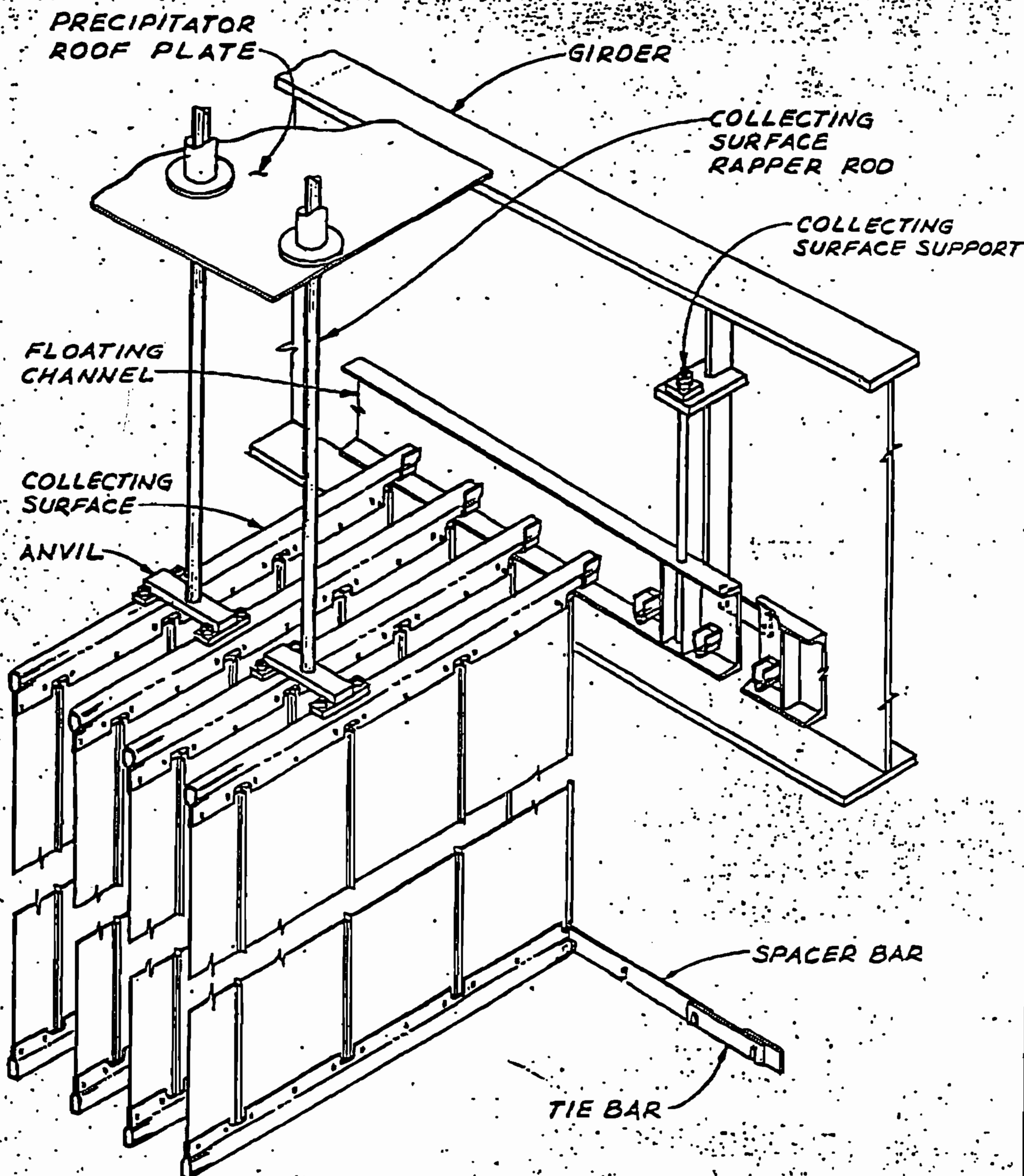
G. ACCESS FACILITIES

Access facilities are provided to the scope as shown on the proposal drawings. Structural steel is ASTM A-36 designed for 100 psf loading. Stairtreads and grating are galvanized. The handrail will be dual rail using 1-1/4 standard pipe rail and post. Platforms will be provided with 4 inch x 1/4 inch toe plates. Walkways are 36 inch minimum width. Stairways are 30" width.

H. COLLECTING ELECTRODE SYSTEM – Drawing No. 1120

Seller's C1010 steel MODULOK collecting surfaces (U.S. Patent # 3,418,792) are roll formed into 18 inch modules having tightly interlocked edges which when factory assembled form a rigid one piece baffled structure, which provides maximum stiffness, optimum gas exposure and minimum field assembly.

The top and bottom edges of each collecting surface are reinforced and stiffened by 7 gauge and 11 gauge respectively tubular structural members which are factory welded to the roll formed collecting surfaces. These members prevent edge effect arc-over where the discharge electrodes enter and leave the collecting field. This horizontal welding at the top and bottom is the only heat applied to the plate during manufacture. This procedure prevents the deformation and "oil-canning" which can easily result when individual modules




ENVIRONMENTAL ELEMENTS CORPORATION

COLLECTING SURFACE RAPPER ARRANGEMENT

are welded together. The collecting surfaces are rapped by electric impact type rappers located on the penthouse roof. Full provision is made in the collecting system suspension for uniform thermal movement up to the maximum design temperature without disturbance to internal alignment.

These collecting surfaces are shipped and lifted into the precipitator shell in nested, upright packages thereby affording maximum protection against handling damage for optimum straightness and uniformity in operation.

I. DISCHARGE ELECTRODE SYSTEM – Drawing No. 1121

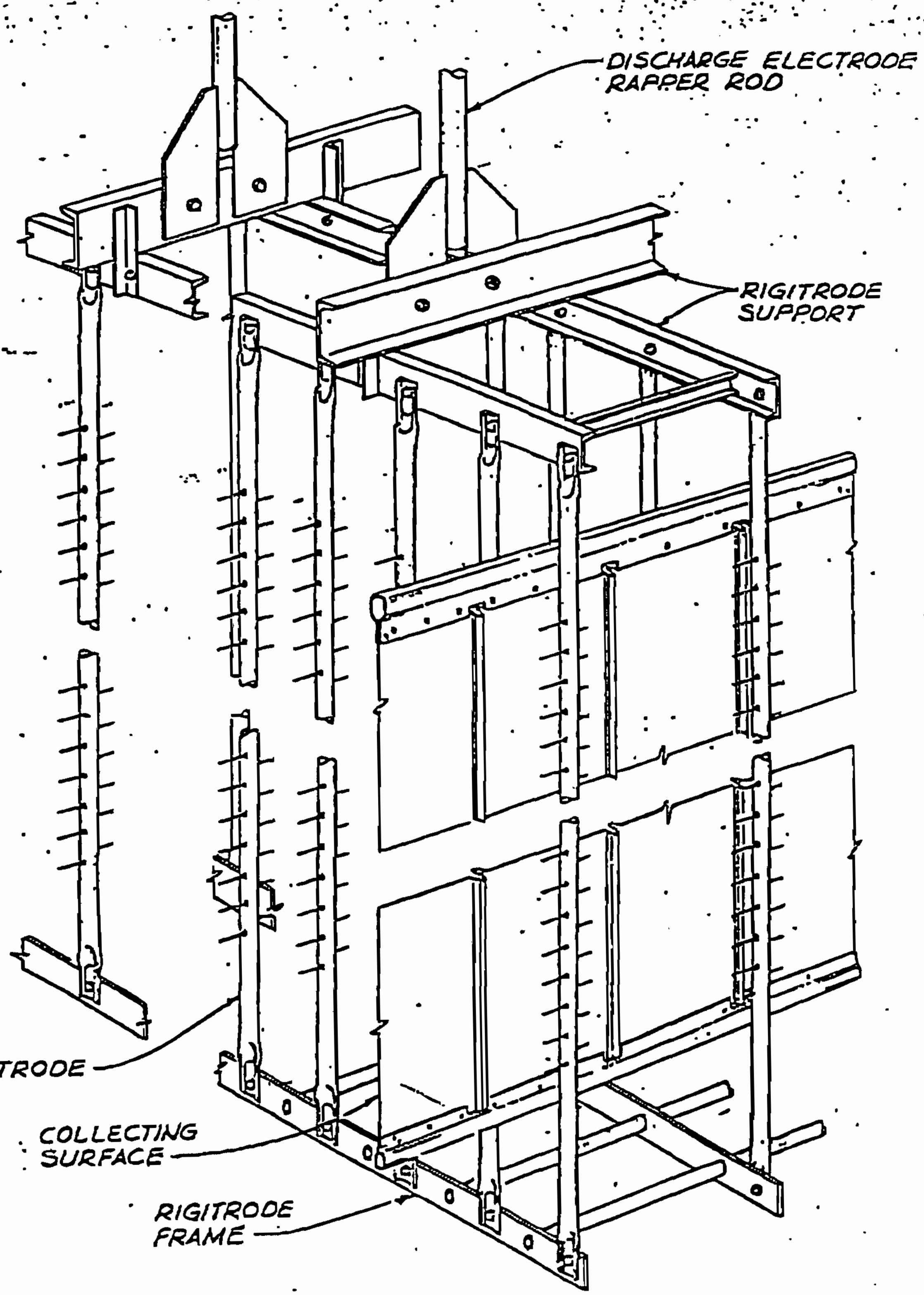
Seller's RIGITRODE electrode is a true unbreakable rigid discharge electrode. The RIGITRODE electrode is a 1-1/2 inch diameter 16 gauge mild steel tube with corona-generating studs welded to it. The studs are 12 gauge and are fully annealed to eliminate fatigue cracking. The RIGITRODE electrode exhibits a low corona onset voltage typical of a pointed discharge electrode. This feature makes it appropriate in inlet fields where dust loadings are high. As voltage is increased, the V-I relationship approaches that of a smooth electrode. This feature allows the same RIGITRODE electrode to be used effectively in outlet fields. Laboratory tests and commercial operation has shown this design to have a unique combination of several characteristics: high sparkover voltage, high field strength and an even current distribution from discrete emission points.

The restoring forces of this system are substantial; therefore, an overfull hopper will not cause permanent misalignment. The system will return to correct alignment when the hopper is emptied, thus avoiding unscheduled outages. Further, the computerized power control (discussed in detail later in this proposal) will protect the power supply and prevent the formation of fused ash in a full hopper.

J. HIGH VOLTAGE SUPPORT – PENTHOUSE DESIGN – Drawing No. 1217

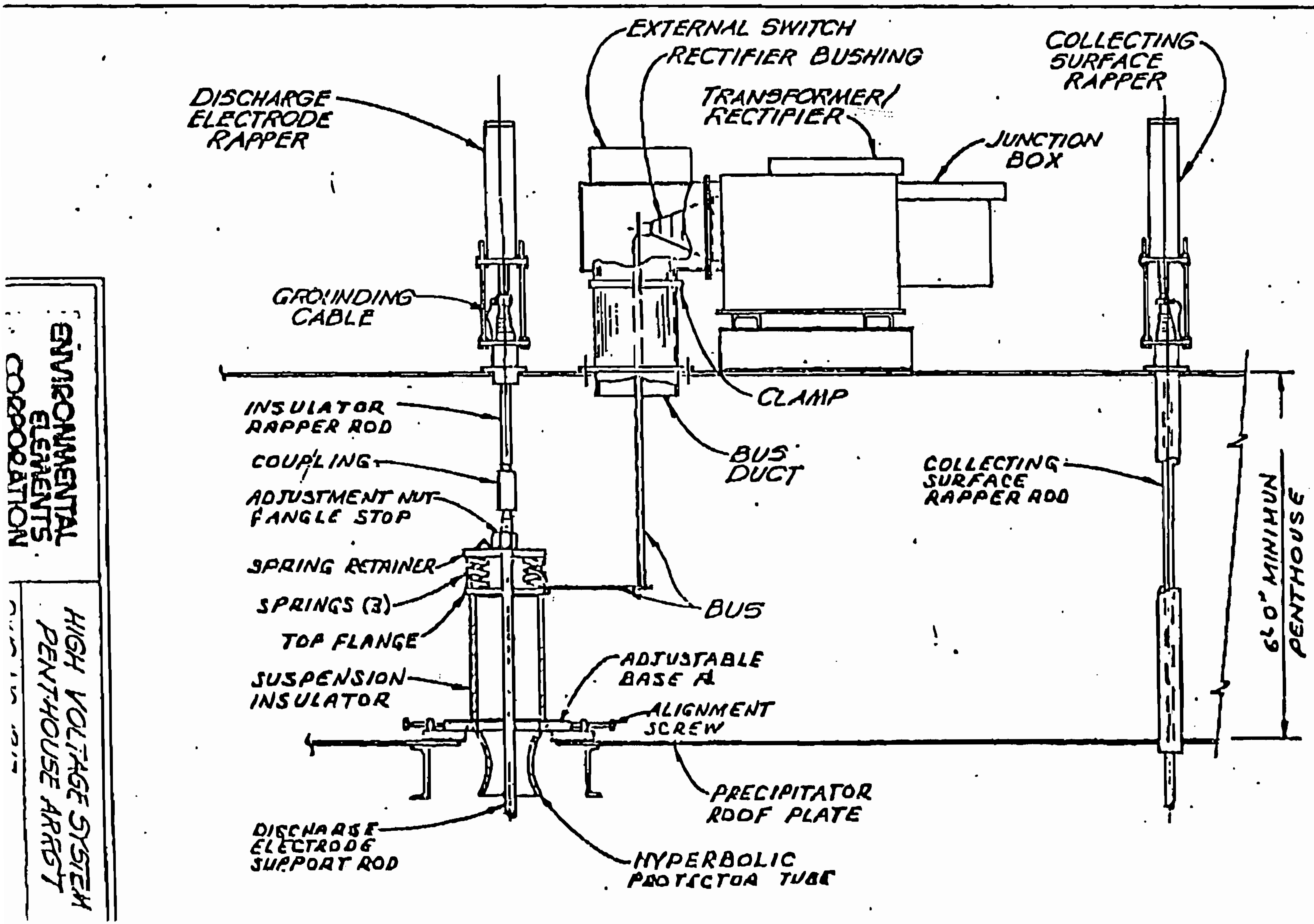
Each bus section is supported by two (2) suspension insulators located on the precipitator roof. An epoxy filled glass filament rod connects an externally located rapper to the high voltage support rod to transmit energy while at the same time providing the necessary electrical insulation.

The insulators are housed in a gas-tight 6 foot high penthouse covering the entire roof area. The sides are fabricated from 10 gauge steel. The roof is fabricated from 1/4 inch checker plate to provide a firm walk surface. All rappers, transformer-rectifiers and rapper panels are located on the penthouse roof allowing inspection and maintenance with the precipitator in operation. The penthouse construction reduces the radiator effect of the many projections through the precipitator and eliminates the roof corrosion inherent with the use of individual insulator compartments. The insulators are totally accessible for cleaning and inspection. The penthouse roof is sloped 1/4 inch in 12 inches for drainage. The penthouse is pressurized by a forced air system, sized to supply 100 cfm per insulator, to prevent the entrance of dust into the penthouse and to keep the inside surface of the support insulators clean.




ENVIRONMENTAL ELEMENTS CORPORATION

RIGITRODE DISCHARGE ELECTRODE ARRANGEMENT


EXTERNAL SWITCH
RECTIFIER BUSHING
TRANSFORMER/ RECTIFIER
COLLECTING SURFACE RAPPER
DISCHARGE ELECTRODE RAPPER
JUNCTION BOX
GROUNDING CABLE
CLAMP
INSULATOR RAPPER ROD
BUS DUCT
COUPLING
COLLECTING SURFACE RAPPER ROD
ADJUSTMENT NUT & ANGLE STOP
6'0" MINIMUM
PENTHOUSE
SPRING RETAINER
SPRINGS (3)
BUS
TOP FLANGE
SUSPENSION INSULATOR
ADJUSTABLE BASE A
ALIGNMENT SCREW
PRECIPITATOR ROOF PLATE
DISCHARGE ELECTRODE SUPPORT ROD
HYPERBOLIC PROTECTOR TUBE
ENVIRONMENTAL ELEMENTS CORPORATION
HIGH VOLTAGE SYSTEM PENTHOUSE ARRGT

K. INSULATOR HEATERS

A 0.4 KW contact heater is provided around each support insulator. Insulator heaters are not essential to operation of the precipitator since the precipitator is normally heated prior to energization. The insulator heaters are included, however, as insurance in the event that the precipitator is energized cold.

L. ELECTRIC IMPULSE RAPPER MODEL ESI-I -- Drawing No. 1076

The electric impulse rapper has been specifically designed for rapping the collecting surfaces, discharge electrodes and perforated distribution plates of electrostatic precipitators. The ESI-I is a single impulse gravity impact type rapper consisting of an integral DC coil and steel housing assembly, a 20 pound piston and mounting hardware. Its features include:

Accurate Control. Rapper impact is precisely repeatable. Intensity of impact and frequency of operation are controlled by a microprocessor based controller. With the optional Data Management System, the operating characteristics can be controlled from a remote control room through the CRT.

One Piece Construction. The coil is permanently bonded to the inside of the housing and is totally encapsulated in epoxy to seal out the environment. Long life is assured with this uncomplicated construction.

Lubrication. None is required.

Maintenance Free. The ESI-I requires absolutely no periodic adjustment or maintenance over its entire service life.

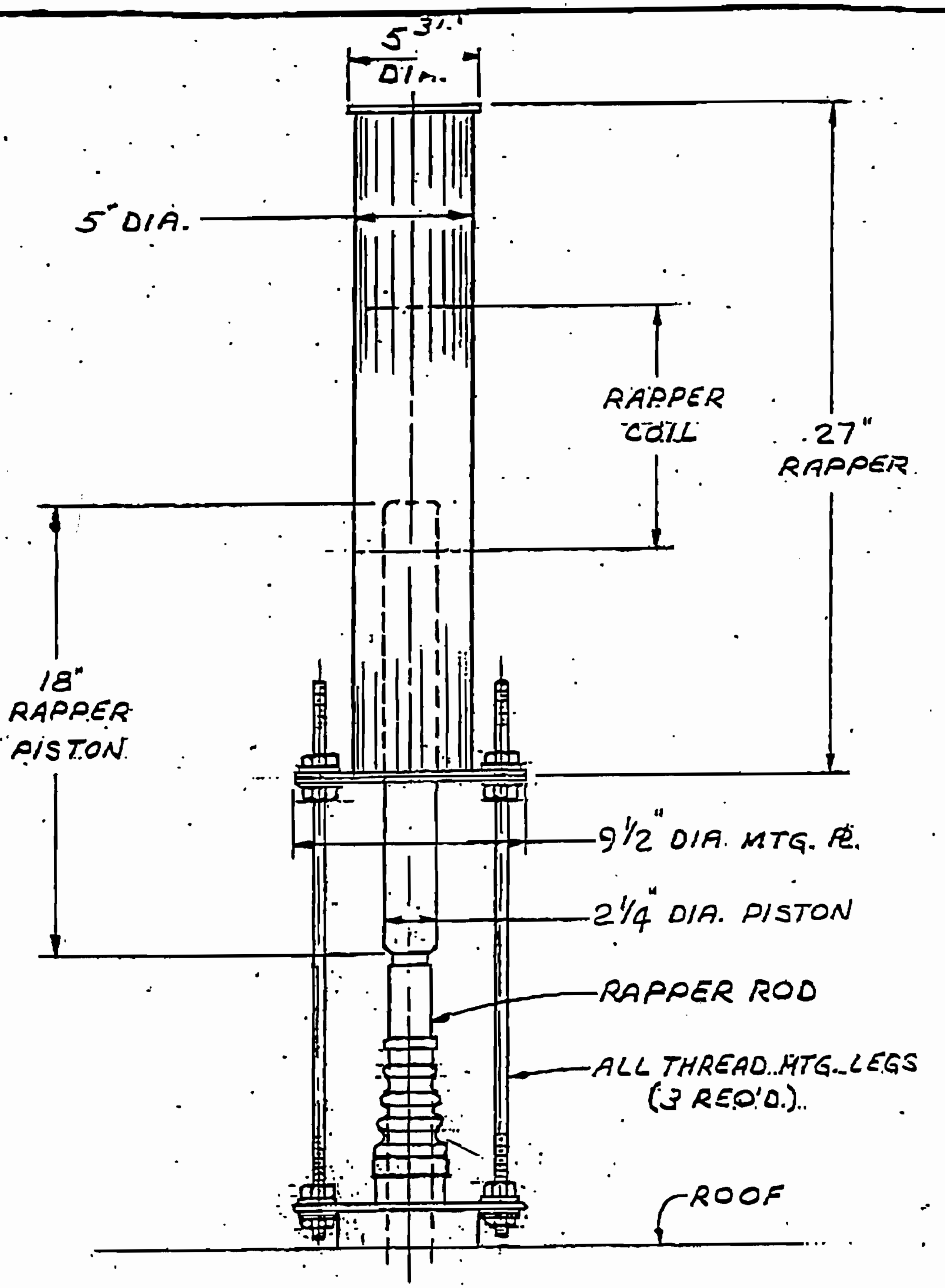
Roof Mounting. The rapper is mounted on the roof by means of three (3) support rods. The piston moves freely in and out of the rapper body when striking the rapper rod.. The impact does not impart a shock to the housing which eliminates any chance of material fatigue. The rapper is weatherproof for outdoor operation.

Power Supply. The rapper operates from a 240 volt supply and draws an instantaneous current of 22 amperes maximum. The three (3) wire conductor cable supplied with the rapper is used to make the electrical connections. An additional grounding strap is provided for connecting the housing to the precipitator roof.

Energy Output. Microprocessor controlled output levels are provided.

M. RAPPER CONTROLS

The microprocessor based rapper controls are housed in a NEMA 4 weathertight enclosure. The rapper control system is designed to operate within ambient temperature limitations of -25°C to 85°C. The rappers for the discharge electrodes and each collecting surface field are individually controlled to permit adjustment of rapper impact intensity and cycle time for each section. Impact is variable up to 10 foot pounds. On time is 1 to 8 half line cycles and




ENVIRONMENTAL ELEMENTS CORPORATION

ESI RAPPER

off time is variable from 1 to 999 seconds. Control, rapper status indication and fault detection can be transferred to a remote location by multiplex signals from the optional Data Management System. For further details, see Attachments.

N. TRANSFORMER-RECTIFIER – Drawing No. C37533

Each field is energized by a high voltage, coolant filled, silicon diode transformer-rectifier. Power is conducted to the precipitator through 3/4 inch A-36 steel bus bar enclosed in a 16 inch round 10 gauge A-36 steel water-tight housing.

The transformer is single phase, liquid cooled with the silicon diode rectifiers immersed in the same tank. Line voltage is regulated by a full range thyristor controller (SCR) which provides automatic power control. The current linear reactor is located in the junction box.

The transformer-rectifiers are furnished with a magnetic liquid level gauge, dial thermometer, drain, low voltage junction box and liquid filled bushings. The units are designed for a 55°C rise, at rated load, based on operation in an average ambient temperature of 40°C providing the maximum daily ambient shall not exceed 50°C. An alarm contact is provided on the temperature gauge.

The high voltage ground switch is integrated into the key interlock system to insure that the transformer-rectifier bushing is grounded before entry can be gained to the precipitator.

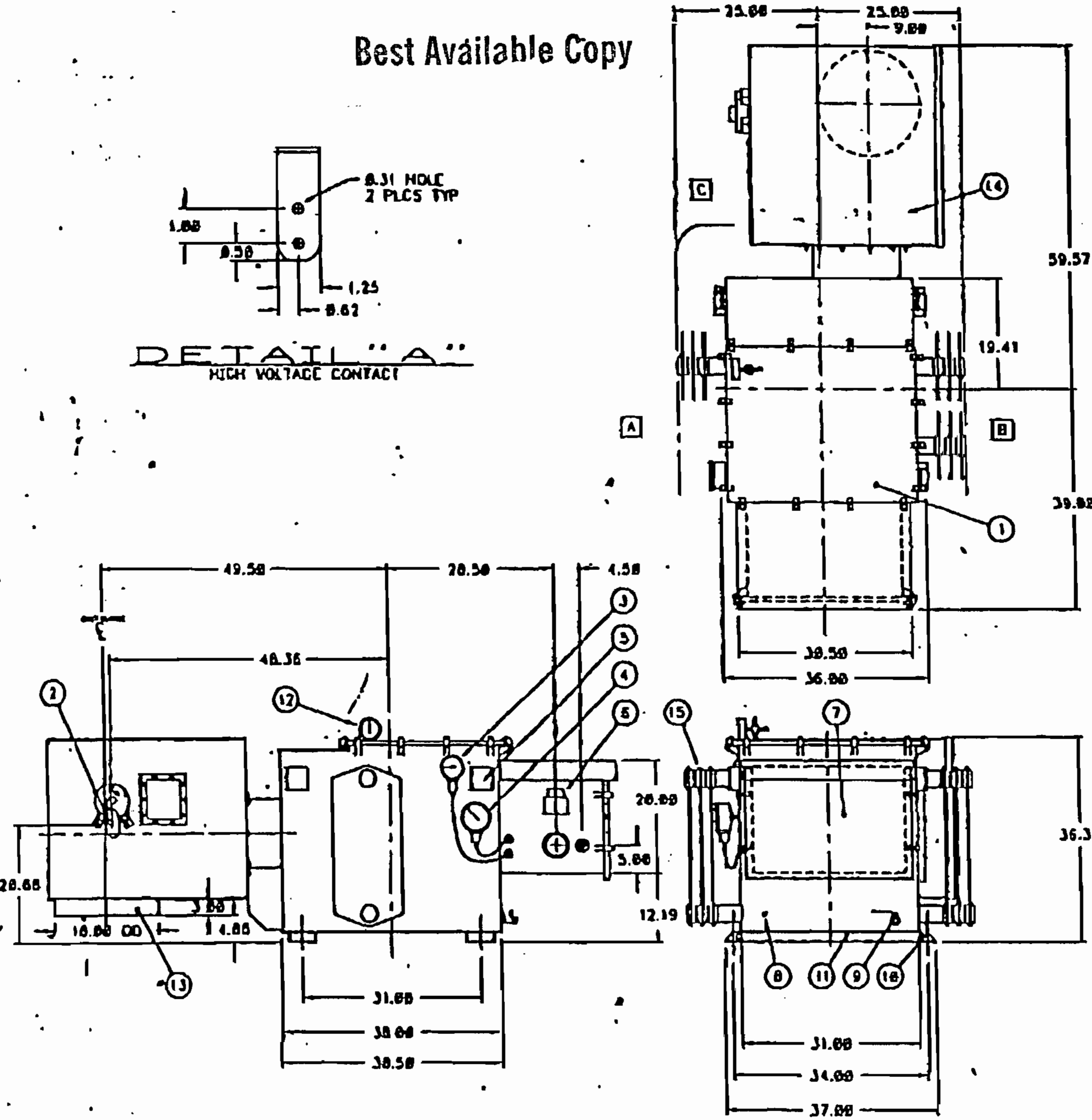
O. AUTOMATIC GROUNDING SYSTEM - Drawing No. C29652

The automatic grounding switch is located in the bus duct between the transformer-rectifier and penthouse insulator compartment. The automatic grounding of the high voltage system is solenoid activated when the transformer-rectifiers are deenergized on CO gas detection signal. The automatic grounding system will be provided for the kiln precipitator only.

P. RECTIFIER CONTROL CABINETS – Drawing No. 1224, 1225

Environmental Elements rectifier control cabinets are fabricated as attractive two section (2-PAC) dead front, NEMA 12 enclosures. The cabinets are independent of one another, each containing separate assemblies to apply voltage to the primary of an associated transformer-rectifier at levels determined by a dedicated automatic power controller. Access to all equipment is through the front door allowing easy access for maintenance. Components include the circuit breaker, contactor, control transformer, monitoring circuits, relays, firing circuit and Silicon Controlled Rectifiers (SCR's). The SCR assembly utilizes two (2) SCR's fitted to electrically isolated heat sinks of an appropriate size. The electronic components of the firing circuit are mounted on a printed circuit board attached to the heat sink. The firing circuitry determines the conduction angle (0° to 180°) of the SCR's as a function of the signal from the automatic power control or manual control.

A separately enclosed high impedance linear reactor (CLR) with an iron core and air chimneys in the windings is connected in series with the SCR's to limit primary current surges during sparking.




| SPECIFICATIONS | | | | | | |
|---|---|---|---|---|---|---|
| MODEL NUMBER | OUTPUT K.V.D.C. | OUTPUT M.A.D.C. | APPROX WEIGHT | FLUID CAPACITY | NO. OF RADIATORS | LOC. OF RADIATORS |
| 39267 | 65 | 750 | 3000# | 120 GAL | 2 | A, B |
| 39268 | 65 | 1000 | 3300# | 120 GAL | 3 | A, (2)B |

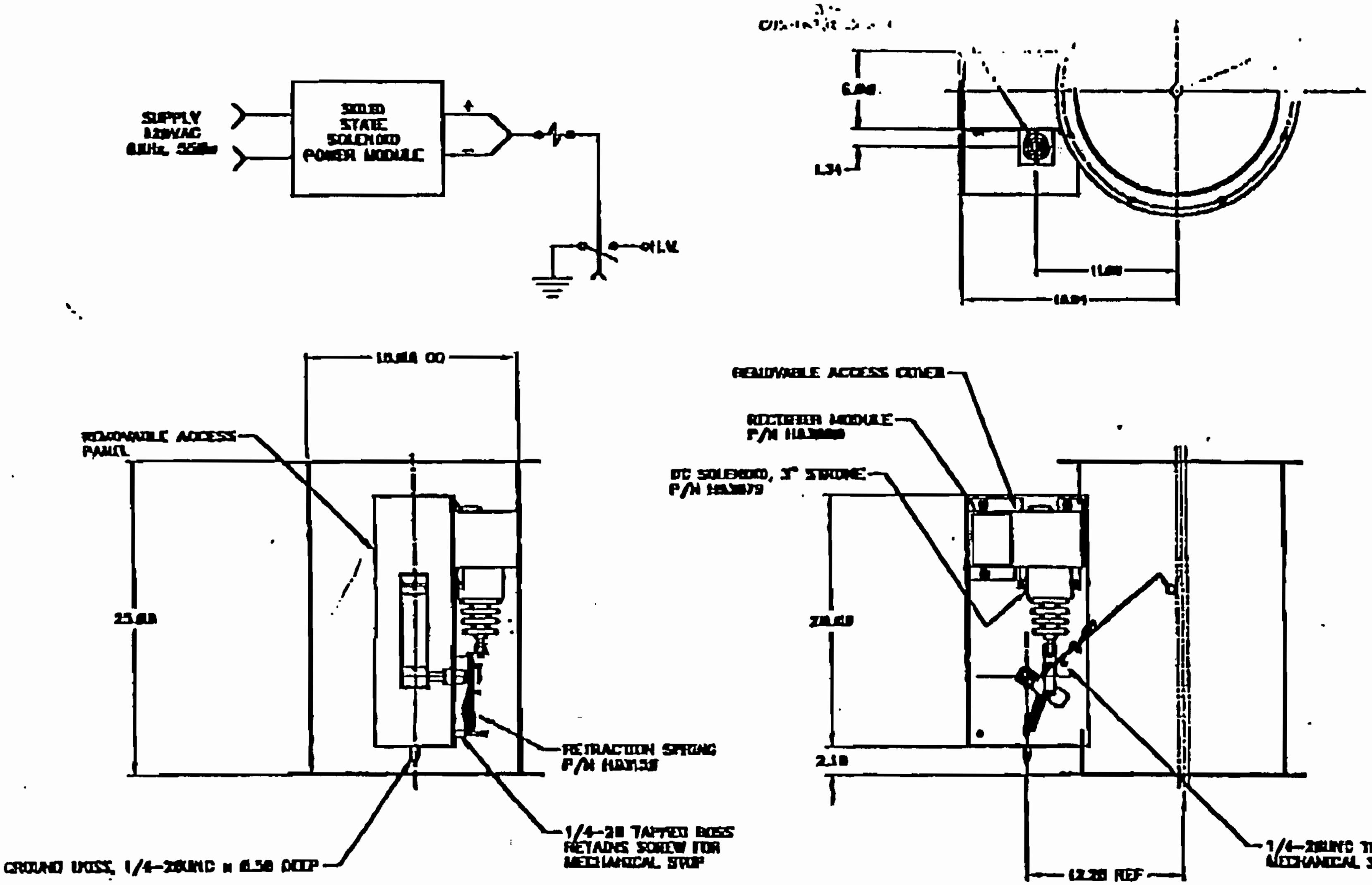
1. HANDHOLE FOR INTERNAL ACCESS WITH REMOVABLE COVER
2. HIGH VOLTAGE CONTACT SEE DETAIL "A"
3. MAGNETIC FLUID LEVEL INDICATOR LOW LEVEL CONTACTS OPTIONAL
4. TEMPERATURE INDICATOR MOUNTED IN WELL TO FACILITATE REPLACEMENT OVERTEMP ALARM CONTACTS SHOWN ARE OPTIONAL
5. LIFTING CHANNEL, C4-7.25# x 4.00 LG. 4 PLC'S
6. NAMEPLATE LOCATION
7. LOW VOLTAGE JUNCTION BOX WITH REMOVABLE COVER AND TOP, 1 - 3" CPLG, 1 - 1" CPLG PROVIDED
8. GROUND BOSS, 1/2-13UNC THREAD WITH THREAD PROTECTIVE PLUG
9. 0.5" VALVE & PLUG FOR DRAIN OR SAMPLING
10. MOUNTING HOLES, 0.75 DIAMETER 4 PLC'S
11. 0.25" PLATE BOTTOM WITH (2) FORMED STEEL CHANNELS
12. 0.5" FILL CPLG. WITH PRESSURE RELIEF VALVE PRESSURE-VACUUM GAUGE OPTIONAL
13. H.V. DUCT FLANGE, 10.00 OD
14. GROUNDING SWITCH, 2 POSITION EXTERNAL WITH PROVISIONS FOR 2 ZERO BOLT EXTENSION INTERLOCKS. APPROVED LOCKS: KIRK TYPE F, SUPERIOR TYPE B4003, OR EQUIVALENT. REF DWG: D37449
15. COOLING RADIATOR

NWL TRANSFORMERS

ENVIRONMENTAL ELEMENTS

| SCALE | APP'D | DATE |
|---|---|---|
| 1=14 | | 3/4/96 |
| PGF | PGF | C37533 |

| REV | DATE | BY | DESCRIPTION |
|---|---|---|---|



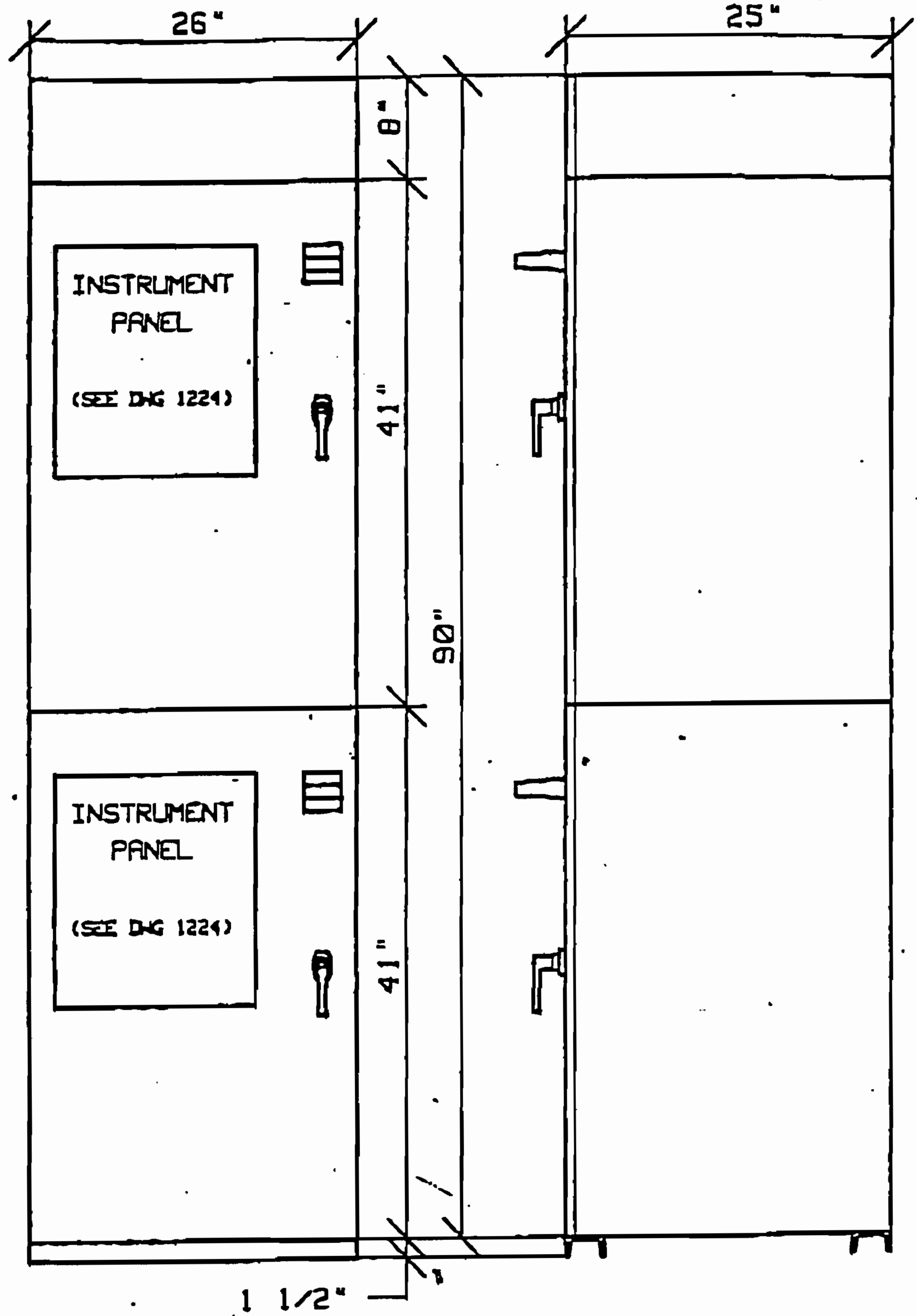

NOTES:

1. BUS DUCT IS TO BE SELF SUPPORTING.

NWL TRANSFORMERS

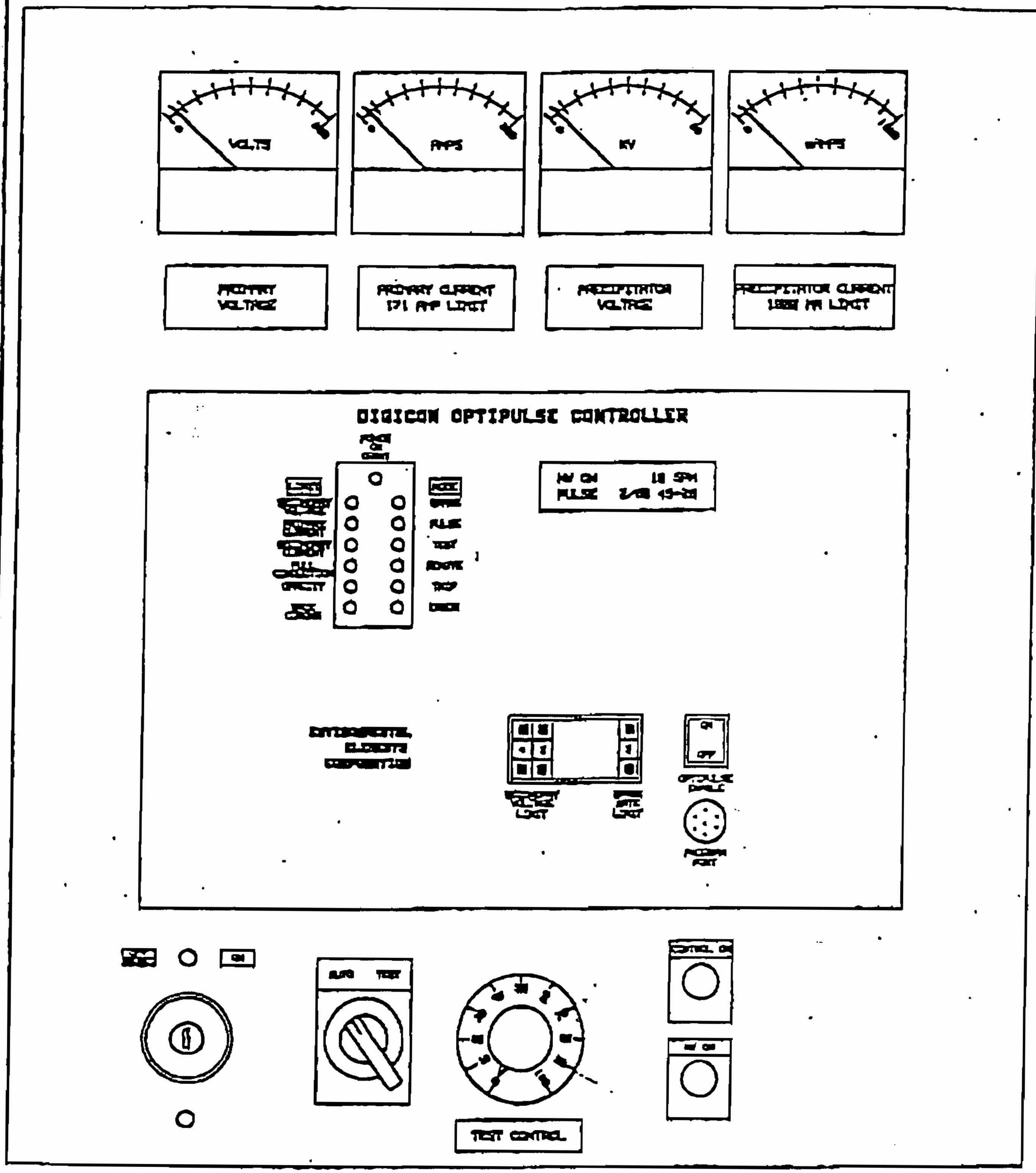
PHYSICAL OUTLINE
NWL # 37136

| | | |
|---|---|---|
| 1=6 | TH | 02/15 |
| RK | TH | C29652 |




| ENVIRONMENTAL ELEMENTS CORPORATION | W.O. NO. DUAL CONTROL CONSOLE WITH CIRCUIT BREAKER | | | |
|---|---|---|---|---|
| DRAWN | SIZE A | FILE NAME | DRAWING NO. 1225 | REV. |
| DATE | SCALE | | SHEET | |

DWG. NO.
REV.




A1S3

| | | | | |
|---|---|---|---|---|
| ENVIRONMENTAL ELEMENTS CORPORATION | M.O. NO. INSTRUMENT PANEL | | | |
| | SIZE | FSCM NO. | DRAWING NO. 1224 | REV. |
| DRAWN J. HAMLIN | | | | |
| DATE 2-16-87 | SCALE | | SHEET | |

The control cabinets also contains a number of features that protect the precipitator and other components. Associated fuses and surge arresters protect the SCR's and metering circuits against external circuit failure and transient current sparks. An electronic overcurrent relay provides additional protection.

To eliminate the manual monitoring of the units, each cabinet contains a DIGICON OPTIPULSE automatic power controller to maintain optimum power input to the precipitator.

Each controller has a two line 32 character alphanumeric Liquid Crystal Display (LCD) located on the front panel which presents a user-friendly interface to the plant operator. Controller faults, operating status and other information are presented in plain English.

Six standard alarms are annunciated through the controller:

Overcurrent
Undervoltage
Overspark
SCR Phase Imbalance
High Ambient Temperature
T-R High Temperature

In the event that power is interrupted due to one of the above mentioned faults, the fault is indicated on the LCD display. An additional three (3) alarm points are available for customized alarming (e.g. SCR high temperature, T-R low liquid level, ...etc.). Process related alarms may also be incorporated into the controller to trip the precipitator field due to such conditions as incomplete combustion in the boiler.

The DIGICON OPTIPULSE controller is described in more detail on the following pages.

Each cabinet is provided with the following meters:

Primary Current
Primary Voltage
Secondary Current
Secondary Voltage
Spark Rate (Digital)

The control cabinets are equipped with face-mounted breakers. The circuit breaker interrupting capacity is greater than or equal to 50,000 amperes symmetrical. As a safety feature, each cabinet is integrated into the key interlock system.

Where space is limited, the 2-PAC arrangement offers an attractive alternative to conventional rectifier control cabinets which house the automatic power controller, power components and current limiting reactor all in one enclosure.

Q. DIGICON OPTIPULSE AUTOMATIC POWER CONTROLLER

The DIGICON OPTIPULSE Automatic Power Controller is a microprocessor based controller using the latest state-of-the-art components. The controller is equipped with dual specialized microprocessors for extremely fast processing of operational functions, and a 16K EEPROM for storage of all program parameters. The controller enclosure is NEMA 12, dust tight, and mounted inside the transformer-rectifier control cabinet. The ambient conditions can range from -10°C to +50°C and 0% to 95% humidity. On the front of the controller are two (2) digital selector switches: secondary voltage and spark rate. The controller uses this information to regulate the power level supplied to the precipitator. An additional selector switch is provided to enable the intermittent energization mode of operation. For further details regarding other features including host computer interfacing, user friendly displays and on line program modification capabilities, see Attachments.

R. UNDERVOLTAGE RELAY PROTECTION

Dust build-up into the electrostatic field is a possibility with failure of the dust removal system. The result is high heat generated due to the resistive ground formed by the dust bridging the space between the discharge and collecting electrodes. This leads to distortion of the discharge and collecting systems. To guard against this, undervoltage protection is built into the controllers to trip the power and sound an alarm in the event of a dead short or ground.

S. ALARM SYSTEM

Alarm contacts are provided in the following circuits for incorporation into Buyer's annunciator system. These contacts may also be integrated into Seller's optional Data Management System.

1. Transformer-rectifier control cabinet trip.
2. Penthouse blower failure.
3. Rapper failure.
4. High dust level in hoppers.
5. Dust conveying system failure.
6. Dust valve failure.
7. Hopper low temperature.

T. GROUNDING DEVICES

Grounding devices, permanently located within the penthouse, are provided for attachment to the high voltage frame whenever work is being performed on the system.

U. ELECTRICAL - GENERAL

All electrical equipment furnished is in accordance with current accepted engineering practices including the National Electrical Code, NEMA standards and the AIEE standards, wherever they apply. Controls for the high voltage are assembled into self-contained units of standard dead-front switchboard construction.

All control circuits will operate on 120V unless otherwise specified. All pushbutton and indicating lights will be combination type. Terminal boards are furnished in each control panel to which customer's signal circuit or safety circuits may be connected.

V. INTERLOCK SYSTEM

Seller's offering is complete with key-interlock system for the portions of the precipitator where high voltage may be a hazard. Access may not be gained to these danger zones without first turning off the power and grounding the appropriate high voltage elements.

Interlocks are provided for the following:

1. Transformer-rectifier control cabinets.
2. Transformer-rectifier grounding switches.
3. Penthouse roof access doors.
4. Hopper access doors.
5. Inlet nozzle door.

W. ACCESS DOORS

Seller's standard quick-opening 22 inch x 28 inch access doors are provided. Each opening through thermal insulation will be of double-door construction consisting of a hinged, dogged outer door of ductile iron and a clamped steel inner doorplate, fabricated of 11 gauge carbon steel. Dogs and lugs on the outer door are made of stainless steel to assure free operation in all environments. This dual construction reduces or eliminates the need for insulation at the door area, and the inner plate provides an additional safety feature not found in competitive designs. The hopper inner door plate is provided with a 1-1/2 inch diameter inspection port which allows the operator to determine if the ash level is above the door level. A Viton coated aramid blend fiber gasket with a stainless steel mesh core is provided on the outer door to maintain a gas-tight seal, and positive interlocking is provided to prevent accidental entry. Each door bears a highly visible "Warning" sign made of enameled aluminum.

X. SHOP PAINT

External uninsulated surfaces will be cleaned per Specification SSPC-SP-6 and given one (1) coat of zinc rich primer.

Y. THERMAL INSULATION

Seller will provide thermal insulation specifications for the electrostatic precipitator system. Three inch thick, 8 pcf, 1000°F mineral wool and 0.032 inch ribbed unpainted aluminum lagging (exterior surfaces) is recommended to insulate the hoppers, inlet nozzle, outlet nozzle precipitator casing and penthouse sides. The penthouse floor should be covered with 3 inches of calcium silicate block insulation. The transformer-rectifier bus duct and the penthouse blower system need not be insulated.

## Z. VENDOR'S LIST

The items not manufactured in fabrication shops are furnished by the following suppliers or equal.

| | |
|---|---|
| Transformer-rectifiers: | NWL |
| Control Cabinets: | Electronic Power and Control |
| Rapper Panels: | Forry Incorporated |
| Hopper Alarms: | Drexelbrook, Bindicator, |
| Penthouse Blowers: | ACME or Equal |
| Screw Conveyors: | Jervis B. Webb Co., Summelot or Equal |
| Dust Valves: | Sprout Bauer or equal |

## AA. GAS DISTRIBUTION MEDIA AND BAFFLING (WITHOUT MODEL STUDY)

Uniform gas distribution to the precipitator is essential if performance guarantees are to be achieved for the specified service. Included in this proposal are the perforated distribution plates as shown on the proposal drawing. Other vanes, splitters, turning devices and grids as required for uniform gas distribution are to be included in the ductwork contract.

Seller has extensive experience with ductwork configurations and will provide an aerodynamic (not structural) design without additional charge or a model study.

## AB. FIRE PROTECTION

The potential for fires exists in all equipment cleaning the exhaust gases from a pyro process where a combustible gas mixture or burning char carryover can occur through improper firing or loss of process control. Risk of fire is minimal where process monitors are installed and maintained to alarm and control a developing hazardous condition. In the rare instance where the process cannot be controlled, the precipitator must be de-energized until conditions are safe for restart.

## AC. QUALITY ASSURANCE PLAN

Our Corporate Quality Assurance Section is staffed, trained and equipped to maintain effective quality management of a contract from the time it is awarded until final customer acceptance has been made.

This group routinely provides the following for all contracts:

1. Review of the customer's procurement and technical documents to determine that the requisite requirements have been defined and documented as well as to assure that Seller's resources and capabilities are adequate to meet the requirements.

2. Assist Seller's Purchasing Section in the selection and development of quality fabricators including judgments relative to potential fabricator's abilities to conform to those requisite requirements.

3. Review and assess, for approval, designated fabricator's quality systems including their organizational structure, responsibilities, procedures, processes and resources for implementing quality management to conform to contractual requirements.

4. Schedule source inspection visits by Seller's Quality Assurance Representatives (QAR's) to monitor in-process activities and/or to provide shipping releases.

5. Assure qualifications of all welders to AWS D1.1 for arc welding and AWS C1.1 for spot welding or equivalent as required.

6. Perform system, product and process audits as required to assure conformance and implementation to contractual requirements including the pertinent documentation.

# SECTION 3

# TECHNICAL TABULATION

## SECTION 3

3. TECHNICAL TABULATION

A. KILN MILL PRECIPITATOR

1. Structural Design Parameters

| | | |
|---|---|---|
| a. | Structural Design | AISC Code throughout |
| b. | Wind Load | 90 mph |
| c. | Live Load | 50 psf on precipitator roof<br>100 psf on all access |
| d. | Seismic Zone | 1 |
| e. | Dust Bulk Density -<br>Structural<br>Volumetric | <br>115 pcf<br>35 pcf |
| f. | Snow Load | Nil |
| g. | Temperature | 750°F |
| h. | Pressure | $\pm$25 inches $H_20$ |

2. Mechanical Design Data

| | | |
|---|---|---|
| a. | Number of Precipitators | 1 |
| b. | Number of Chambers | 1 |
| c. | Fields4 | |
| d. | Bus Sections Per Field | 1 |
| e. | Total Number Bus Sections | 4 |
| f. | Gas Passages | 23 |
| g. | Spacing of Gas Passages | 16 inches |
| h. | Precipitator Casing Dimensions | See Drawing 15290-D-3 Rev. 3 |
| i. | Number & Type Hoppers | 2 trough |

| | | |
|---|---|---|
| j. | Hopper Material | 1/4 inch A-36 steel |
| k. | Casing Material | 3/16 inch A-36 steel |
| l. | Distribution Plates | 12 gauge mild steel |

3. Collection Surface Systems

| | | |
|---|---|---|
| a. | Type of Material | Modular Roll Form 18 gauge Mild Steel |
| b. | Baffle Stiffeners | Integrally formed on 18 inch centerlines |
| c. | Number and Size of Surfaces | 96@10.625'x38' |
| d. | Total Active Collecting Surface | 74,290 sq. ft. |
| e. | Floating Channel Support System | Leading and trailing edges of each mechanical field |

4. Discharge Electrode System

| | | |
|---|---|---|
| a. | Type | 1.5 inch diameter Rigid Tube with emitting studs |
| b. | Effective Length Per Electrode | 38 feet |
| c. | Number of Electrodes Per Gas Passage | 28 |
| d. | Total Number Electrodes | 644 |
| e. | Total Effective Length | 24,472 feet |
| f. | Suspension Insulators | |

| | | |
|---|---|---|
| (1) | Number and Material | 8 Alumina |
| (2) | Manufacturer | Coors |
| (3) | Dry Arc-Over K.V. RMS | 99.1 KV, 60 Cycle |
| (4) | Wet Arc-Over K.V. RMS | 97.0 KV, 60 Cycle |
| (5) | Leakage Distance | 19 3/4 inch |

5. Rapping System

a. Quantity and Type of Rappers — Electrical impulse

| | | |
|---|---|---|
| (1) | Collecting Surfaces | 48 Model ESI-I |
| (2) | Discharge Electrodes | 8 Model ESI-I |
| (3) | Perforated Distribution Plates | 1 Model ESI-I |

b. Weather-Proof Rapper Panels

| | | |
|---|---|---|
| (1) | Material | Steel - NEMA 4 |
| (2) | Quantity | 1 |
| (3) | Type | Solid State |
| (4) | Power Transformer | 15 KVA 480/240 volt |

6. Electrical

a. Transformer-Rectifiers

| | | |
|---|---|---|
| (1) | Type | Silicon |
| (2) | Voltage Rating | 70kv (DC Avg.)<br>83kv (AC) RMS<br>118 kv (DC) Peak |
| (3) | Output Wave Form | Full Wave |

| | Quantity | KVA | MA |
|---|---|---|---|
| 1st Field | 1 | 100.1 | 1000 |
| 2nd Field | 1 | 100.1 | 1000 |
| 3rd Field | 1 | 100.1 | 1000 |
| 4th Field | 1 | 100.1 | 1000 |

| | | |
|---|---|---|
| b. | T-R Insulation Fluid | Mineral Oil |
| c. | High Voltage Switch Type | One per T-R unit, interlocked grounding switch with observation window |
| d. | T-R Control Cabinet | One per pair of T-R's<br>NEMA 12 Construction |
| e. | Type of Control | Thyristor (SCR) |
| f. | Maximum Ambient Temperature for Electrical Supply and Control Equipment | 40°C |

g. Electrical Supply — 480 Volt, 60 Hertz, 3 Phase

h. Maximum Expected Power Consumption

| | | |
|---|---|---|
| (1) | Precipitator (T-R's) | 182.7 KW |
| (2) | Rappers | 2.0 KW |
| (3) | Insulator Heaters | 3.2 KW |
| (4) | Penthouse Blowers | 1 1/2 HP |
| (5) | Conveyor | 25 HP |
| (6) | Dust Valve | 3 HP |

i. Total Connected Load (Transformer-Rectifier Units) — 400.4 KVA

j. Type of High Voltage Conductor — 3/4 inch pipe in 16 inch round or square duct

7. Access Doors

| | |
|---|---|
| Penthouse Roof | 2, single door, interlocked |
| Precipitator Roof | 4, double door, non-interlocked |
| Nozzles | 1, double door, interlocked |
| Hoppers | 4, double door, interlocked |

8. Thermal Insulation - By Erector

| | |
|---|---|
| Precipitator Roof | 3 inch calcium-silicate block<br>AREA = 1558 sq. ft. |
| Nozzles, Precipitator Sides<br>Penthouse Sides and Hoppers | 3 inch 8 PCF mineral wool<br>AREA = 12948 sq. ft. |

All lagging will be 0.032 inch ribbed aluminum on exterior surfaces.

9. Dust Removal

a. Hopper Conveyor Kiln ESP

| | | | |
|---|---|---|---|
| (1) | Quantity and Size | | One 18" x 36' |
| (2) | Type - | Trough | 3/16" A-36 U through |
| | | Screw | Full Flight |
| (3) | Speed | | 20 rpm |
| (4) | Capacity | @ 46% load | 1200 cfh |
| | | @ 100% load | 2,614 cfh |
| (5) | Dust Density | Volumetric | 35 pcf |
| | | Power | 85 pcf |
| (6) | Drive | | 25 Hp end mounted reducer |
| (7) | Motion Sensor | | By customer |

b. Dust Valve Kiln ESP

| | | |
|---|---|---|
| (1) | Type | Sprout Bauer Rotary Valve w/Type 2 Rotar and Ni-Hard |
| (2) | Adjustable Tips | |
| (3) | Quantity and Size | One Size 2018 |
| (4) | Capacity @ 80% Load | 2,500 cfh |
| (5) | Speed | 18 rpm |
| (6) | Drive | 2 Hp |
| (7) | Motion Sensor | Shaft Mounted |

c. Hopper Conveyor Clinker Cooler ESP

| | | |
|---|---|---|
| (1) | Quantity and Size | One 14" x 36' |
| (2) | Type-Trough | 3/16" A-36 U Trough |
| | Screw | Full Flight |
| (3) | Speed | 20 rpm |
| (4) | Capacity @ 40% Load | 510 cfh |
| | @100% Load | 1274 cfh |
| (5) | Dust Density Volumetric | 35 pcf |
| | Power | 85 pcf |
| (6) | Drive | 15 Hp end Mounted Reducer |
| (7) | Motion Sensor | By Customer |

d. Dust Valve Clinker Cooler ESP

| | | |
|---|---|---|
| (1) | Type | Sprout Bauer Rotary Valve w/type 2 Rotar and Ni-Hard Adjustable Tips |
| (2) | Quantity and Size | One Size 1614 |
| (3) | Capacity @ 85% Load | 1250 cfh |
| (4) | Speed | 20 rpm |
| (5) | Drive | 1 1/2 Hp |
| (6) | Motion Sensor | By Customer |

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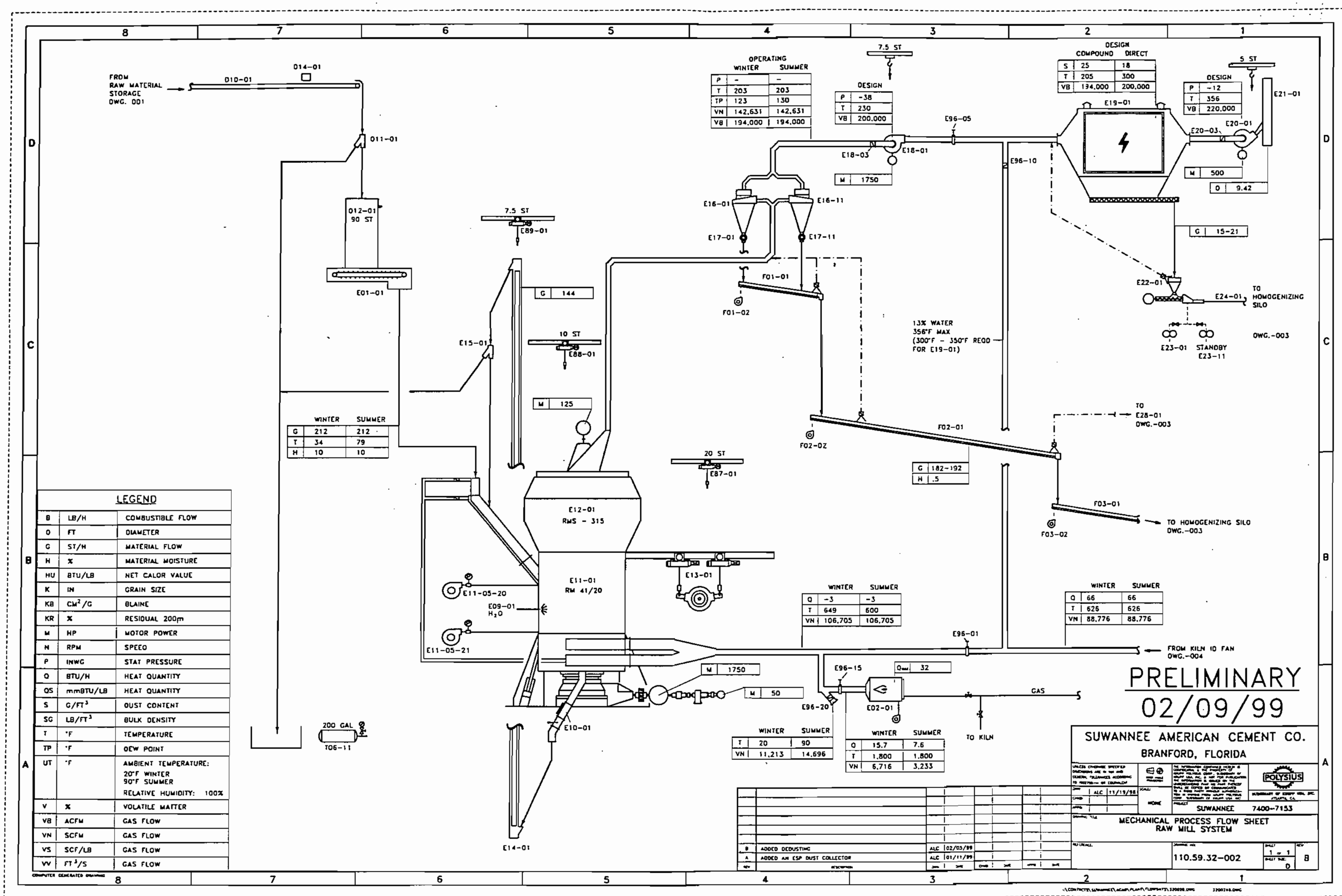

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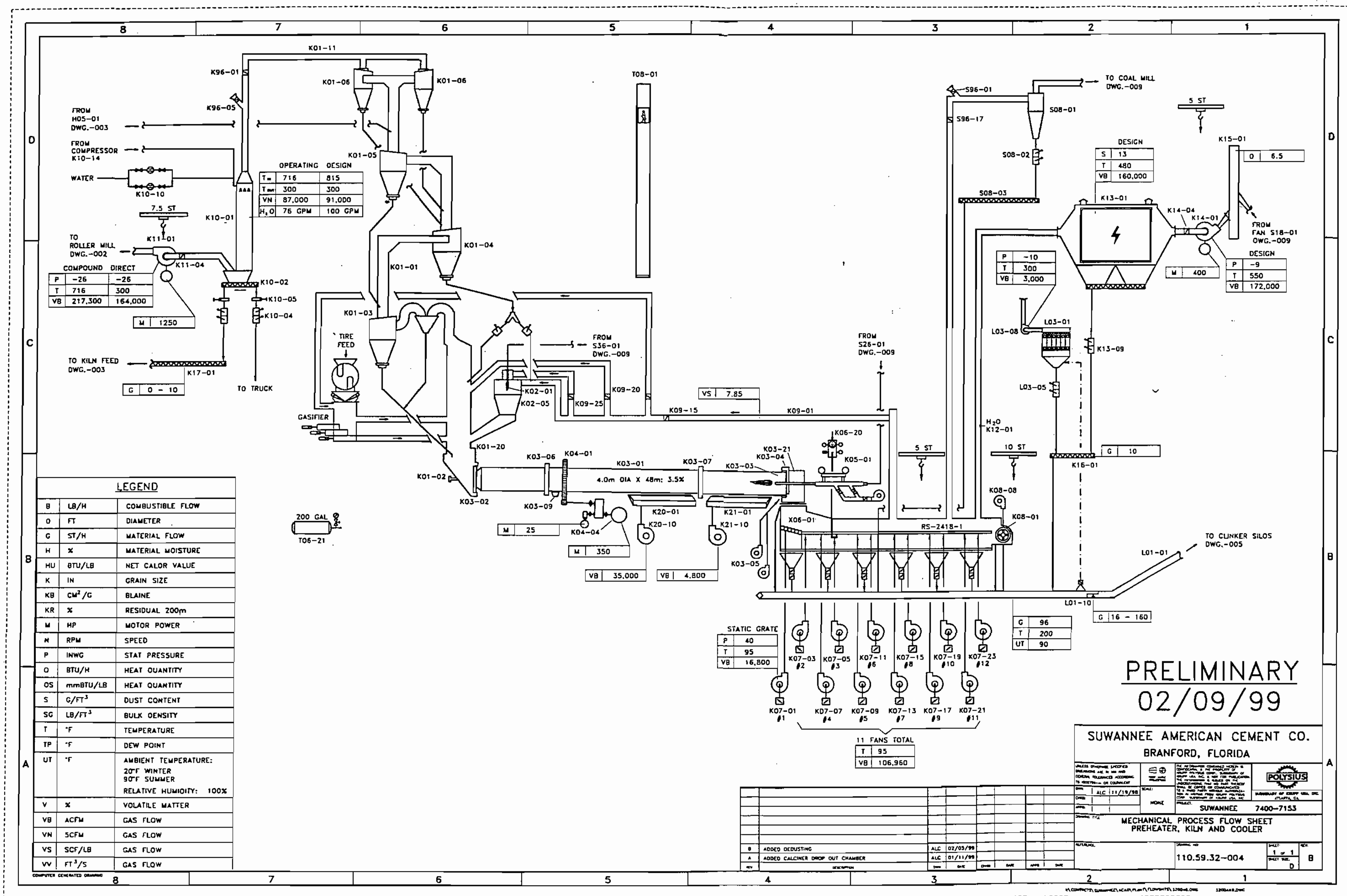

4. The Department believes that BACT at this facility for $PM_{10}$ should at a minimum meet the same emission limits as at Lafarge Corporation's plant included in the BACT determinations shown in Table 14. Please comment.

***Response:***

We concur. All additional modeling for PM10 was conducted using these lower emission limits.

5. The sample sulfur dioxide reduction calculations were based on coal with a sulfur content of 1.5%. Please evaluate the proposed sulfur limits and reduction required with the proposed coal and petcoke. Also comment on the relative merits of limiting percent sulfur in the fuel versus solely limiting emissions of sulfur dioxide. EPA has commented to the Department that the feasibility of a cement kiln $SO_2$ emission rate of 0.27 lb/ton clinker (versus the proposed 0.28 lb/ton clinker limit) should be addressed. Please also address EPA's comment.

***Response:***

No sulfur limits are proposed for petcoke and it is requested that no sulfur limit be placed on coal. The calculations provided for coal (at 1.5 percent sulfur) were for illustrative purposes. Similarly, the estimated removal efficiency of sulfur from the system when burning petcoke is as follows:

The projected $SO_2$ removal efficiency of the total system is calculated from the total $SO_2$ available for liberation, as compared to the proposed allowable emission limit.

<u>Petcoke:</u>
4.0% sulfur by weight, 13.0 tons/hour combusted, Sulfur to sulfur dioxide ratio = 1:2
(2 lbs. $SO_2$ per 1 lb. S) = 2,080 lbs/hr

<u>Raw Meal:</u>
Sulfite ($SO_3$) from raw meal = 0.1% by weight
Raw meal is processed at the rate of 163 tons/hour = 326,000 lbs/hr
Sulfite to sulfur dioxide ratio = 5:4 (4 lbs. $SO_2$ per 5 lbs. $SO_3$)
$SO_2$ from raw meal =
326,000 lbs/hr X 0.001 lbs. $SO_3$/lb X 4 lbs. $SO_2$/5 lbs. $SO_3$ = 261 lbs/hr

Total $SO_2$ from petcoke and raw meal = 2,080 + 261 = 2341 lbs/hr

Proposed $SO_2$ emission limit = 26.83 lb/hr

Estimated $SO_2$ removal from total system:

100 % - [(26.83 lbs/hr emitted/2341 lbs/hr liberated) X 100%] = **98.9%**

The sulfur in a pyroprocessing system includes the sulfur in the fuel (fuel sulfur) and the sulfur contained in the preheater feed. The sulfur that contributes most significantly to sulfur dioxide ($SO_2$) emissions is that contained in the preheater feed. Fuel sulfur generally does not contribute significantly to $SO_2$ emissions.

The sulfur in the preheater feed that results in high $SO_2$ emissions is primarily pyritic sulfur or other highly volatile forms of sulfur. This sulfur disassociates at about 400°C (750°F) (close to the exit temperature of a four-stage preheater) and exits the system as $SO_2$. The low $SO_2$ emission limit proposed by Suwannee American of 0.28 pounds per ton of clinker is based on the fact that there is very little pyritic or high volatility sulfur in the mined feed materials that will be used by Suwannee American.

To reduce $SO_2$ emissions below 0.28 pounds per ton of clinker is not practical as it would seriously restrict Suwannee American on its selection of non-mined feed materials (flyash, mill scale, iron ore, etc.). These materials will normally contain pyritic or other high volatility sulfur inclusions in some amount. By maintaining the $SO_2$ limit at 0.28 pounds per ton of clinker, Suwannee American will have the flexibility of obtaining the necessary raw materials at a competitive price while still maintaining a $SO_2$ emission rate at a level that will create less than a significant impact on ambient air quality.

Regarding fuel sulfur, in a pyroprocessing system the sulfur will generally react with alkaline material in the kiln feed to produce alkaline sulfates which remain part of the clinker. The mined feed material available to Suwannee American are expected to have sufficient alkaline materials to combine with essentially all of the fuel sulfur. This is true regardless of the fuel being used; petroleum, coke, coal, tires, fuel oil, or natural gas. Thus, the $SO_2$ emission limit established for the plant will be established to control feed sulfur.

A review of recent BACT determinations for $SO_2$ from cement plants shows limits ranging from 0.42 pounds per ton of clinker (Great Star Cement) to about 8.0 pounds per ton of clinker (Roanoke Cement expressed as 4.99 pounds per ton of feed). The BACT limits for Florida Rock (December 1996) and Florida Crushed Stone (November 1995) were 0.28 and 0.27 pounds of $SO_2$ per ton of clinker, respectively. The difference in these emission limits is undoubtedly a function of plant design and, most importantly, the amount of volatile sulfur in the feed material. As a result of the inherently low volatile sulfur content of the mined feed material used in Florida plants, the BACT limits for Florida plants are 2-30 times lower than limits for other plants around the county (see Table 15 of Report in Support of an Application for a PSD Construction Permit Review, Suwannee American Cement Company, November 1998).

To impose an even lower $SO_2$ BACT limit on a Florida plant is without merit. The maximum expected emission rate of 26.8 pounds per hour is already so low that it results in less than a significant impact on ambient air quality; even under worst case meteorological conditions. The fact that there are cement plants with scrubbers for $SO_2$ control (Holnam in Dundee, Michigan and Midlothian, Texas and TXI at Midlothian, Texas) is, in itself, not relevant. The question that must be asked is what would the uncontrolled $SO_2$ emissions have been from these plants and what is the permitted $SO_2$ emission limit following the scrubbers. Krupps Polysius reported that the TXI plant has an allowable $SO_2$ emission rate of 796 pounds per hour following the scrubbers. The Holnam Dundee, Michigan plant is a wet-process plant and the scrubber and an oxidizer were installed on the 40-year old plant to reduce $SO_2$, odors, and a visible non-steam plume. No information was available on the Holnam Midlothian, Texas plant. However, given the reported $SO_2$ emissions from the TXI Midlothian plant, it is expected that high $SO_2$ emissions from the Holnam Midlothian result from feed materials and a scrubber is necessary to reduce those emissions to a reasonable level.

If scrubbers were considered for the Suwannee American plant for the control of $SO_2$, the reduction in $SO_2$ emissions would have to be weighed against plume visibility, less favorable plume dispersion characteristics due to a lower stack gas discharge temperature and the treatment and disposal of the scrubber water blowdown. The cement plant, as designed, is a "zero (wastewater) discharge" facility. If scrubber water blowdown had to be treated and discharged, the facility would no longer be "zero discharge" and a wastewater discharge point would have to be permitted in a sensitive internally drained (discharge directly to the groundwater) karst environment. The downside impacts of a scrubber, considering the already low permitted $SO_2$ emission rate (and the fact that actual $SO_2$ emissions are expected to be well below the permitted limit as with Florida Crushed Stone and The Florida Southdown plant), do not support this technology for $SO_2$ control at Suwannee American.

Suwannee American Cement requests that the $SO_2$ emissions limit be retained at 0.28 pounds per ton of clinker.

6. Please comment on the feasibility of combining the proposed selected BACT control technologies (process control, secondary combustion, indirect firing) with SNCR. It appears that the proposed selected technologies are integral to the plant design so such a combination appears possible. If the proposed selected technologies are not integral to the plant design, please provide a detailed cost analysis for them in terms of overall and marginal cost effectiveness (annualized dollars/ton of nitrogen oxides removed) for NOx control using these technologies, including all references and assumptions.

***Response:***

Krupp Polysius has fully evaluated the effectiveness of SNCR for reducing NOx emissions from pyroprocessing kilns. They have reviewed data available worldwide and have conducted testing of their own. SNCR has yet to be proven long-term in a variety of plant types and with the possibility of one or two plants worldwide, the only experience with SNCR has been short-term tests (a week or two) primarily in older plants. SNCR experience on the few precalciner kilns (without MSC) ever tested shows NOx reductions in the range of 10-20 percent.

Krupp Polysius has found that SNCR is an effective measure to reduce NOx emissions from long wet and dry kilns; LEPOL, GEPOL, and preheater kilns; and pyroprocessing systems with precalcining rates below approximately 25 percent (expressed as total system fuel use). They have found through their own experience, and the experience of others, that SNCR has proven to be no more effective than MSC for controlling NOx emissions on precalciner kilns firing more than 50 percent of the total system fuel to the precalciner. The reason for this is that the conditions that make MSC effective reduce the effectiveness of SNCR. These competing reactions can be explained by describing the NOx reduction mechanism of the competing systems.

The precalciner plant with MSC-CC was selected by Suwannee American as it is the most energy efficient state-of-the-art plant design available. With this plant, approximately 50-60 percent of the total system fuel will be fired in the precalciner and the remaining 40-50 percent of the fuel will be fired at the main kiln burner. As previously discussed, minimizing the fuel fired in the main kiln burner will minimize thermal NOx production. Thermal NOx production will also be minimized by keeping the excess oxygen as low as practical in the kiln. This also has the effect of reducing the gas volume and minimizing fuel consumption.

The fuel burned in the precalciner will be split with approximately 10 percent of the total system fuel fired at the kiln inlet burner and the remaining 40-50 percent of the total system fuel fired in the CC. The fuel fired at the kiln inlet burner is introduced with insufficient oxygen to complete combustion. This reduces even further the oxygen that was present in the gas which has passed through the kiln and also releases free radicals (organic radicals which are the product of incomplete combustion). The very low levels of oxygen and the free radicals create a reducing atmosphere which begins to reduce the thermal NOx formed in the kiln.

These gases then pass upward to the precalciner where the remaining 40-50 percent of the total system fuel is fired in the CC. Again, the fuel is fired with insufficient oxygen to complete combustion. This results in a further depletion of available oxygen and the generation of additional free radicals and causes a continuation of the NOx reducing zone. In effect, an NOx reducing zone is maintained from the inlet of the kiln through the precalciner to a point just below the bottom of the fourth cyclone of the preheater system. At this point, the majority of the tertiary air is introduced to complete the combustion process.

In summary, MSC functions on the principal of a NOx reducing zone (very low levels of oxygen in the presence of free radicals) being maintained between the kiln inlet (the point where feed material enters the kiln) and the upper part of the precalciner. In this zone, thermal NOx formed in the kiln is reduced and the formation of thermal and/or fuel NOx resulting from fuel fired in the precalciner is minimized.

SNCR, in contrast, relies on the reduction of NOx in a gas stream by ammonia or urea in a temperature window of 900-1150°C (1650-2100°F) without using any catalyst. The two principal reactions are[1]:

$$4NH_3 + 4NO + O_2 \rightarrow 4N_2 + 6H_2O$$

$$4NH_3 + 2NO_2 + O_2 \rightarrow 3N_2 + 6H_2O$$

It is apparent that SNCR requires oxygen to be effective; a gas that is intentionally reduced to very low levels in the MSC system. Regarding the temperature window in which SNCR is effective, this temperature regime can be found in a precalciner kiln in the region between the kiln inlet and the fuel injection point of the calciner burner (all within the reducing zone). By the time the gases have reached the upper part of the precalciner to the point where the remaining tertiary combustion air is introduced and sufficient oxygen is available for SNCR, the gas temperature has dropped below 900°C.

To summarize, in the only section of the preheater/precalciner of the kiln system selected by Suwannee American where the temperature is right for SNCR, a reducing atmosphere (oxygen depleted) has intentionally been created to make NOx reduction by MSC effective. Higher up the preheater/precalciner system where additional tertiary combustion air is introduced to complete the combustion reaction and excess oxygen is

[1] Alternative Control Techniques Document – NOx Emissions from Cement Manufacturing, EPA – 453/R-94-004, Office of Air Quality Planning and Standards, USEPA, Research Triangle Park, NC, March 1994.

present, the gas temperature has dropped below the window for effective SNCR performance.

The favorable SNCR results that have been published have been on long wet or dry kilns; LEPOL, GEPOL, or preheater kilns or on kiln systems with low calcining rates. These are all kiln systems with sufficient excess oxygen in a zone where gas temperatures are in the range of 900-1100°C.

7. Please provide a detailed cost analysis in terms of overall and marginal cost effectiveness (annualized dollars/ton of nitrogen oxides removed for NOx control using SNCR, including all references and assumptions. Krupp Polysius markets an SNCR system for Portland cement plants that should be directly applicable to this project so cost and effectiveness estimates for this project should be detailed. Although the Krupp Polysius system uses ammonia water transported to the site as the reactant, please comment on the feasibility of using anhydrous ammonia to generate the reactant on site.

***Response:***

In Response No. 6, it was demonstrated that SNCR and MSC are mutually exclusive; that is, one or the other will work on a given kiln system but both will not work together. In a precalciner kiln with MSC-CC (50-60 percent of the total system fuel fired to the calciner), SNCR will not work because there is insufficient oxygen in the zone where the gas temperature is in the range 900-1150°C. Suwannee American has selected the precalciner kiln system with MSC-CC as it is the state-of-the-art design in pyroprocessing systems. The system is the most energy (fuel and electric) efficient plant available as a result of several design features. The incorporation of MSC-CC into the design of the plant will result in NOx emission levels that are as low as can be achieved by SNCR applied to less energy efficient pyroprocessing systems.

Suwannee American has selected a plant design based on technological and energy efficiency features, and SNCR is not compatible with this plant design. As NOx emission levels achieved by the precalciner design with MSC-CC selected by Suwannee American are equivalent or better to NOx emission rates achieved by SNCR, nothing is to be gained by evaluating the cost effectiveness of SNCR on the plant as designed.

Suwannee American Cement has additional concerns related to the discussion of SNCR as a control technique for NOx emissions. These concerns are in two categories:

ecosystem suitability for storage and handling of ammonia/urea, and ecosystem impacts resulting from the use of ammonia/urea.in a SNCR system.

The first concern is related to the suitability of receiving, storing, and handling of ammonia/urea in this karst area with the exposed Floridan Aquifer System. As MSC-CC can achieve similar (or lower) NOX emission levels as SNCR, it is imprudent to specify a control technique that would necessitate the use of potentially hazardous ammonia/urea compounds.

The second concern is related to potential ecosystem impacts resulting from the use of ammonia/urea in a SNCR system. A SNCR system in operation invariably results in some amount of "ammonia slip". This could result in:

- Increased plume visibility
- Ammonia odors
- Elevated deposition or concentration of ammonia
- Increased emissions of $N_2O$ – a "greenhouse gas"

In order to be responsive to the Department's request, cost information for SNCR applied to a precalciner plant with less than 25% heat input to the calciner without MSC was developed by Polysius. The example plant has NOx emissions of 4.29 lb/ton of clinker and 839,500 tons of clinker per year.

It is important to note that Polysius' guarantee for NOx emissions for a precalciner plant with SNCR is 3.18 lb/ton of clinker -- this is substantially greater than the proposed NOx BACT limit attained through the use of MSC-CC. Interestingly, this limit is consistent with the NOx BACT limit for Great Star Cement of 3.1 lb/ton of clinker, with SNCR (plant never built).

Although it may be academic at this point since Polysius is not prepared to guarantee less than 650 mg/Nm$^3$ at 10% $O_2$ (approximately 3.18 #/st) NOx in a modern precalciner plant with SNCR, they prepared a cost calculation based on their system using ammonia water. If urea is used at the same NOx level, the $N_2O$ and CO will increase by 15% above the baseline and ammonia slip of up to 50 – 60 ppm can be expected.

Equipment

(one) 12,000 gal. Solution storage tank with accessories.

(one) Pump Station including: pumps, motors, starters, heaters, solution filters, instrumentation for flow and temperature indication, interconnecting pipe valves, and fittings all on a consolidated base frame.

(one) Distribution System including: pumps, motors, motor controls, starters, agitators with drives, pressure and flow control (as well as indication), valves, regulators, filters, interconnecting piping and fittings.

(one set) Injectors with control piping manifolds including: check and control valves, regulators, filters all on a unified base. 6 injectors with tubing, steel flex hoses, clamps, mounting brackets, couplings for solution as well as compressed air and adapters.

(one lot) Electrical and control equipment including: local control panels for Pump Station, PLC for Distribution System, VFD controls and MCC's.

(one lot) Piping, including: mounting brackets, clamps, fittings bands, etc.

(one lot) Complete System Engineering including: Optimization and control interface to Plant Control System, plus layout.

| | |
|---|---|
| Price (with Engineering) | $757,850 |
| Installation (Estimate) | $201,250 |
| | |
| Total Equipment, Engineering & Installation | $959,100 |
| | |
| Annualized Cost | $116,735 |
| @ prime (7.75%) for 15 years | |
| (assumed life of the plant's financing) | |
| | |
| Annual Operating Cost: | |
| Solution/Reagent | $476,875 |
| Power | $ 19,800 |
| Maintenance | $ 11,000 |
| | $507,675 |
| | |
| First Year's Cost | $624,410 |
| (Cheapest of the 15 year period) | |

NOx = 4.29 lb/ton of clinker and 839,500 tons of clinker per year = 1800 TPY NOx

Assume 28% control efficiency = 499 TPY of NOx removed

First Year's Cost = \$624,410 ÷ 499 TPY of NOx removed

Cost \$/ton NOx removed = \$1,251

It is apparent from this discussion that cost is not the reason for rejecting SNCR as BACT. The proven MSC technology was selected because it offers the following advantages:

- Krupp Polysius will guarantee a lower NOx emission rate with MSC than with SNCR (3.0 lb NOx/ton of clinker vs. 3.18 lb NOx per ton of clinker).

- The MSC plant is more energy efficient and technologically advanced than a precalciner plant without MSC (as would be required for SNCR to be effective).

- There are no potential environmental risks associated with the MSC technology (such as associated with the ammonia/urea required by SNCR)

- The MSC technology does not introduce a new or different operating technology to the cement plant.

A complete top-down BACT analysis for NOx is included with this response. The top-down analysis clearly shows that environmental, energy, and economic factors support the rejection of SNCR as BACT. Likewise, the analysis concludes that MSC represents BACT for a precalciner cement kiln.

## TOP-DOWN BACT ANALYSIS for NOx

**STEP 1:** ***IDENTIFY ALL CONTROL TECHNOLOGIES***

For this review, the control technologies for NOx are categorized in three ways:

- **Inherently Lower-Emitting Processes**

  Staged Combustion (MSC)

  Low-NOx Burners

- **Add-On Controls**

  Selective Non-Catalytic Reduction (SNCR)

- **Combination of Lower-Emitting Processes and Add-on Controls**

  Combination of SNCR with MSC

**STEP 2:** ***ELIMINATE TECHNICALLY INFEASIBLE OPTIONS***

Technical feasibility is assessed based on an evaluation of pollutant bearing gas stream characteristics.[1] This demonstration of technical infeasibility shows, based on physical, chemical, and engineering principles, that technical difficulties would preclude the successful use of:

- Combination of SNCR with MSC

It is apparent that SNCR requires oxygen to be effective; a gas that is intentionally reduced to very low levels in the MSC system. Regarding the temperature window in which SNCR is effective, this temperature regime can be found in a precalciner kiln in the region between the kiln inlet and the fuel injection point of the precalciner burner (all within the reducing zone). By the time the gases have reached the upper part of the

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[1] New Source Review Workshop Manual.

precalciner to the point where the remaining tertiary combustion air is introduced and sufficient oxygen is available for SNCR, the gas temperature has dropped below 900°C. To summarize, in the only section of the preheater/precalciner of the kiln system selected by Suwannee American where the temperature is right for SNCR, a reducing atmosphere (oxygen depleted) has intentionally been created to make NOx reduction by MSC effective. Higher up the preheater/precalciner system where additional tertiary combustion air is introduced to complete the combustion reaction and excess oxygen is present, the gas temperature has dropped below the window for SNCR performance. Therefore it is apparent that SNCR will not work in combination with MSC.

- Low-NOx Burners

Low NOx burner technology, as commonly used in power plants, has not been found effective in the cement industry. Krupp Polysius has installed and operated, at client's request, numerous "Low NOx" burners in cement kilns around the world. These burners are always the main burner and are commonly provided from Pillard (Rotaflam) or from KHD (Pyrojet). The only way these burners have demonstrated significant NOx reduction is through reduced heat output of the burner and the associated decrease in production. The quality of the clinker is dependent upon the quality of the main burner flame, requiring a short, compact, intense flame which generates thermal NOx. The best control method to reduce the thermal NOx in a precalciner kiln is to operate the calciner with reducing zones to reduce the NOx back to $N_2$. This is best accomplished with Multi-Stage Combustion. Therefore, low-NOx burners are not applicable as BACT for cement kilns.

Remaining control technologies are:

- **Inherently Lower-Emitting Processes**

  Staged Combustion (MSC)

- **Add-On Controls**

  Selective Non-Catalytic Reduction (SNCR)

**STEP 3:** ***RANK REMAINING CONTROL TECHNOLOGIES BY CONTROL EFFECTIVENESS***

A key issue that must be addressed in this step is the determination of common units to compare emissions performance levels among options. This issue arises when comparing inherently lower-emitting processes (MSC) to add-on controls (SNCR). It is generally most effective to express emissions performance as an average steady-state emissions level per unit of product produced (lb/ton clinker). Calculating annual emissions levels (tons/yr) using these units becomes straightforward once the projected annual production rates are known.

Another issue that must be addressed in this step is the evaluation of control techniques with wide (reported) ranges of emissions performance levels. In accordance with EPA guidance, this top-down review uses the most recent regulatory decisions and performance data for identifying the emissions performance level. It is apparent with

SNCR that the reported range of control efficiency (30-70%)[1] is not to be interpreted as being the range of emissions performance levels applicable to a particular source type.

Rather, as with most control devices, the control efficiency falls as the uncontrolled emissions levels fall (i.e., diminishing returns). For this reason, control efficiency for SNCR on a cement kiln with uncontrolled NOx levels in the range of 6-7 pounds per ton of clinker may approach 70%, while control efficiency on a modern precalciner cement kiln with uncontrolled NOx emissions in the range of 4.0-4.5 pounds per ton of clinker is more likely to be on the order of 30%. This discussion confirms that it is generally most effective (and most appropriate) to express emissions performance as an average steady-state emissions level per unit of product produced (lb/ton clinker).

After determining the emissions performance levels (in common units) of each control technology identified in Step 2, a hierarchy is established that places at the top the control technology that achieves the lowest emission level. The following chart displays the control hierarchy for the remaining control technologies.

| **Control Technology** | **Expected Emission Rate** | | | **Performance Level % NOx Removed** | **Expected NOx Reduction TPY** |
|---|---|---|---|---|---|
| | **pounds/ton clinker** | **tons/year** | **pounds/hour** | | |
| MSC | 3.0 | 1260 | 287 | 30% | 540 |
| SNCR[2] | 3.1 | 1301 | 297 | 28% | 499 |

[1] Alternative Control Techniques Document – NOx Emissions from Cement Manufacturing
[2] Great Star Cement Company, BACT/LAER Clearinghouse, 11/98.

**STEP 4:** ***EVALUATE MOST EFFECTIVE CONTROLS***

The available and technically feasible control technologies have been identified above and the environmental, economic, and energy impacts must be considered.

Environmental Impacts

This environmental impacts portion of the BACT analysis concentrates on impacts other than impacts on air quality standards due to emissions of NOx, such as solid or hazardous waste generation, discharges of polluted water from a control device, visibility impacts, or emissions of unregulated pollutants. Generally, these types of environmental concerns become important when sensitive area-specific conditions exist or when the incremental emissions reduction potential of the top control (MSC) is only marginally greater than the next most effective option (SNCR).

This analysis starts with the identification of the solid, liquid and gaseous discharges from the control device (SNCR), as no environmental impacts within the context of this BACT analysis are associated with the use of MSC.

Any SNCR system will result in some emissions of ammonia, generally referred to as "ammonia slip". Ammonia is a regulated toxic substance under 40 CFR 68. These ammonia emissions can lead to detached (visible) plumes of $(NH_4)_2SO4$, [1] which is the compound most responsible for regional haze in the southeastern U.S.

Likewise, SNCR control of NOx actually results in creation of $N_2O$, a greenhouse gas and an "oxide of nitrogen". Higher CO emissions have also been associated with SNCR control.

Significant concerns also exist regarding the handling of ammonia/urea in a karst environment with direct exposure potential of the Floridan Aquifer System.

---

[1] Alternative Control Techniques -- NOx

Economic Impacts

- Total Annualized Cost

  MSC = $194,355

  - annual cost of capital for $1,600,000 in equipment

  SNCR = $624,410

  - annual cost of capital for $959,100 in equipment
  - $507,675 in annual operating costs

- Average Cost Effectiveness

  Average cost effectiveness is a way to present the costs of control. Average cost effectiveness is calculated as shown by the following formula:

  Average Cost Effectiveness ($/ton removed) =

$$\frac{\text{Control option annualized cost}}{\text{Baseline emissions rate} - \text{Control option emissions rate}}$$

$$\text{MSC} = \frac{\$194{,}355}{1800\ \text{TPY} - 1260\ \text{TPY}} = \$360/\text{ton of NOx removed}$$

$$\text{SNCR} = \frac{\$624{,}410}{1800\ \text{TPY} - 1301\ \text{TPY}} = \$1251/\text{ton of NOx removed}$$

- Incremental Cost Effectiveness

In addition to the average cost effectiveness of a control option, incremental cost effectiveness between control options are also calculated. The incremental cost effectiveness is examined in combination with the average cost effectiveness in order to justify elimination of a control option (SNCR).

Incremental Cost Effectiveness ($/incremental ton removed) =

$$\frac{\text{Control option annualized cost (MSC)} - \text{Next control option annualized cost (SNCR)}}{\text{Next control option emissions rate (SNCR)} - \text{Control option emissions rate (MSC)}}$$

$$= \frac{\$194{,}355 - \$624{,}410}{1301 \text{ TPY} - 1260 \text{ TPY}} \quad = \$\ \text{-}10{,}489 \text{ per incremental ton of NOx removed}$$

It is apparent from the negative incremental cost effectiveness value that SNCR is not incrementally cost effective when compared to MSC. This is because MSC is, first, a more effective control option (and hence BACT) and second, MSC has significantly lower annual costs than SNCR.

An interesting example is provided to show that even if SNCR is as effective as MSC (same emission rate), recognizing that there is <u>no vendor confirmation of this hypothetical supposition</u>, the incremental cost effectiveness of SNCR versus MSC would be over <u>$400,000 per incremental ton of NOx removed</u>!

$$= \frac{\$194{,}355 - \$624{,}410}{1259 \text{ TPY} - 1260 \text{ TPY}} \quad = \$\ 430{,}055 \text{ per incremental ton of NOx removed}$$

Energy Impacts

This analysis examines the energy requirements of the control technologies and determines that the use of SNCR results in energy penalties while MSC results in energy benefits.

SNCR has direct energy cost for pumps and electrical equipment. These costs are estimated to be $19,800 per year. Also, due to the requirements of the chemical reduction process, SNCR becomes more effective as more fuel is shifted away from the precalciner burner and back to the main burner. Whereas the modern precalciner plant (with or without MSC) will typically combust 60% of fuel in the precalciner and the remaining 40% of fuel in the main burner; SNCR technology becomes effective when less than 40% of the fuel is combusted in the precalciner. The magnitude of this energy penalty is apparent when comparing the energy efficiency of preheater kilns (no precalciner burner) to that of precalciner kilns. The reported heat input requirement for precalciner kilns is 3.3 MMBtu/ton of clinker and for preheater kilns it is 3.8 MMBtu/ton of clinker.

With all other factors held constant, the precalciner kiln is approximately 15% more fuel efficient than the preheater kiln. As fuel is shifted to the main burner to accommodate SNCR, overall fuel efficiency of a precalciner plant drops. This discussion shows why SNCR is more applicable to preheater and other dated types of cement kilns.

Conversely, MSC results in energy benefits in a precalciner plant. First, MSC has "no moving parts" and there is no annual electrical cost associated with its use. Second, as MSC requires the operator to control oxygen levels throughout the process to a higher degree than any other configuration, overall energy efficiency is increased. This is because less excess air is heated, and a lower specific exhaust gas volume results. This translates into energy benefits over a precalciner kiln without MSC.

| TOP-DOWN BACT ANALYSIS RESULTS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **CONTROL OPTION** | **EMISSIONS (TPY)** | **REDUCTION (TPY)** | **ANNUAL COST ($/YR)** | **AVERAGE COST EFFECTIVENESS ($/TON)** | **INCREMENTAL COST EFFECTIVENESS ($/TON)** | **TOXICS IMPACT (YES/NO)** | **ADVERSE ENVIRONMENTAL IMPACTS (YES/NO)** | **ENERGY IMPACTS (BENEFIT or PENALTY)** |
| | | | | | | | | |
| MSC | 1260 | 540 | $194,355 | $360 | $0 | **NO** | **NO** | Benefit |
| | | | | | | | | |
| SNCR | 1301 | 499 | $624,410 | $1251 | $430,055[1] | **YES** | **YES** | Penalty |
| | | | | | | | | |
| Baseline | 1800 | | | | | | | |

[1] See discussion. As MSC is a more effective control (lower emission rate), the incremental cost effectiveness of SNCR is only meaningful if it is assumed to be as effective as MSC.

**STEP 5:** ***SELECT BACT***

The most effective control alternative from Step 4 is selected as BACT (MSC). This top-down BACT analysis has provided information on the various control options. This analysis has adequately demonstrated that energy, environmental, and economic impacts justify the rejection of SNCR.

8. Please compare other NOx limits established by BACT (for Lafarge and Great Star Cement, for example) with the proposed NOx limit and discuss the variables that affect emissions of NOx from Portland cement plants that are applicable to the proposed facility.

***Response:***

Nitrogen oxides emission rates vary over a considerable range for similar types of plants depending on a variety of factors. For example, EPA reports (see footnote on page 9), the following uncontrolled NOx emission rate ranges for preheater and precalciner plants:

| Kiln Type | **Range of NOx Emissions** (lb NOx/ton clinker) |
|---|---|
| Preheater | 2.5 - 11.7 |
| Precalciner | 0.9 - 7.0 |

The NOx emissions vary by a factor of five to eight for "similar type" plants

To compare the NOx emission rates or NOx limits established by BACT for other plants requires specific information on the following;

1. Plant design - whether the plant is a preheater design, a precalciner design or another design; whether or not MSC or MSC-CC is incorporated into the plant design; whether the kiln is direct fired or indirect fired; whether or not a bypass exists; whether or not TDF will be used and if used, how it will be burned and possibly other factors.

2. Fuel type - the specific types of fuel proposed (petroleum, coke, coal, gas, fuel oil, etc.) and the volatile content of the fuel.

3. Raw material - the alkali content of the feed (as it would affect the $SO_2/O_2/NOx$ chemistry); the burnability of the mix (the harder to burn, the more fuel used and hence, the greater the potential for NOx generation); the moisture content of the feed; and the inherent carbon and sulfur content of the feed.

4. Plant operating characteristics - the oxygen levels normally maintained in the kiln system; the desired relationship between NOx, CO and $SO_2$ emissions (normally dictated by emission limiting standards); and others.

Because of the effects of all of these variables on emission rates of NOx, CO, and $SO_2$, it is not possible to assume that since one plant operates with a certain emission rate or was permitted with a specific BACT limit for a single pollutant or a combination of pollutants, that a second plant operating under a difference set of conditions can achieve those same limits. Some of the conditions affecting NOx, CO and $SO_2$ emission rates have been discussed in previous responses. From information presented in the previous responses, the impact of some of the variable listed herein should be apparent. To require an applicant to get all of the information necessary to compare BACT limits would be extremely burdensome and probably impossible in many cases as some of the required information is proprietary.

With this said, a qualitative comparison of BACT limits imposed on other plants with the BACT limits proposed by Suwannee American will be made. The Lafarge Sugar Creek plant has BACT limits for $SO_2$, NOx and CO of 4.06, 3.68 and 1.64 pounds per ton of clinker, respectively. The $SO_2$, NOx and CO BACT limits proposed for Suwannee American are 0.28, 3.0, and 3.6 pounds per ton of clinker, respectively. Lafarge has a much higher $SO_2$ limit (probably as a result of pyritic or other highly volatile sulfur compounds in the feed material) and a significantly higher NOx emission limit (possibly the result of higher oxygen levels required to control sulfur chemistry). On the other hand, the Lafarge CO limit is considerably lower than that proposed for Suwannee American. This would suggest that regulators determined it was more important to reduce CO emissions and to allow a correspondingly higher NOx emission limit. The reasons for these decisions are not known.

With the Great Star Cement plant, SNCR is proposed for NOx control and the BACT limit for NOx is 3.1 pounds per ton of clinker. At the same time, the CO BACT limit is 5.67 pounds per ton of clinker. Both of these BACT limits are higher than limits proposed for Suwannee American. In spite of all of the discussions of permitted limits and BACT limits for Great Star, the plant is not yet under construction (after having been permitted for years) and doubts have been expressed that the plant will ever be built.

A more educated comparison can probably be made between BACT limits for the Florida Crushed Stone and Florida Rock plants and the limits proposed for Suwannee American. The Florida Crushed Stone BACT limits for $SO_2$ and NOx are very close to limits proposed by Suwannee American and the Florida Crushed Stone CO BACT limit is lower (at 2.0 pounds per ton of clinker) than the limit proposed for Suwannee American. The limit accepted by Florida Crushed Stone is probably based on operating experience with their existing kiln. The Florida Crushed Stone plant is a GEPOL preheater plant whereas the Suwannee American plant is a precalciner plant with MSC-CC.

The Florida Rock plant is very similar in design to the Suwannee American plant (with the exception of the MSC-CC feature) and the BACT limits for $SO_2$, NOx and CO imposed on the Florida Rock plant are very similar to those proposed by Suwannee American. The differences between the two plants include the design features that have been mentioned, the moisture content of the feed and possibly, operating philosophy.

There is probably enough flexibility offered by these and other factors to allow both plants, even with their differences, to achieve the same set of BACT limits.

As regards the NOx BACT emission limit for Florida Rock, they have been granted two years after startup to reach the limit. If necessary, Florida Rock will likely install Multi-Stage Combustion (MSC) system with a Combustion Chamber (CC) in order to meet their BACT limit. In fact, Polysius' performance guarantee for Florida Rock stipulates that the 1018 ton/year emission rate (actually 2.9 lb of NOx per ton of clinker) will only be guaranteed if Florida Rock installs MSC-CC.

Suwannee American Cement has committed to installing this technology <u>from the outset</u>. This will allow for a foreshortened post-startup tuning period of approximately one year.

9. Although the temporary exemption language of Rule 62-212.400(3)(c), F.A.C. provides for exemption from certain PSD requirements for emissions lasting up to two years, such time period for NOx seems excessive given Krupp Polysius' experience with the startup of similar facilities, and the experience it will gain with the startup of the similar Florida Rock plant (which is scheduled to begin operation prior to completion of this facility). EPA has also commented to the Department that the applicant should address the feasibility of meeting the proposed BACT NOx emission limit at startup of the facility. Please address this issue.

***Response:***

It is recognized that the Suwannee American plant will be designed and constructed with the latest technology currently available in a MSC-CC plant for NOx control. It is also recognized that Krupp Polysius will have developed operating experience with the Florida Rock plant that is scheduled for startup prior to the completion of the Suwannee American plant. Still, it must be recognized that each cement plant has unique characteristics (as discussed in Response No. 8) and some provisions must be made to account for these characteristics. Suwannee American will make every attempt to achieve the permitted NOx emission limit at startup; however, the company requests a startup NOx emission limit of 3.8 pounds per hour per ton of clinker for a one year period following startup.

Suwannee American will have different sources for fuels and fly ash. The fly ash being considered has a greater loss on ignition (LOI) than that expected for use at the Florida Rock plant. This physical difference can result in higher emissions of CO and $SO_2$.

The limestone at the Suwannee American plant is all excavated from below the water table whereas at Florida Rock some rock is from above the water table. This results in higher moisture content of the limestone as processed. This excess moisture must be driven off by heat in the raw mill. This heat for material drying is provided at Florida

Rock by an auxiliary air heater. At Suwannee American, the extra heat is to be provided by the pyroprocessing system. This is the most efficient way to provide the necessary heat for material drying.

This need for additional heat input requires higher emission limits (especially for NOx) per ton of clinker. The Florida Rock permit (AC01-267311/PSD-FL-228) allows for 1018 TPY of NOx from 712,500 TPY of clinker. This emission rate includes emissions from the raw mill air heater (40 MMBtu/hr) and equates to an effective NOx BACT limit for Florida Rock of 2.9 lb/ton of clinker. Florida Rock's application was based on a limestone moisture content of 8-12%. Suwannee American expects limestone moisture contents of about 15%. If the Suwannee American preheater feed rate of 163 tons per hour (dry weight) is used as a basis and if the limestone portion of the feed is taken to be 80%, the limestone portion of the feed rate will be 130.4 tons/hour. The comparative wet limestone feed rates at 8-12% (10% average) and 15% moisture are:

| Moisture (%) | Limestone | | Moisture in Limestone | |
|---|---|---|---|---|
| | (TPH dry) | (TPH wet) | (TPH) | (lb/hr) |
| 15 | 130.4 | 153.4 | 23.0 | 46,000 |
| 10 | 130.4 | 144.9 | 14.5 | 29,000 |
| | | Difference | | = 17,000 lb/hr |

Heat requirement for material drying is 1500 Btu/lb of water = 25.5 MMBtu/hr.

As Florida Rock's 40 MMBtu/hr air heater added 0.1 pound of NOx per ton of clinker, it is evident that this additional heat requirement would add an additional 0.06 pounds of

NOx per ton of clinker. Suwannee American Cement is now proposing BACT for NOx from the entire process as 3.0 lb/ton of clinker.

10. EPA has commented to the Department that the applicant should discuss why a reduced kiln CO emission rate limit would not be proposed as BACT, given that the RBLC listings have several kilns with lower CO emission rate limits. EPA has suggested that such a discussion should include a technical and economic analysis regarding the feasibility of a 1.64 lb/ton clinker (Lafarge Corporation, Sugar Creek, Missouri, Permit No. 0897-019, issued August 20, 1997) kiln CO emission rate limit, or a CO emission rate limit of 2.77 lb/ton clinker (June 3, 1998, dry process kiln operations at Signal Mountain Cement Company located at Chattanooga, Tennessee). Please address this issue.

***Response:***

The interrelationship of the CO, NOx and $SO_2$ emissions from pyroprocessing systems has been discussed in several of the previous responses and will not be repeated here. The Lafarge Sugar Creek plant referenced does have a CO limit of 1.64 pounds per ton of clinker; however, the NOx emission limit for the plant is 3.68 pounds per ton of clinker. Roanoke Cement is another example of a company with a relatively low CO emission limit (2.53 pounds per ton of feed); however, the NOx emission limit is 6.0 pounds per ton of feed. It is quite apparent that plants with low CO emission limits will have relatively high NOx emission limits while those plants with low NOx emission limits will have relatively high CO emission limits. As stated in previous responses, there is an inverse relationship between CO and NOx, and in the case of Suwannee American, the Department has elected to impose a very restricted NOx emission limit. As a result, the CO emission limit for the plant must be the 3.6 pounds per ton of clinker regardless of what CO limits Lafarge, Signal Mountain Cement and Roanoke Cement have.

11. Provide the worst case startup and shutdown emissions estimates for the inline kiln/raw mill including duration of excess emissions. The Department plans to address excess emissions in its BACT determination.

***Response:***

During the initial phase of startup, only the main kiln burner is being fired; there is no fuel fired to the kiln inlet burner or to the precalciner; and no raw meal is fed to the preheater. During this phase, NOx emissions (entirely from the main kiln burner) are at their peak and may be as high as 2,000 ppm (equivalent to an emission rate of about 500-600 pounds per hour). This peak emission rate will last only for a few minutes until feed passes down through the precalciner and gets well into the kiln. Once feed is introduced, the system must be quickly stepped up to at least 70 percent of its nominal capacity since the preheater vessels and ducts are of fixed cross-section section and require a minimum gas velocity to function. The time required from "feed ready" (no feed to the preheater) to steady-state operation at 70 percent of nominal capacity and MSC operation is about one hour. During this time interval, the NOx emissions will decrease from the peak emission rate of approximately 500-600 pounds per hour to a rate that will likely be within permit limits. The system will then be brought up to normal capacity as quickly as possible as the system operates most efficiently at this production rate and it is in the producer's best interest to achieve this rate. Generally, the entire startup process is semi-automated through the central plant control system to expedite the process.

During the startup (approximately two hours), there could be an excursion of CO emissions although this is not as likely as higher NOx emissions. There should be no excursion of particulate matter emissions during startup and $SO_2$ emissions are expected to be no higher than during usual operations as the kiln will be started using natural gas.

During shutdown, no excess emissions are expected. The shutdown process involves assuring that the homogenizing silo is full and then stopping the feed to the preheater. After the preheater feed is stopped, the fuel to the precalciner, the kiln inlet burner, and the main kiln burner are shut off. Material in the kiln at the time of shutdown is classified as "underburned" material. The material is transported to the "fringe" clinker bin and returned to the process later.

12. Please comment on the need to include estimated emissions of $PM_{10}$ from prescribed burning at Ichetucknee Springs State Park in the $PM_{10}$ impact analysis for the proposed facility.

***Response:***

The estimated emissions of $PM_{10}$ from prescribed burning at Ichetucknee Springs State Park have been properly included in the $PM_{10}$ impact analysis for the proposed facility as part of the background ambient air quality.

This is consistent with Appendix W to 40 CFR 51 – Guideline on Air Quality Models which states:

> 9.2 Background Concentrations
>
> Background concentrations are an essential part of the total air quality concentration to be considered in determining source impacts. Background air quality includes pollutant concentrations due to:
>
> (1) natural sources,
>
> (2) nearby sources other than the one(s) currently under consideration, and
>
> (3) unidentified sources.
>
> 9.2.2 Recommendations (Isolated Single Source)
>
> a. Two options (paragraph b or c of this section) are available to determine the background concentration near isolated sources.
>
> b. Use air quality data collected in the vicinity of the source to determine the background concentration for the averaging times of concern. Determine the mean background concentration at each monitor by excluding values when the source in question is impacting the monitor. The mean annual background is the average of the annual concentrations so determined at each monitor. For shorter averaging periods, the meteorological conditions accompanying the

concentrations of concern should be identified. Concentrations for meteorological conditions of concern, at monitors not impacted by the source in question, should be averaged for each separate averaging time to determine the average background value. Monitoring sites inside a 90° sector downwind of the source may be used to determine the area of impact. One hour concentrations may be added and averaged to determine longer averaging periods.

c. If there are no monitors located in the vicinity of the source, a "regional site" may be used to determine background. A "regional site" is one that is located away from the area of interest but is impacted by similar natural and distant man-made sources.

The recommendations of paragraph c of the above section were utilized for this project. Regional sites in Alachua County and Hamilton County provided monitoring data for PM10 background concentrations. These regional sites are located away from the area of interest but are impacted by similar natural and distant man-made sources; including prescribed burns.

Similarly, the requirements of Subpart W to 40 CFR 51 – Determining Conformity of General Federal Action to State or Federal Implementation Plans, do not apply to:

Actions which implement a decision to conduct or carry out a conforming program such as <u>prescribed burning</u> actions which are consistent with a conforming land management plan. [emphasis added, 40 CFR 51.853(c)(4)]

13. Please discuss the basis for the estimated emissions of mercury and provide illustrative calculations. Please estimate the possible impact or deposition of mercury at the Ichetucknee Springs State Park and the Santa Fe and Suwannee Rivers in the vicinity of the proposed facility.

***Response:***

The PSD report used an emission factor for mercury from AP-42, Table 11.6-9, for cement kilns with fabric filters. The other available emission factor in AP-42 is for cement kilns with ESPs. As this kiln will utilize an ESP for the pyroprocessing system, this response uses the ESP emission factor:

0.00022 pounds/ton of clinker X 839,500 tons/year = 185 pounds per year

Mercury emission data from nine cement plants were evaluated as reported in the EPA Document *Locating and Estimating Air Emissions From Sources of Mercury and Mercury Compounds.* These data are shown in the following table:

| Company | Location | $10^{-3}$ lb/ton clinker |
|---|---|---|
| Lone Star | Cape Girardeau, MO | 0.02 |
| Lone Star | Cape Girardeau, MO | 0.43 |
| Lafarge Corp | Demopolis, AL | 0.16 |
| Ash Grove | Foreman, AK | 0.035 |
| Ash Grove | Foreman, AK | 0.07 |
| Ash Grove | Chanute, KS | 0.97 |
| Ash Grove | Chanute, KS | 0.15 |
| Ash Grove | Louisville, NE | 0.095 |
| Ash Grove | Louisville, NE | 0.03 |
| ESSROC | Fredrick, MD | 0.22 |
| ESSROC | Fredrick, MD | 0.22 |
| Lafarge Corp | Paulding, OH | 0.032 |
| Lone Star | Oglesby, IL | 0.0045 |
| Lone Star | Oglesby, IL | 0.028 |
| Holnam | Clarksville, MO | 0.097 |
| | | Average 0.171 |

The use of the average value from these tests results in a lower and consistent value:

0.000171 pounds/ton of clinker X 839,500 tons/year = 144 pounds per year

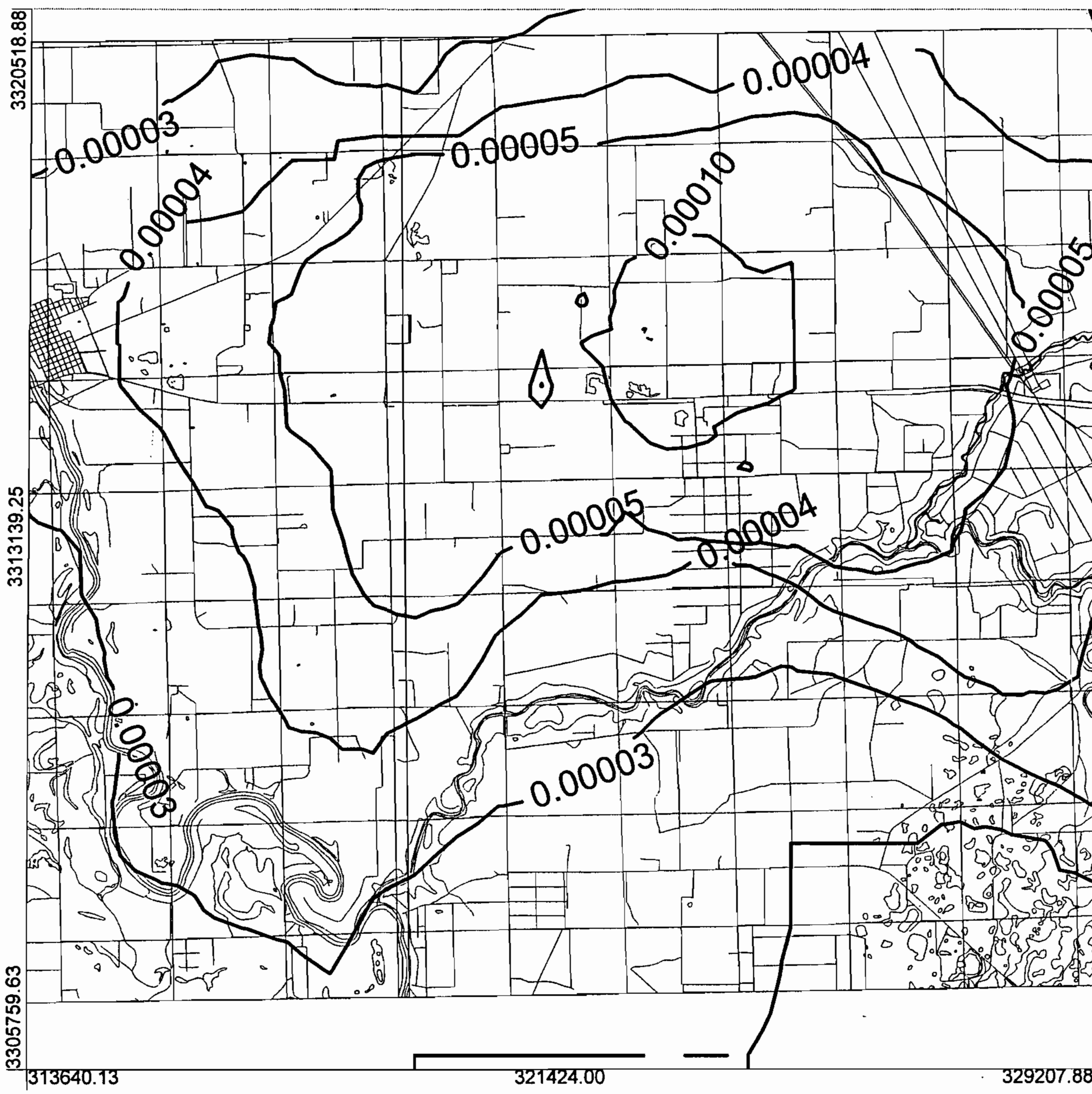
Emission estimates based on expected mercury levels in limestone, clay, sand, fly ash, and coal that will be used by Suwannee American result in an estimated emission rate of 129 pounds per year

The ambient air impact of mercury at the Ichetucknee Springs State Park and the Santa Fe and Suwannee Rivers in the vicinity of the proposed facility is estimated as 0.00003-0.00005 $\mu g/m^3$ as a maximum annual concentration. The Reference Air Concentration (RAC) for mercury (40 CFR 266, Appendix IV) is 0.3 $\mu g/m^3$, annual average.

The deposition of mercury at the Ichetucknee Springs State Park and the Santa Fe and Suwannee Rivers in the vicinity of the proposed facility is estimated as 0.00002-0.00005 $g/m^2$ as a maximum annual deposition. If this level of deposition continued for 50 years and if all deposited mercury was to accumulate in the top six inches of soil, the increase in mercury levels in the soil would be on the order of 0.006 mg/kg. Background mercury levels in clay and sand is on the order of 0.09 mg/kg. Safe mercury levels in soil established by Rule 62-785, FAC are 3.7 mg/kg for direct exposure and 2.1 mg/kg for groundwater protection.

PROJECT NAME :

**Mercury**
**PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL**




| MODELING OPTIONS : | | | COMPANY NAME : | |
|---|---|---|---|---|
| **CONC, RURAL, FLAT, DFAULT, NOCMPL** | | | **Koogler & Associates** | |
| OUTPUT TYPE : **CONC** | RECEPTORS : **396** | COMMENTS : Maximum annual concentration. 1989 Meteorological data | MODELER : **Steve Cullen** | PROJECT/PLOT NO. : **Suwannee American Cement** |
| MAX : **0.00013** | UNITS : **ug/m**3** | | DATE : **2/9/99** | |

ISC View by Lakes Environmental Software

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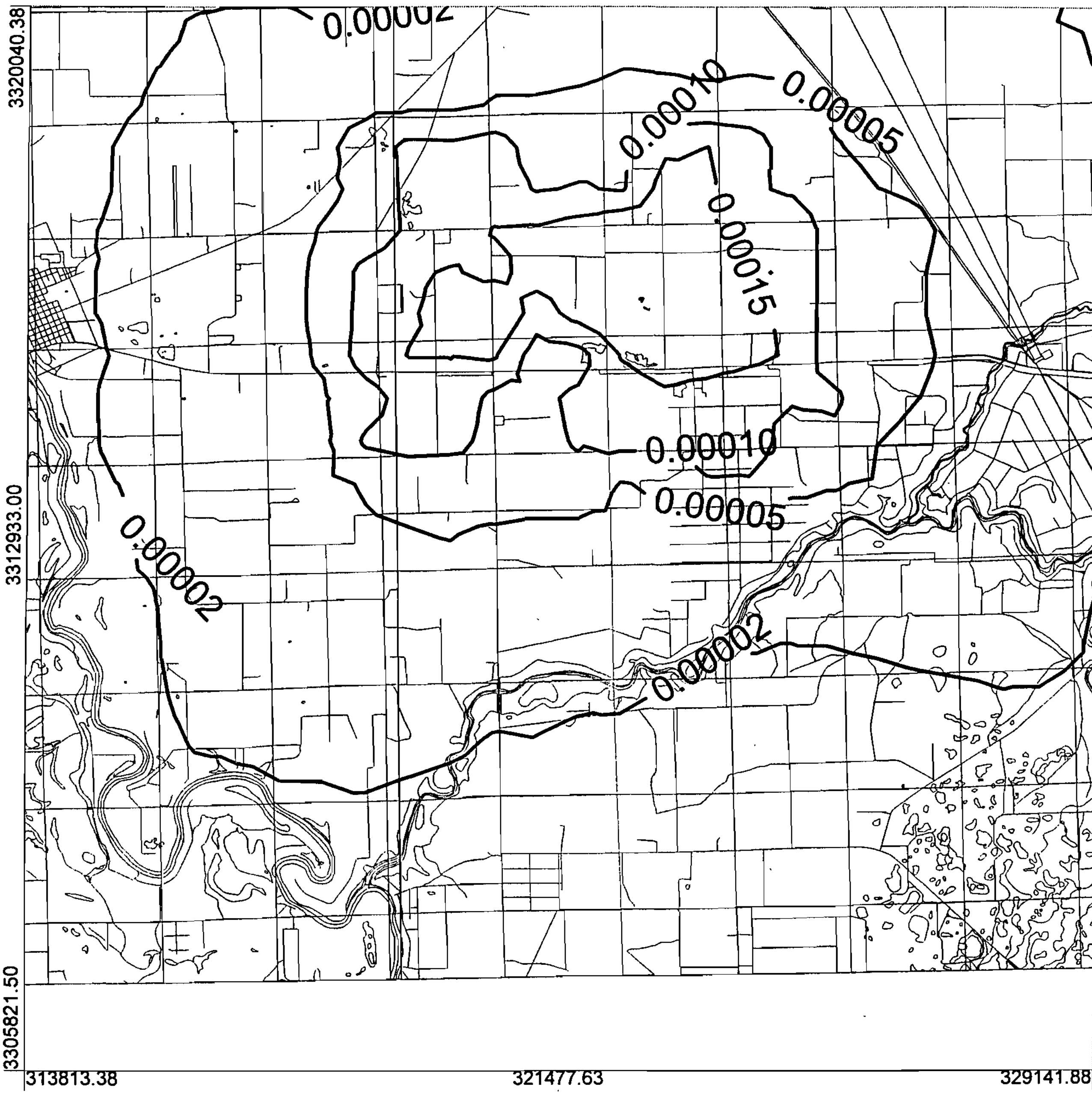
PROJECT NAME :

**Mercury**
**PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL**




| MODELING OPTIONS : | | | COMPANY NAME : | |
|---|---|---|---|---|
| **DEPOS, RURAL, FLAT, DFAULT, DRYDPL, WETDPL, NOCMPL** | | | **Koogler & Associates** | |
| OUTPUT TYPE : **DEPOS** | RECEPTORS : **396** | COMMENTS : Maximum annual deposition. 1989 Meteorological data | MODELER : **Steve Cullen** | PROJECT/PLOT NO. : |
| MAX : **0.00028** | UNITS : **g/m**2** | | DATE : **2/9/99** | |

**Suwannee American Cement**

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14. Please perform an additional impact analysis in the PSD Class II area near the facility including the Ichetucknee Springs State Park and the Santa Fe and Suwannee Rivers in the vicinity of the proposed facility. This analysis must include impacts on growth, soils and vegetation, and visibility.

***Response:***

Growth Analysis

This growth analysis includes a projection of the associated industrial, commercial, and residential source growth that will occur in the area due to the source.

No associated industrial growth is expected in the PSD Class II area. The pre-existing mining and trucking activities provide available mechanical and other services.

Minimal commercial growth is expected in the area. Existing retail and wholesale trade establishments can accommodate growth associated with this facility.

Residential growth is expected to be minimal, as the area has a large available work force and good availability of housing.

Soils Analysis

The soils in the PSD Class II area are generally described as a Blanton-Chiefland association of well-drained to excessively drained sands, 30-72 inches deep to fine-textured limestone.

Water drains through the soils. Originally the area was covered hardwoods and pines, but now it has been cleared for cultivation. Corn, tobacco, peanuts, watermelons, and other farm crops are grown. The soils are well suited to pine. Many formerly cultivated fields have been reforested with pine trees. Several pits mine the high-quality limestone.[1]

The major land resource area is described as 138-North-Central Florida Ridge. This land resource area includes 3,400 sq. km (1,310 sq. mi).

Land use: Most of this area is in farms, but some large holdings are used exclusively for forestry. Pasture makes up about one-fourth of the area; the remainder is mainly cropland and forested. Corn, peanuts, tobacco, soybeans, vegetables, and melons are major crops. Some hay and feed grains are grown for livestock. More than one-half of the area is forested. Pulpwood and lumber are the principal forest products.

Soil: The dominant soils are Udults and Psamments. They have a thermic temperature regime and an udic moisture regime. Well drained and somewhat poorly drained Paleudults (Blanton and Albany series) have thick sandy layers over a loamy subsoil.[2]

The main atmospheric pollutants that affect trees and forests are nitrate, sulfate and ozone. Nitrates and sulfates are deposited through rain and dry deposition and serve to lower soil pH. Note that harvesting trees also leads to lower soil pH if the trees do not

[1] Soil Survey of Suwannee County, Florida. USDA Soil Conservation Service. March 1965.
[2] Major Land Resource Areas. USDA Natural Resources Conservation Service. February 1997.

decay and return base cations to the soil. In the southern U.S. pine forests, nitrate and sulfate deposition and tree farming contribute about the same to soil acidification..[1]

Evaluation of impacts to soils and vegetation are considered further relative to terrestrial ecosystems. Sulfur dioxide and nitrogen oxides emitted as a result of fossil fuel combustion undergo chemical transformation in the atmosphere and occur as sulfate, nitrate, and hydrogen ions when dissolved in precipitation. An ecosystem's susceptibility to acidification is determined by the alkalinity, or acid neutralizing capacity (ANC), of its soils and waters. Well- buffered soils can adsorb sulfate and neutralize acidity, resulting in soil water and streamwater composition being maintained in a range acceptable to biota.[2]

Terrestrial Ecosystems – Nitrogen

Annual deposition of all forms of nitrogen averaged 13.5 kilograms/hectare (kg/ha) as measured in the Branford Forest during the period from 1993-1997.[3]

The source contribution to deposition of nitrate at Ichetucknee Springs State Park and the Santa Fe and Suwannee Rivers in the vicinity of the proposed facility is estimated as 0.1-0.4 kg/ha.

---

[1] *A Brief Overview of the Effects of Air Pollution on Trees and Forests.* William Grant, PhD., June 1996.

[2] The Effects of Air Pollutants on Wildlife and Implications in Class I Areas. Tonnie G. Maniero, National Park Service Air Resources Division.

[3] National Atmospheric Deposition Program. Data obtained February 1999.

The Forest Service's screening value for evaluating impacts to terrestrial ecosystems provides an estimate of the total acceptable nitrogen loading. This value is 15 kg/ha for the southeastern U.S.[1]

There are few data that relate pollutant exposure to growth or other characteristics of mature trees, and almost no data for herbaceous species.[2]

Generally, most nitrogen is retained in the terrestrial ecosystem.

Terrestrial Ecosystems -- Sulfur

There are very few data on the effects of sulfur compounds on mature trees or other native plants, and there is a wide range of sensitivity to ambient sulfur compounds. In order to maximize protection of all plant species, maximum $SO_2$ concentrations should not exceed 40-50 ppb, and annual average $SO_2$ concentrations should not exceed 8-12 ppb.

Sulfate serves primarily to lower the soil pH.

Annual deposition of sulfate averaged 13.0 kilograms/hectare (kg/ha) as measured in the Branford Forest during the period from 1993-1997.[3]

---

[1] Forest Service.
[2] Forest Service 2.
[3] NADP

The source contribution to deposition of sulfate at Ichetucknee Springs State Park and the Santa Fe and Suwannee Rivers in the vicinity of the proposed facility is estimated as 0.02-0.04 kg/ha.

The Forest Service's screening value for evaluating impacts to terrestrial ecosystems provides an estimate of acceptable sulfate loadings. This value is 20 kg/ha.[1]

Aquatic Ecosystems

Aquatic impacts are evaluated with respect to the sensitivity of surface waters as measured by the combined concentrations of calcium, magnesium, potassium, and sodium (expressed in microequivalents per liter (μeq/l)). In general, waters with an ANC of 200 microequivalents per liter or less are considered sensitive.

The waters in the three rivers have ANCs that average in the range 2400-2800 μeq/l. This provides substantial buffering for resistance to acidification.

Acidification is the primary concern, with sulfate being considered the primary contributor.

Runoff is considered when evaluating impacts to aquatic AQRVs. Warm temperatures, deep soils, level topography, and vigorous plant growth all favor evapotranspiration and reduce runoff. Effects of nitrogen deposition are not likely to be significant because the

[1] Forest Service.

nitrogen is taken up by the watershed terrestrial and aquatic ecosystems and does not contribute to acidification.[1]

Only waters low in concentrations of both base cations and organic acids are highly susceptible to acidification. Waters high in base cations ( and therefore alkalinity) receive substantial neutralization potential from their watersheds, and therefore typically have the capacity to completely neutralize acidic deposition inputs, largely through increased weathering and exchange of base cations.[2]

There are two watersheds present in the vicinity of the project: the Lower Suwannee and the Santa Fe. The EPA has described the health of the aquatic resources in both watersheds as having a low vulnerability to stressors such as pollutant loadings.[3]

---

[1] Forest Service.
[2] Forest Service 2.
[3] Watershed Health Information. Environmental Protection Agency. October 1998.

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
Site ID: FL03 Date Range: 1993 to 1998 Report Date: 02/07/1999 01:36:43 PM
Deposition in kg/ha.

| Year | Ca | Mg | K | Na | NH4 | NO3 | N | Cl | SO4 |
|---|---|---|---|---|---|---|---|---|---|
| 1993 | 1.36 | 0.450 | 0.316 | 3.550 | 1.39 | 10.83 | 3.52 | 5.92 | 15.95 |
| 1994 | 1.16 | 0.445 | 0.256 | 3.519 | 1.11 | 9.88 | 3.09 | 5.99 | 12.85 |
| 1995 | 1.04 | 0.455 | 0.284 | 3.883 | 1.92 | 9.57 | 3.66 | 6.42 | 12.96 |
| 1996 | 0.96 | 0.405 | 0.258 | 3.531 | 1.05 | 8.08 | 2.64 | 6.13 | 12.16 |
| 1997 | 0.82 | 0.355 | 0.274 | 2.774 | 0.96 | 7.37 | 2.41 | 4.89 | 10.95 |
| | | | | Average: | 1.29 | 9.15 | 3.06 | | 12.97 |

All Nitrogen = 13.5

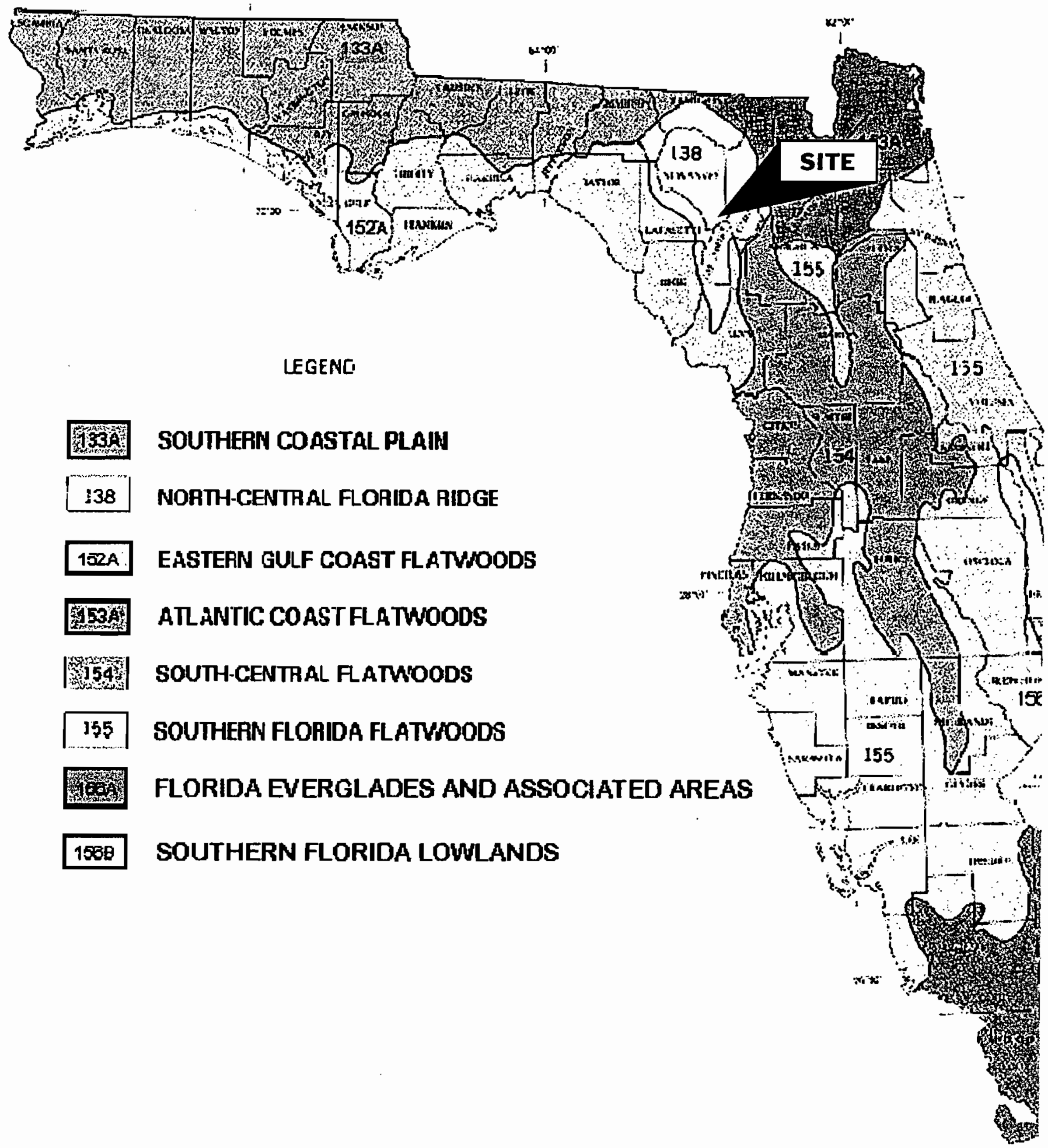
Visibility Analysis

Visual effects screening analysis was conducted for the PSD Class II Area including the Ichetucknee Springs State Park. The analysis was a Level II analysis using the VISCREEN model. The results (attached) show that maximum visual impacts inside the park do not exceed the screening criteria.

The results also show that maximum visual impacts outside the park (i.e., between the park and the project site do not exceed the screening criteria. This analysis shows that impacts to visibility in the PSD Class II area are within the acceptable range.

U.S. DEPARTMENT OF AGRICULTURE

NATURAL RESOURCES CONSER




# MAJOR LAND RESOURCE AREAS

## FLORIDA

## FEBRUARY 1997

EPA United States Environmental Protection Agency

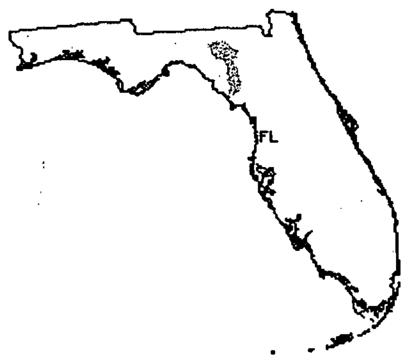
# Surf Your Watershed

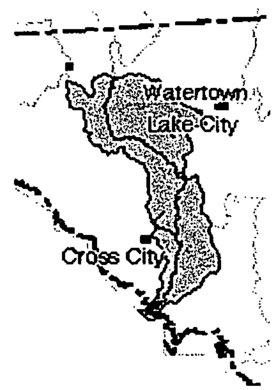
Locate Your Watershed
JOIN DISCUSSIONS
ADD INFORMATION
SEARCH INFORMATION
MAP LIBRARY

**News Flashes:**

## Lower Suwannee

USGS Cataloging Unit: 03110205





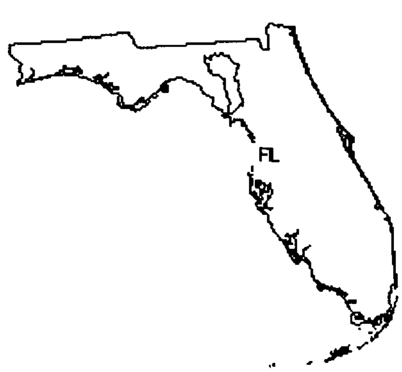

EPA **Watershed Health (IWI)** | Watershed Information: 03110205
located in the state(s) of FL

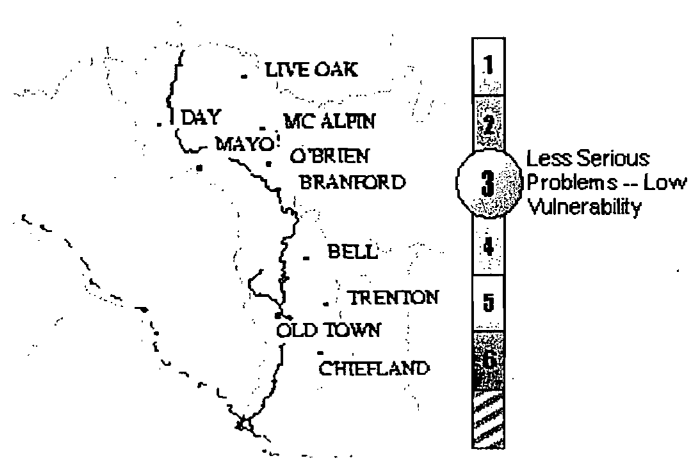
## Lower Suwannee

Locate Your Watershed
JOIN DISCUSSIONS
ADD INFORMATION
SEARCH INFORMATION
MAP LIBRARY

IWI Homepage | Updates | Surf Your Watershed | Comments

*The overall IWI score below describes the health of the aquatic resources for this watershed. A score of 3 indicates Less Serious Water Quality Problems - Low Vulnerability to stressors such as pollutant loadings. Get a description of the latest overall score (October 1998, Version 1.2) and find out how your watershed scores are calculated. See the Condition and Vulnerability Indicator Graphs link below for the individual scores used in the overall score calculation.*



EPA United States Environmental Protection Agency

# Surf Your Watershed

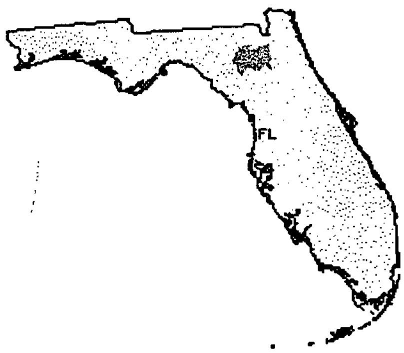
Locate Your Watershed

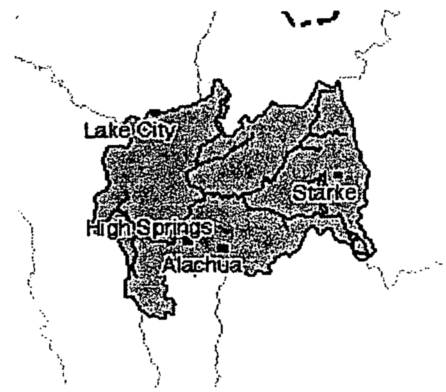
JOIN DISCUSSIONS | ADD INFORMATION | SEARCH INFORMATION | MAP LIBRARY

**News Flashes:**

## Santa Fe

USGS Cataloging Unit: 03110206






EPA United States Environmental Protection Agency

**Watershed Health (IWI)** | Watershed Information: 03110206
located in the state(s) of FL

## Santa Fe

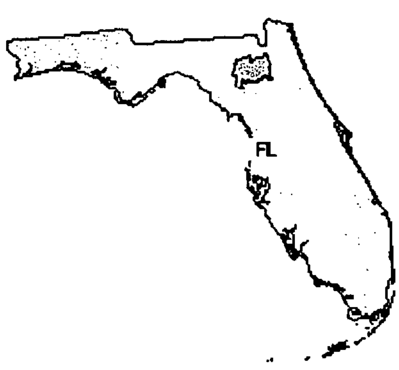
Locate Your Watershed

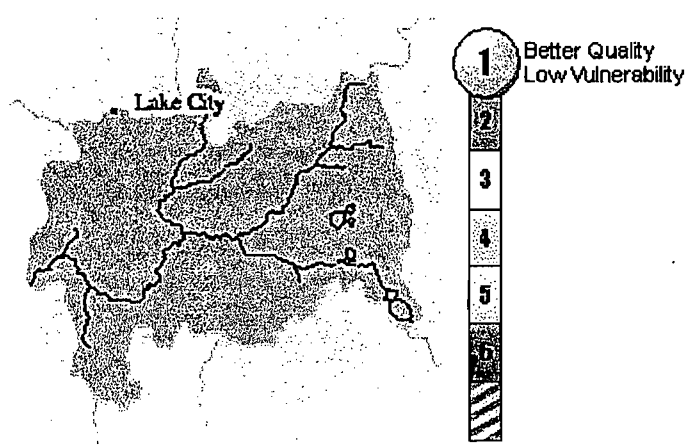
JOIN DISCUSSIONS | ADD INFORMATION | SEARCH INFORMATION | MAP LIBRARY

IWI Homepage | Updates | Surf Your Watershed | Comments

*The overall IWI score below describes the health of the aquatic resources for this watershed. A score of 1 indicates Low Vulnerability to stressors such as pollutant loadings. Get a description of the latest overall score (October 1998, Version 1.2) and find out how your watershed scores are calculated. See the Condition and Vulnerability Indicator Graphs link below for the individual scores used in the overall score calculation.*

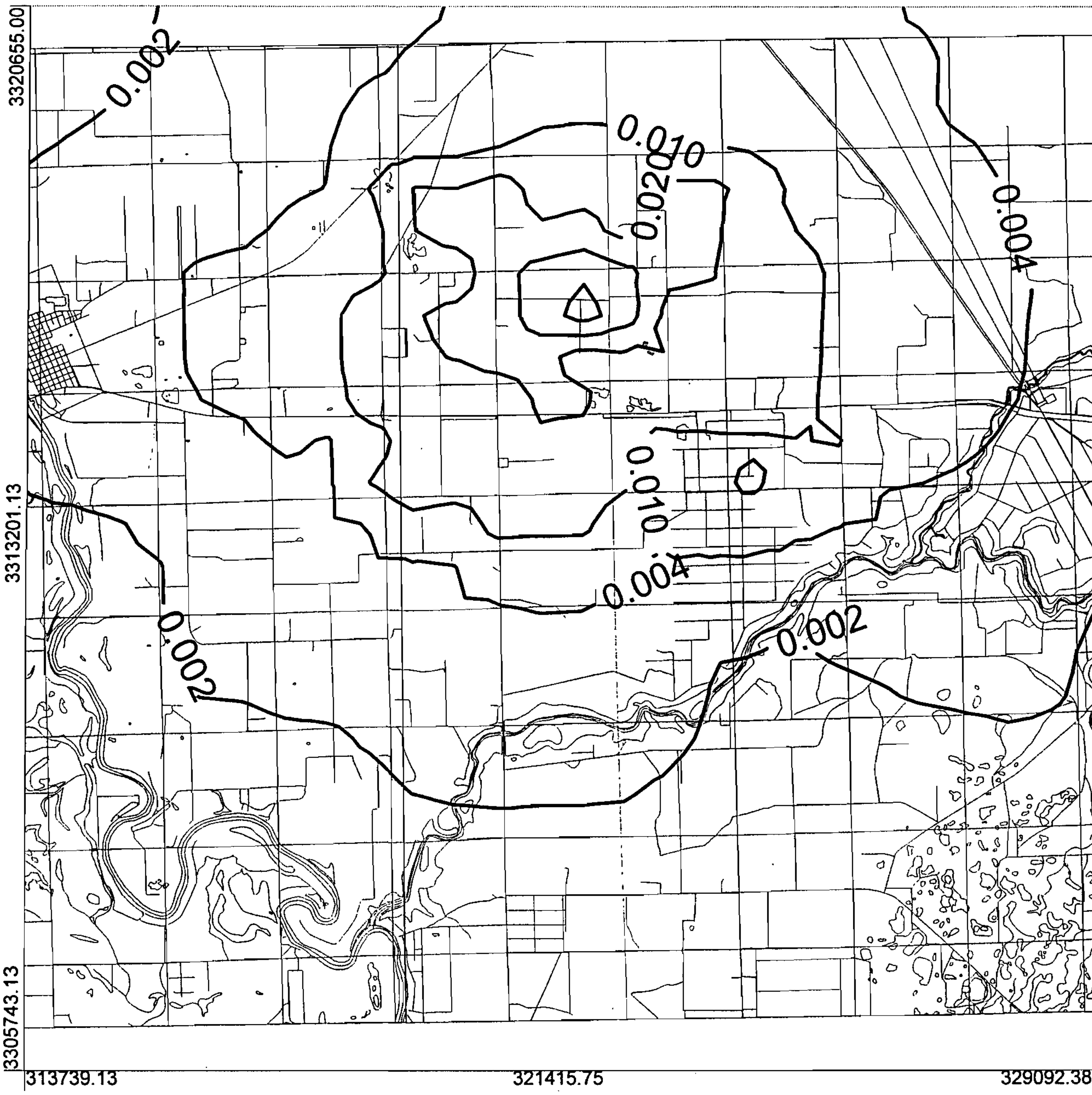




PROJECT NAME :

**Estimated Deposition of Sulfate**
**1990 Meteorological Data**




| MODELING OPTIONS : | | | COMPANY NAME : | |
|---|---|---|---|---|
| DEPOS, RURAL, FLAT, DFAULT, DRYDPL, WETDPL, NOCMPL | | | Koogler & Associates | |
| OUTPUT TYPE : DEPOS | RECEPTORS : 396 | COMMENTS : Source-alone g/m^2 x 10 = kg/ha | MODELER : Steve Cullen | PROJECT/PLOT NO. : |
| MAX : 0.08455 | UNITS : g/m**2 | | DATE : 2/9/99 | |

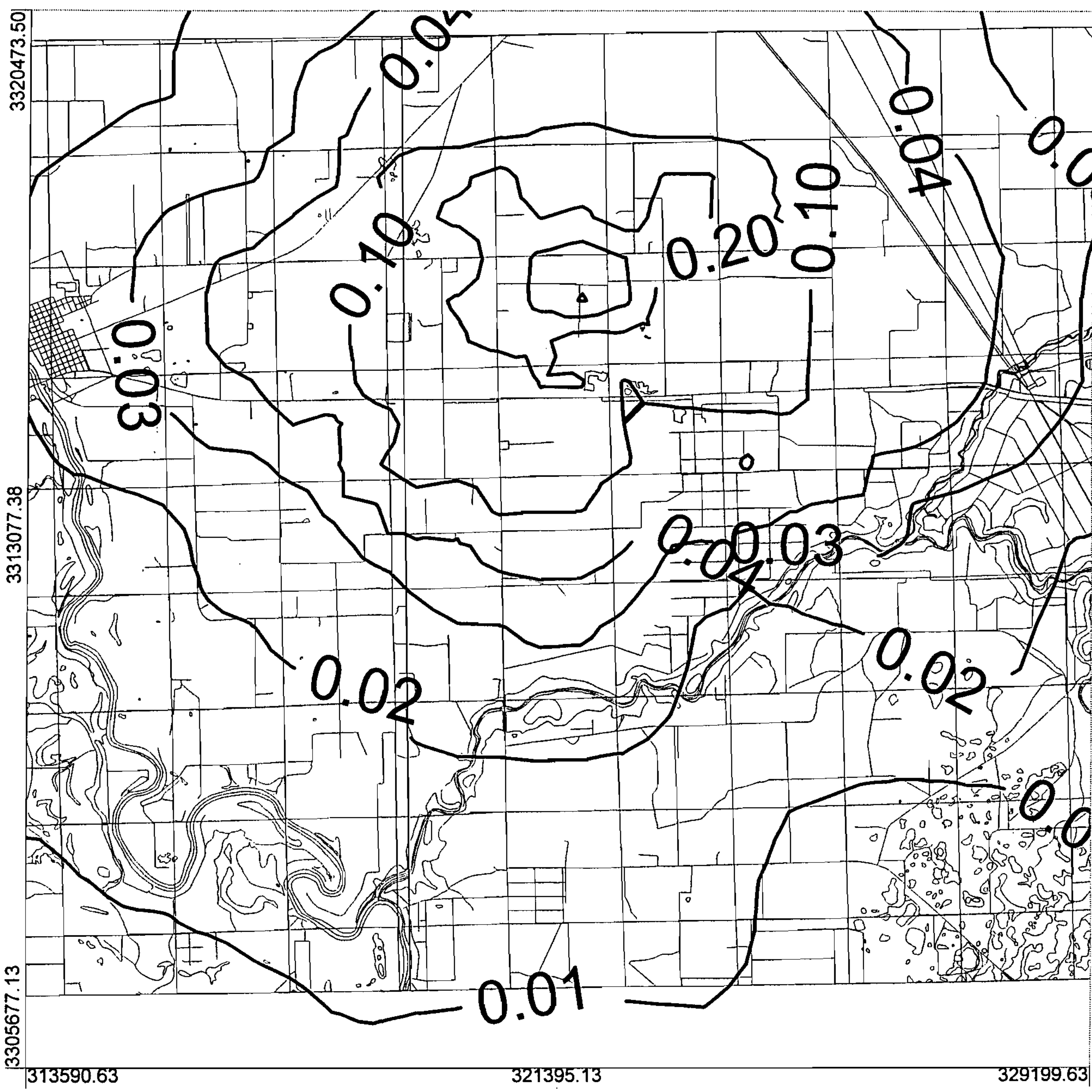
**Suwannee American Cement**

ISC View by Lakes Environmental Software

C:\ISCVIEW2\DEPOSI~1\SO2DEP90.FIL

PROJECT NAME :

**Estimated Deposition of Nitrate**
**1990 Meteorological Data**




| MODELING OPTIONS : | COMPANY NAME : |
|---|---|
| **DEPOS, RURAL, FLAT, DFAULT, DRYDPL, WETDPL, NOCMPL** | **Koogler & Associates** |

| OUTPUT TYPE : | RECEPTORS : | COMMENTS : | MODELER : | PROJECT/PLOT NO. : |
|---|---|---|---|---|
| **DEPOS** | **396** | Source-alone g/m^2 x 10 = kg/ha | **Steve Cullen** | |
| MAX : | UNITS : | | DATE : | |
| **0.78748** | **g/m**2** | | **2/9/99** | |

**Suwannee American Cement**

ISC View by Lakes Environmental Software

C:\ISCVIEW2\DEPOSI~1\NOXDEP90.FIL

**Visual Effects Screening Analysis for**
**Source: Suwannee American Cement**
**Class I Area: Ichetucknee Springs S.P.**

*** Screening Scenario Results ***

Input Emissions for

| | | | |
|---|---|---|---|
| Particulates | 5.50 | G | /S |
| NOx (as NO2) | 33.80 | G | /S |
| Primary NO2 | .00 | G | /S |
| Soot | .00 | G | /S |
| Primary SO4 | .00 | G | /S |

PARTICLE CHARACTERISTICS

| | Density | Diameter |
|---|---|---|
| Primary Part. | 2.5 | 7 |
| Soot | 2.0 | 1 |
| Sulfate | 1.5 | 4 |

Transport Scenario Specifications:

| | |
|---|---|
| Background Ozone: | .01 ppm |
| Background Visual Range: | 25.00 km |
| Source-Observer Distance: | 5.60 km |
| Min. Source-Class I Distance: | 5.60 km |
| Max. Source-Class I Distance: | 9.80 km |
| Plume-Source-Observer Angle: | 11.25 degrees |
| Stability: | 3 |
| Wind Speed: | 2.86 m/s |

R E S U L T S

Asterisks (*) indicate plume impacts that exceed screening criteria

Maximum Visual Impacts INSIDE Class I Area
Screening Criteria ARE NOT Exceeded

| | | | | | Delta E | | Contrast | |
|---|---|---|---|---|---|---|---|---|
| Backgrnd | Theta | Azi | Distance | Alpha | Crit | Plume | Crit | Plume |
| SKY | 10. | 155. | 9.8 | 14. | 9.22 | .798 | .15 | -.002 |
| SKY | 140. | 155. | 9.8 | 14. | 2.79 | .255 | .15 | -.003 |
| TERRAIN | 10. | 84. | 5.6 | 84. | 11.45 | .223 | .30 | .001 |
| TERRAIN | 140. | 84. | 5.6 | 84. | 3.52 | .067 | .30 | .001 |

Maximum Visual Impacts OUTSIDE Class I Area
Screening Criteria ARE NOT Exceeded

| | | | | | Delta E | | Contrast | |
|---|---|---|---|---|---|---|---|---|
| Backgrnd | Theta | Azi | Distance | Alpha | Crit | Plume | Crit | Plume |
| SKY | 10. | 2. | 1.0 | 166. | 2.00 | 1.467 | .05 | .001 |
| SKY | 140. | 2. | 1.0 | 166. | 2.00 | .434 | .05 | -.010 |
| TERRAIN | 10. | 2. | 1.0 | 166. | 2.00 | 1.268 | .05 | .013 |
| TERRAIN | 140. | 2. | 1.0 | 166. | 2.00 | .332 | .05 | .008 |

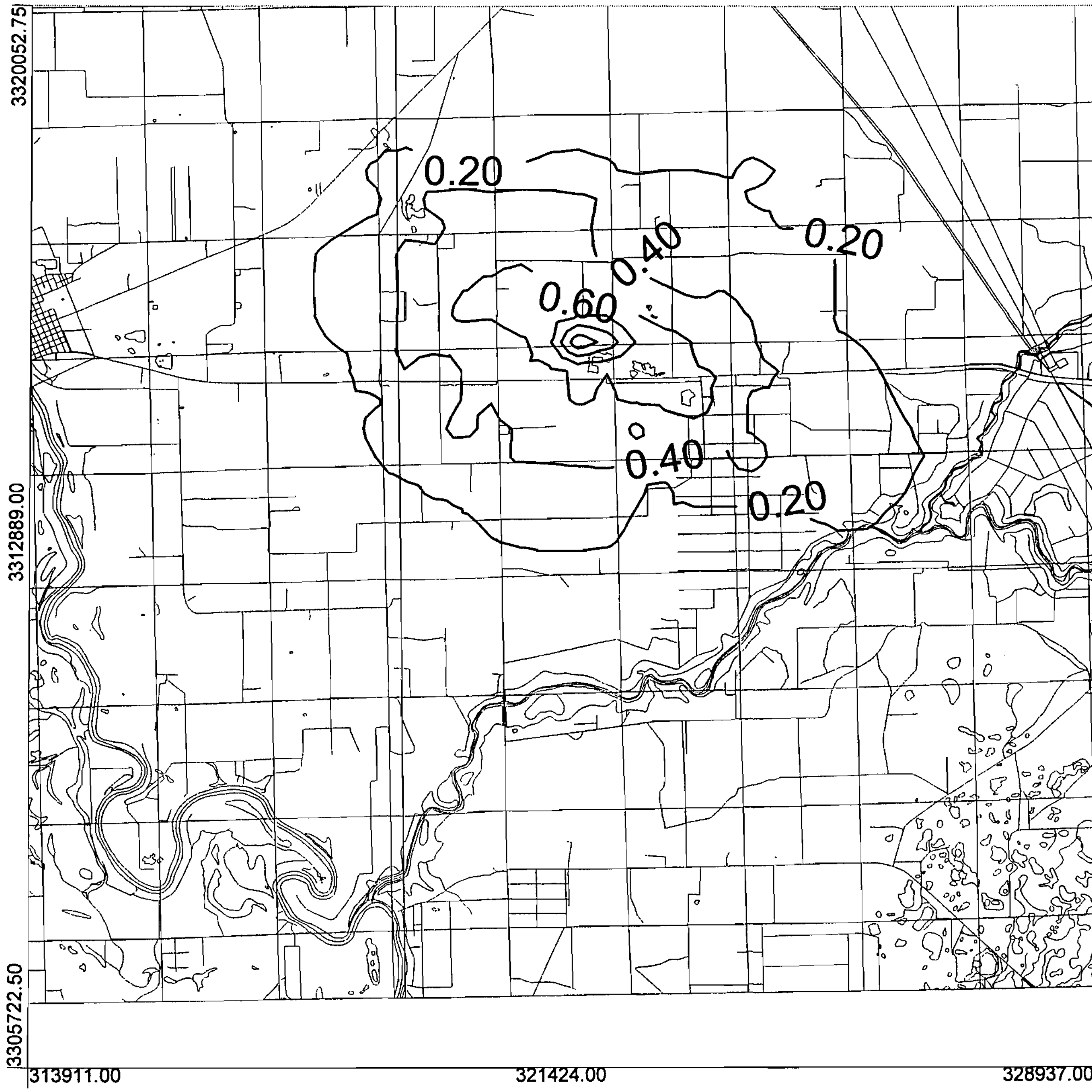
15. Please submit overlays (isopleths) of the maximum ground-level concentrations of NOx, PM/$PM_{10}$, CO, and $SO_2$ with respect to residential communities up to 2 miles (3.2 kilometers) from the proposed site.

***Response:***

The requested isopleths are included with this response.

PROJECT NAME :

**Isopleths of the Maximum Annual Average Ground Level Concentrations of PM10**
**1989 Meterological Data**



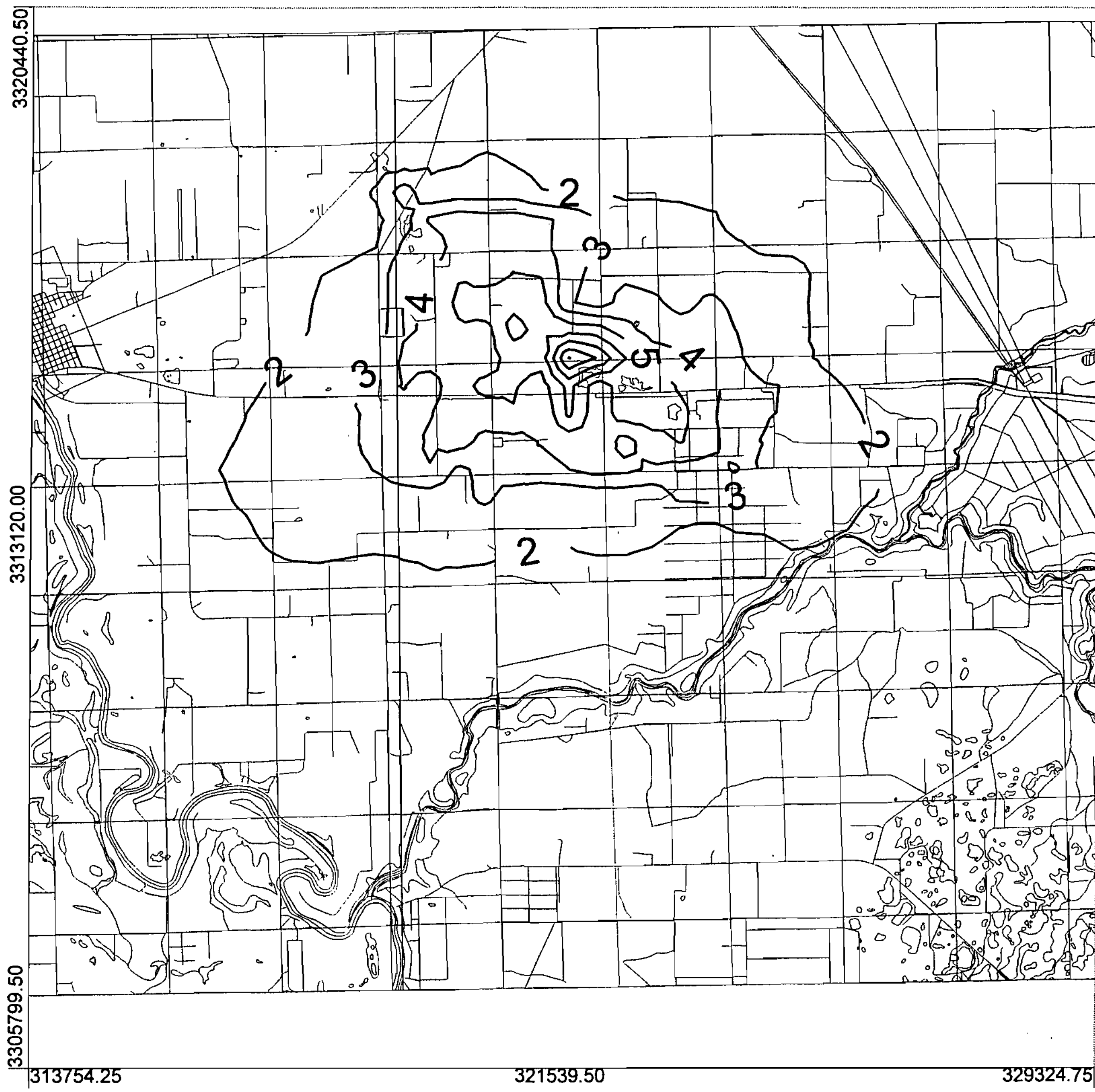

| MODELING OPTIONS : | | | COMPANY NAME : | |
|---|---|---|---|---|
| **CONC, RURAL, FLAT, DFAULT, NOCMPL** | | | **Koogler & Associates** | |
| OUTPUT TYPE : | RECEPTORS : | COMMENTS : | MODELER : | PROJECT/PLOT NO. : |
| **CONC** | **336** | Annual high PM10 concentration isopleths for source-alone. 1989 meteorology. | **Steve Cullen** | **Suwannee American Cement** |
| MAX : | UNITS : | | DATE : | |
| **1.86602** | **ug/m**3** | | **2/9/99** | |

ISC View by Lakes Environmental Software

C:\ISCVIEW2\SUWANNEE\ANNPM89.FIL

PROJECT NAME :

**Isopleths of the Maximum 24-hr Average Ground Level Concentrations of PM10**
**1991 Meteorological Data**




| MODELING OPTIONS : | | | COMPANY NAME : | |
|---|---|---|---|---|
| **CONC, RURAL, FLAT, DFAULT, NOCMPL** | | | **Koogler & Associates** | |
| OUTPUT TYPE : **CONC** | RECEPTORS : **336** | COMMENTS : Source-alone | MODELER : **Steve Cullen** | PROJECT/PLOT NO. : |
| MAX : **12.00522** | UNITS : **ug/m**3** | | DATE : **1/18/99** | |

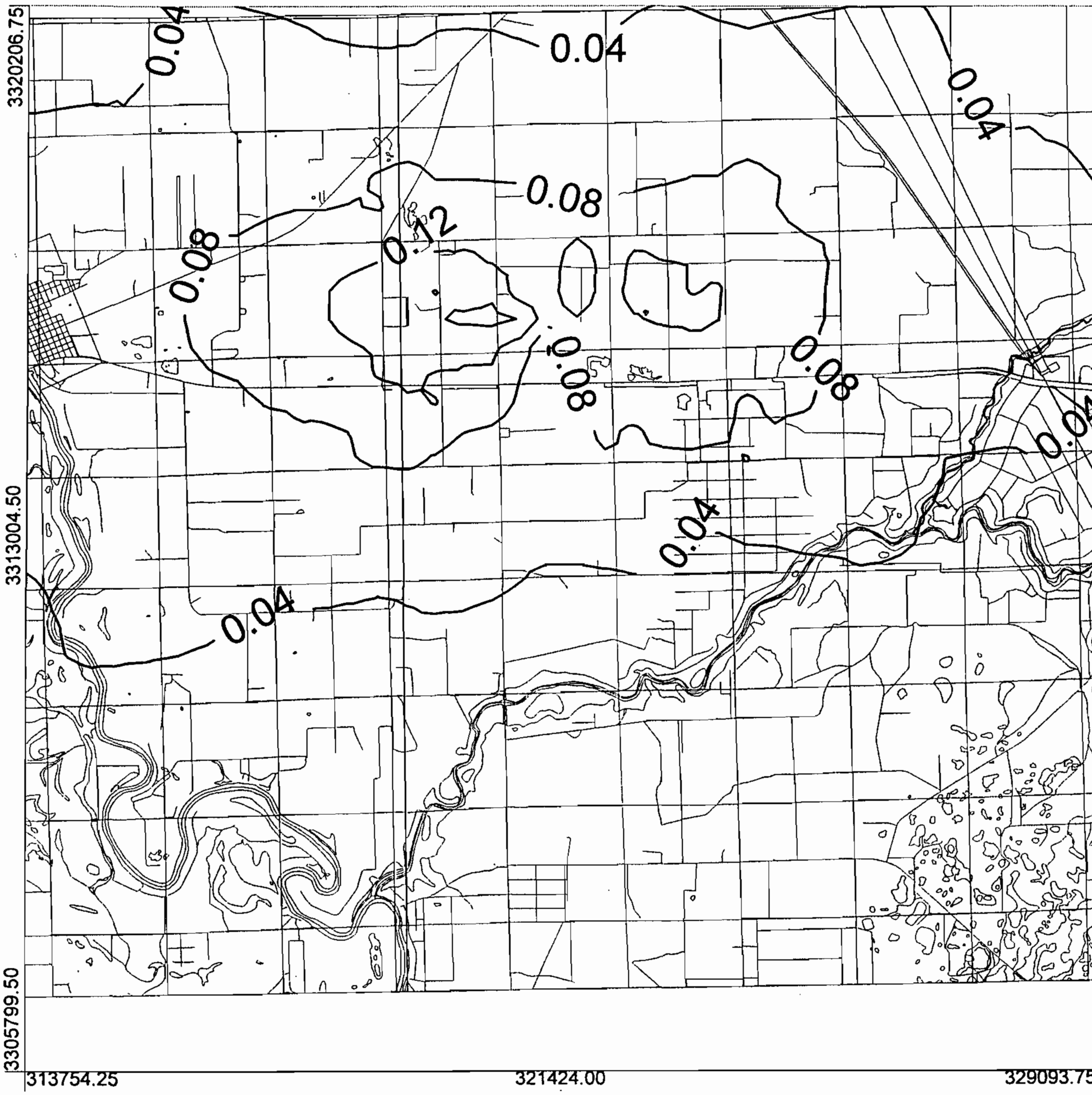
**Suwannee American Cement**

ISC View by Lakes Environmental Software

C:\ISCVIEW2\SUWANNEE\PM91.FIL

PROJECT NAME :

**Isopleths of the Maximum Annual Average Ground Level Concentrations of SO2**
**1990 Meteorological Data**




| MODELING OPTIONS : | | | COMPANY NAME : | |
|---|---|---|---|---|
| CONC, RURAL, FLAT, DFAULT, NOCMPL | | | Koogler & Associates | |
| OUTPUT TYPE : CONC | RECEPTORS : 336 | COMMENTS : Source-alone | MODELER : Steve Cullen | PROJECT/PLOT NO. : |
| MAX : 0.18573 | UNITS : ug/m**3 | | DATE : 2/9/99 | |

**Suwannee American Cement**

ISC View by Lakes Environmental Software

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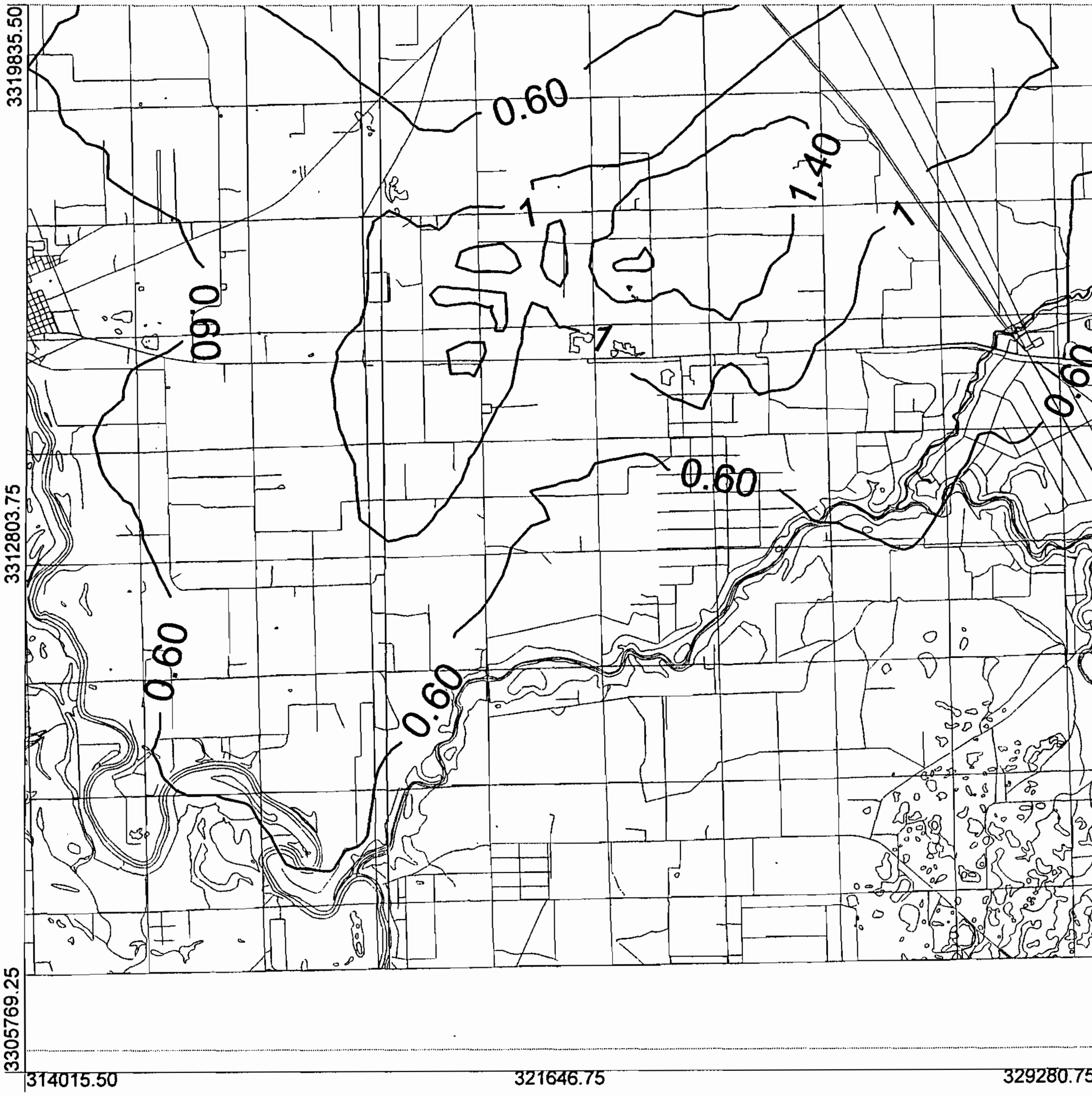
PROJECT NAME :

**Isopleths of the Maximum 24-hour Average Ground Level Concentrations of SO2**
**1992 Meteorological Data**



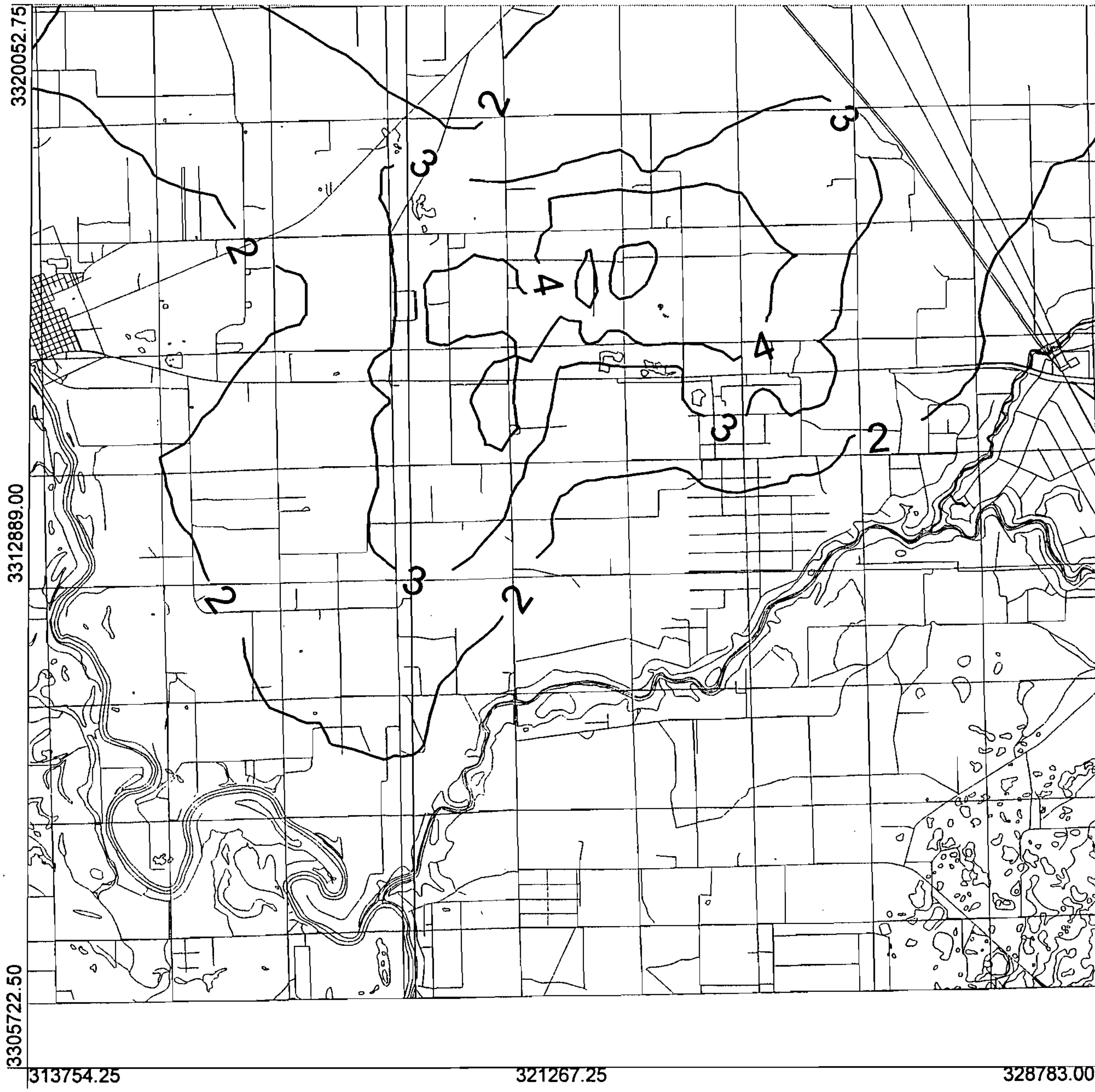

| MODELING OPTIONS : | | | COMPANY NAME : | |
|---|---|---|---|---|
| **CONC, RURAL, FLAT, DFAULT, NOCMPL** | | | **Koogler & Associates** | |
| OUTPUT TYPE : | RECEPTORS : | COMMENTS : | MODELER : | PROJECT/PLOT NO. : |
| **CONC** | **336** | Source-alone | **Steve Cullen** | **Suwannee American Cement** |
| MAX : | UNITS : | | DATE : | |
| **2.62102** | **ug/m**3** | | **2/9/99** | |

ISC View by Lakes Environmental Software

C:\ISCVIEW2\SUWANNEE\S029224.FIL

PROJECT NAME :

**Isopleths of the Maximum 3-hour Average Ground Level Concentrations of SO2**
**1992 Meteorological Data**




| MODELING OPTIONS : | | | COMPANY NAME : | |
|---|---|---|---|---|
| CONC, RURAL, FLAT, DFAULT, NOCMPL | | | Koogler & Associates | |
| OUTPUT TYPE : CONC | RECEPTORS : 336 | COMMENTS : Source-alone | MODELER : Steve Cullen | PROJECT/PLOT NO. : |
| MAX : 7.28792 | UNITS : ug/m**3 | | DATE : 1/18/99 | |

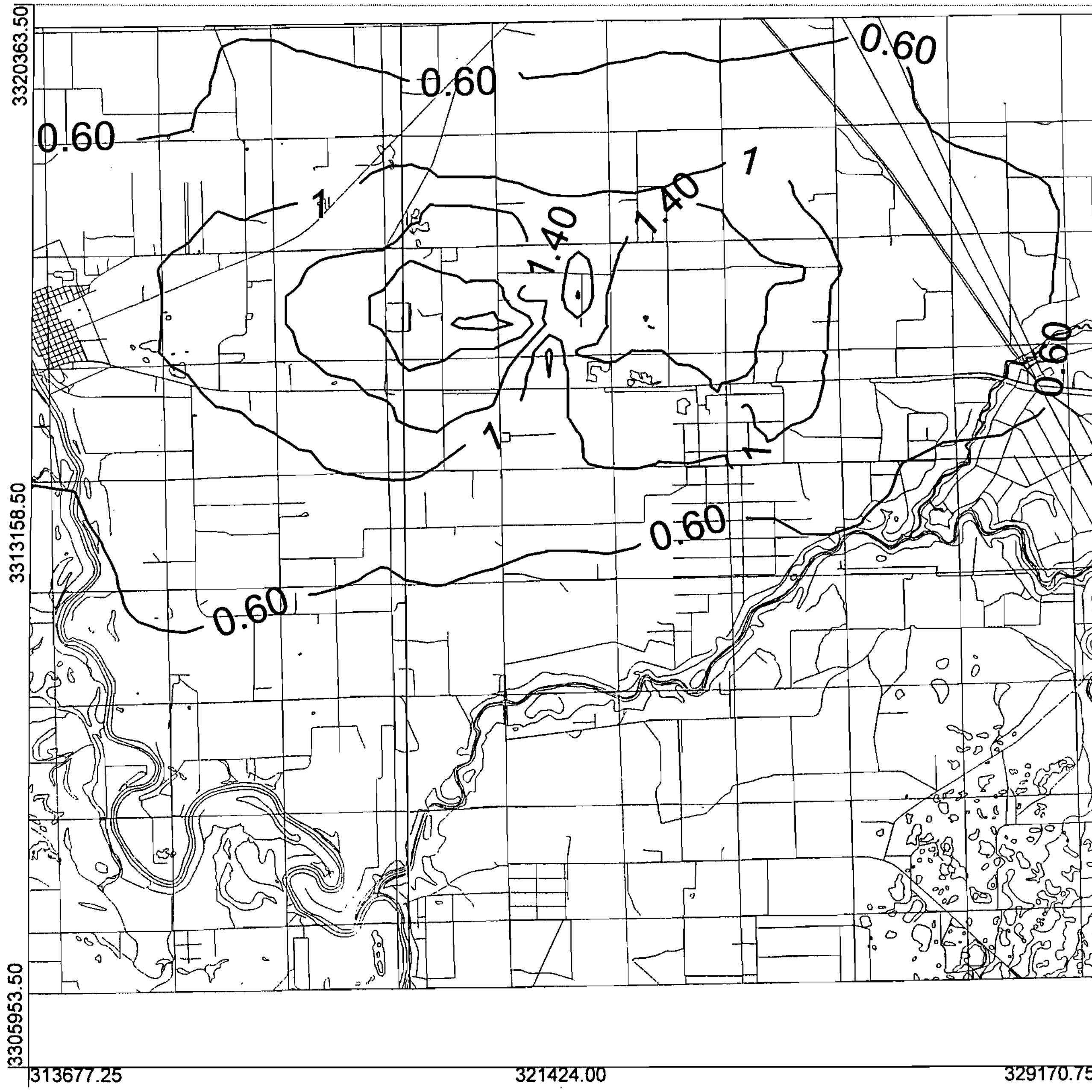
**Suwannee American Cement**

ISC View by Lakes Environmental Software

A:\SO292.FIL

PROJECT NAME :

**Isopleths of the Maximum Annual Average Ground Level Concentrations of NOx**
**1990 Meteorological Data**




| MODELING OPTIONS : | | | COMPANY NAME : | |
|---|---|---|---|---|
| CONC, RURAL, FLAT, DFAULT, NOCMPL | | | Koogler & Associates | |
| OUTPUT TYPE : CONC | RECEPTORS : 336 | COMMENTS : Source-alone | MODELER : Steve Cullen | PROJECT/PLOT NO. : |
| MAX : 2.52166 | UNITS : ug/m**3 | | DATE : 1/18/99 | |

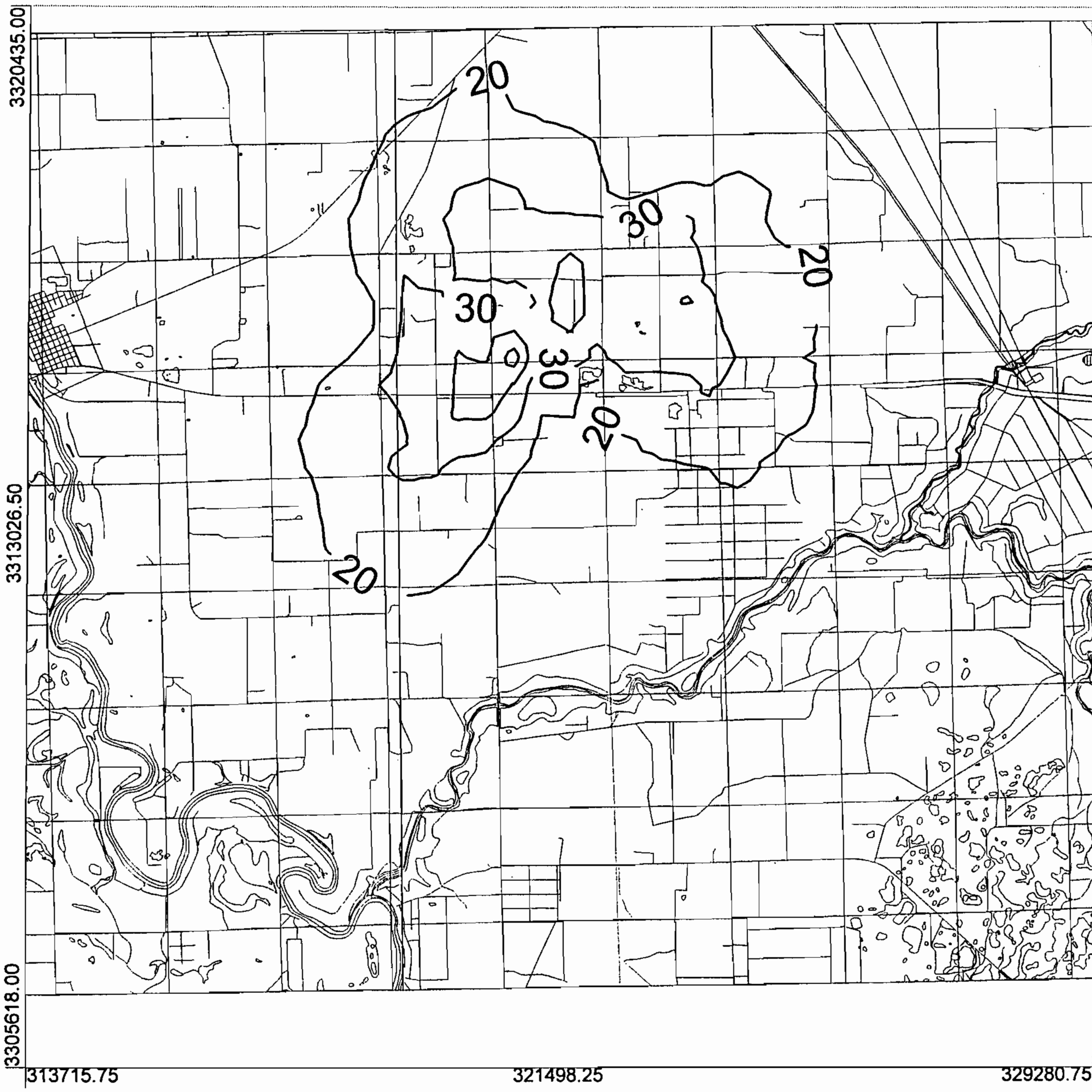
**Suwannee American Cement**

ISC View by Lakes Environmental Software

A:\NOX90.FIL

PROJECT NAME :

**Isopleths of the Maximum 8-hour Ground Level Concentrations of CO**
**1993 Meteorological Data**




| MODELING OPTIONS : | | | COMPANY NAME : | |
|---|---|---|---|---|
| CONC, RURAL, FLAT, DFAULT, NOCMPL | | | Koogler & Associates | |
| OUTPUT TYPE : CONC | RECEPTORS : 336 | COMMENTS : Source-alone | MODELER : Steve Cullen | PROJECT/PLOT NO. : |
| MAX : 76.93284 | UNITS : ug/m**3 | | DATE : 2/9/99 | |

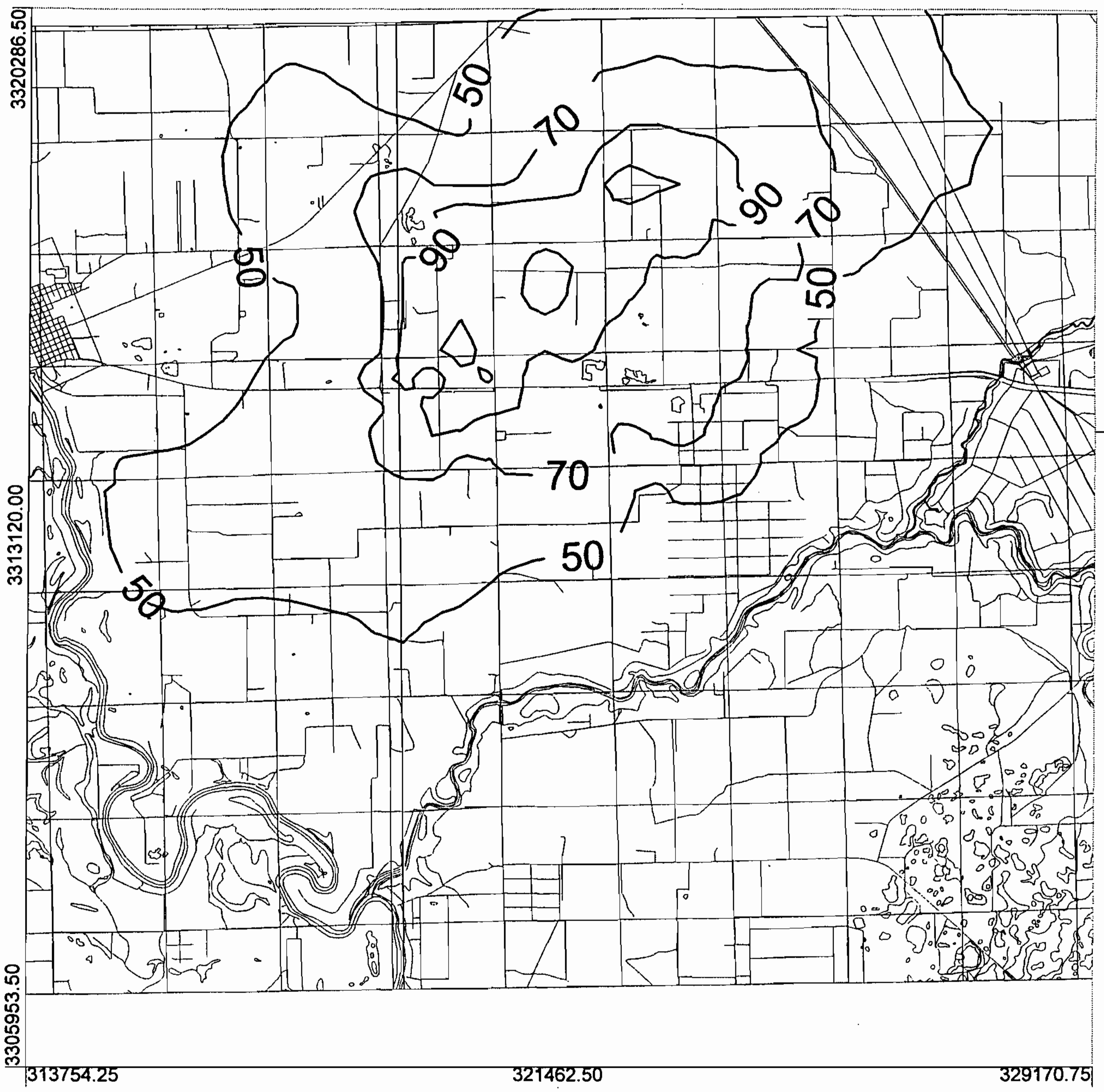
**Suwannee American Cement**

ISC View by Lakes Environmental Software

A:\CO93HR8.FIL

PROJECT NAME :

**Isopleths of the Maximum 1-hour Average Ground Level Concentrations of CO**
**1990 Meteorological Data**




| | | | | |
|---|---|---|---|---|
| MODELING OPTIONS : CONC, RURAL, FLAT, DFAULT, NOCMPL | | | COMPANY NAME : Koogler & Associates | |
| OUTPUT TYPE : CONC | RECEPTORS : 336 | COMMENTS : Source-alone | MODELER : Steve Cullen | PROJECT/PLOT NO. : |
| MAX : 165.75049 | UNITS : ug/m**3 | | DATE : 1/18/99 | |

**Suwannee American Cement**

16. The PSD application does not contain discussions of the modeling procedures, selected model options, source emission information, and receptor information associated with the area of significance, PSD increment, and NAAQS modeling. This information is needed to adequately understand the modeling results presented in the application. In addition, please provide a detailed map showing the location of all of the fence-line receptors used in the air quality impact analysis. These receptor locations should be shown in the coordinate system used in the modeling. This detailed map should also display the location and dimensions of the various plant components.

***Response:***

Procedures

The modeling included the fenceline receptor network (216 receptors) and a polar receptor network at 1000 meter intervals between 1000-10,000 meters from the main stack. The fenceline receptors were spaced 50 meters apart. Modeling included a building downwash (BPIP) analysis of 12 buildings:

1. Storage Hall
2. Raw Mill
3. Homogenization (Blend) Silo
4. Preheater Tower
5. Kiln
6. Coal Storage
7. Coal Mill
8. Clinker Cooler
9. Clinker Silos
10. Limestone and Gypsum Storage Building
11. Finish Mill
12. Cement Silos

Selected Model Options

The regulatory default dispersion option was selected, which means that none of the following non-default options were utilized:

- Gradual plume rise
- No stack-tip downwash
- Bypass the calms processing routine
- No buoyancy-induced dispersion
- Missing data processing routine

The rural dispersion coefficient was selected, and no plume depletion due to wet or dry removal was selected.

Source Emission Information

Eighteeen (18) Emission points (17 point sources and one area source) were used for PM10 modeling. One point source (E21) was used for $SO_2$, NOx, and CO modeling. The following table shows the point source emission information for the PM10 modeling:

| ID | Name | X | Y | Q | H | T | V | D |
|---|---|---|---|---|---|---|---|---|
| E21 | Kiln/raw mill | 321424.48 | 3315869.89 | 2.26 | 76.2 | 369.26 | 14.15 | 2.87 |
| E28 | Recycle | 321419.39 | 3315900.42 | 0.02 | 21.9 | 373.15 | 19.41 | 0.3 |
| G07 | Recycle | 321413.91 | 3315908.25 | 0.11 | 73.4 | 366.48 | 20.05 | 0.67 |
| H08 | Recycle | 321408.83 | 3315886.33 | 0.02 | 15.85 | 366.48 | 19.41 | 0.3 |
| K15 | Clinker cooler | 321430.74 | 3315779.1 | 1.44 | 60.04 | 498.21 | 14.7 | 2.74 |
| L03 | Cooler disch. | 321416.65 | 3315811.58 | 0.02 | 11.28 | 422.04 | 19.41 | 0.3 |
| L06 | Clinker silos | 321411.17 | 3315745.84 | 0.03 | 57.91 | 422.04 | 21.39 | 0.34 |
| M08 | Clinker disch. | 321414.3 | 3315694.96 | 0.03 | 0.91 | 373.15 | 21.39 | 0.34 |
| N91 | Finish mill | 321424.09 | 3315641.74 | 0.04 | 13.41 | 366.48 | 19.81 | 0.43 |
| N93 | Mill separator | 321412.74 | 3315646.82 | 0.99 | 38.71 | 343.15 | 14.79 | 2.29 |
| N94 | Finish mill | 321422.52 | 3315667.57 | 0.24 | 38.71 | 383.15 | 14.16 | 1.22 |
| Q14 | Cement load | 321487.88 | 3315630 | 0.02 | 9.14 | 338.71 | 19.41 | 0.3 |
| Q17 | Cement load | 321487.1 | 3315644.87 | 0.02 | 9.14 | 338.71 | 19.41 | 0.3 |
| Q25 | Cement silos | 321481.62 | 3315640.95 | 0.09 | 57.91 | 338.71 | 19.41 | 0.61 |
| Q26 | Cement silos | 321482.01 | 3315633.52 | 0.09 | 57.91 | 338.71 | 19.41 | 0.61 |
| R12 | Bagging | 321519.58 | 3315612.39 | 0.09 | 11.28 | 338.71 | 19.41 | 0.61 |
| S21 | Coal bin | 321437 | 3315810.8 | 0.02 | 19.2 | 338.71 | 20.22 | 0.24 |

Where:

**X** and **Y** are in meters, Zone 17 UTM coordinates
**Q** is particulate matter (PM10) emission rate in grams/second
**H** is stack height in meters
**T** is stack gas exit temperature in degrees Kelvin
**V** is stack gas exit velocity in meters/second
**D** is stack inside diameter in meters

The emission rate of PM10 for the kiln/raw mill is equal to 0.11 lb/ton of dry feed. The emission rate of PM10 for the clinker cooler is equal to 0.07 lb/ton of dry feed. The emission rate used for NOx (45.89 g/s) is equal to 3.8 lb/ton of clinker, which is the proposed temporary NOx emission rate. The emission rate used for $SO_2$ (3.38 g/s) is equal to 0.28 lb/ton of clinker. . The emission rate used for CO (43.47 g/s) is equal to 3.6 lb/ton of clinker.

Attached please find replacement application pages, reflecting updated point source information. The facility will be equipped with two ESPs (kiln and cooler) and 16 baghouses. There are 17 point sources as the baghouse for the coal mill shares a common stack with the clinker cooler ESP.

| | |
|---|---|
| 9. Actual Volumetric Flow Rate: **See Table** | acfm |
| 10. Percent Water Vapor : **See Table** | % |
| 11. Maximum Dry Standard Flow Rate: **See Table** | dscfm |
| 12. Nonstack Emission Point Height: **NA** | feet |
| 13. Emission Point UTM Coordinates:<br>Zone: East (km): North (km): | |
| 14. Emission Point Comment (limit to 200 characters): | |

| | HEIGHT FT. | DIAM. FT. | TEMP. °F | ACFM | H20 | DSCFM |
|---|---|---|---|---|---|---|
| **E-28** | 72 | 1.0 | 212 | 3,000 | 2% | 2310 |
| **G-07** | 241 | 2.2 | 200 | 15,000 | 2% | 11760 |
| **H-08** | 52 | 1.0 | 200 | 3,000 | 2% | 2352 |
| | | | | | **Total =** | **16422** |

## H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Pollutant Detail Information: Pollutant 1 of 2**

| | | |
|---|---|---|
| 1. Pollutant Emitted: **PM** | | |
| 2. Total Percent Efficiency of Control: | | % |
| 3. Potential Emissions: | **1.41** lb/hour | **6.2** tons/year |
| 4. Synthetically Limited?<br>[ ] Yes [ **X** ] No | | |
| 5. Range of Estimated Fugitive/Other Emissions:<br>[ ] 1 [ ] 2 [ ] 3 | | _______ to _______ tons/year |
| 6. Emission Factor: **0.01 gr/dscf**<br>Reference: **Vendor guarantee** | | |
| 7. Emissions Method Code:<br>[**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 | | |
| 8. Calculation of Emissions (limit to 600 characters):<br><br>**16,422 dscfm x 0.01 gr/dscf x 60 min/hr x 1.0 lb/7000 grains = 1.41 lb/hr**<br><br>**1.41 lb/hr x 8760 hr/yr x 1.0 ton/2000 lb. = 6.2 tons/year** | | |
| 9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): | | |

**Pollutant Detail Information: Pollutant 2 of 2**

| | |
|---|---|
| 1. Pollutant Emitted: **PM10** | |
| 2. Total Percent Efficiency of Control: | % |
| 3. Potential Emissions: **1.20** lb/hour | **5.3** tons/year |
| 4. Synthetically Limited?<br>[ ] Yes [ **X** ] No | |
| 5. Range of Estimated Fugitive/Other Emissions:<br>[ ] 1 [ ] 2 [ ] 3 | _______ to _______ tons/year |
| 6. Emission Factor: **85% of PM**<br>Reference: **AP-42, 5th Edition, Table 11.6-5** | |
| 7. Emissions Method Code:<br>[X] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 | |
| 8. Calculation of Emissions (limit to 600 characters):<br><br>**0.85 x 16,422 dscfm x 0.01 gr/dscf x 60 min/hr x 1.0 lb/7000 grains = 1.20 lb/hr**<br><br>**1.20 lb/hr x 8760 hr/yr x 1.0 ton/2000 lb. = 5.3 tons/year** | |
| 9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): | |

| | |
|---|---|
| 9. Actual Volumetric Flow Rate: **See Table** | acfm |
| 10. Percent Water Vapor : **See Table** | % |
| 11. Maximum Dry Standard Flow Rate: **See Table** | dscfm |
| 12. Nonstack Emission Point Height: **NA** | feet |
| 13. Emission Point UTM Coordinates:<br>Zone: East (km): North (km): | |
| 14. Emission Point Comment (limit to 200 characters): | |

| | HEIGHT FT. | DIAM. FT. | TEMP. °F | ACFM | H20 | DSCFM |
|---|---|---|---|---|---|---|
| **L-03** | 37 | 1.0 | 300 | 3,000 | 2% | 2043 |
| **L-06** | 190 | 1.1 | 300 | 4,000 | 2% | 2723 |
| **M-08** | 3 | 1.1 | 212 | 4,000 | 2% | 3080 |
| **N-93** | 127 | 7.5 | 158 | 128,600 | 2% | 107674 |
| **N-94** | 127 | 4.0 | 230 | 35,000 | 2% | 26247 |
| **N-91** | 44 | 1.4 | 200 | 6,000 | 2% | 4704 |
| **Q-14** | 30 | 1.0 | 150 | 3,000 | 2% | 2545 |
| **Q-17** | 30 | 1.0 | 150 | 3,000 | 2% | 2545 |
| **Q-25** | 190 | 2.0 | 150 | 12,000 | 2% | 10179 |
| **Q-26** | 190 | 2.0 | 150 | 12,000 | 2% | 10179 |
| **R-12** | 37 | 2.0 | 150 | 12,000 | 2% | 10179 |
| | | | | | **Total =** | **182098** |

## H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
## (Regulated Emissions Units Only - Emissions Limited Pollutants Only)

**Pollutant Detail Information:** **Pollutant 1 of 2**

| | | |
|---|---|---|
| 1. Pollutant Emitted: **PM** | | |
| 2. Total Percent Efficiency of Control: | | % |
| 3. Potential Emissions: | **15.61** lb/hour | **68.4** tons/year |
| 4. Synthetically Limited?<br>[ ] Yes [ **X** ] No | | |
| 5. Range of Estimated Fugitive/Other Emissions:<br>[ ] 1 [ ] 2 [ ] 3 | | _______ to _______ tons/year |
| 6. Emission Factor: **0.01 gr/dscf**<br>Reference: **Vendor guarantee** | | |
| 7. Emissions Method Code:<br>[X] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 | | |
| 8. Calculation of Emissions (limit to 600 characters):<br><br>**182,098 dscfm x 0.01 gr/dscf x 60 min/hr x 1.0 lb/7000 grains = 15.61 lb/hr**<br><br>**15.61 lb/hr x 8760 hr/yr x 1.0 ton/2000 lb. = 68.4 tons/year** | | |
| 9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): | | |

**Pollutant Detail Information:** **Pollutant 2 of 2**

| | | |
|---|---|---|
| 1. Pollutant Emitted: **PM10** | | |
| 2. Total Percent Efficiency of Control: | | % |
| 3. Potential Emissions: | **13.27** lb/hour | **58.1** tons/year |
| 4. Synthetically Limited?<br>[ ] Yes [ **X** ] No | | |
| 5. Range of Estimated Fugitive/Other Emissions:<br>[ ] 1 [ ] 2 [ ] 3 | | _______ to _______ tons/year |
| 6. Emission Factor: **85% of PM**<br>Reference: **AP-42, 5th Edition, Table 11.6-5** | | |
| 7. Emissions Method Code:<br>[**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 | | |
| 8. Calculation of Emissions (limit to 600 characters):<br><br>**85% x 182,098 dscfm x 0.01 gr/dscf x 60 min/hr x 1.0 lb/7000 grains = 13.27 lb/hr**<br><br>**13.27 lb/hr x 8760 hr/yr x 1.0 ton/2000 lb. = 58.1 tons/year** | | |
| 9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): | | |

| | |
|---|---|
| 9. Actual Volumetric Flow Rate: **See Table** | acfm |
| 10. Percent Water Vapor : **See Table** | % |
| 11. Maximum Dry Standard Flow Rate: **See Table** | dscfm |
| 12. Nonstack Emission Point Height: **NA** | feet |
| 13. Emission Point UTM Coordinates:<br>Zone: East (km): North (km): | |
| 14. Emission Point Comment (limit to 200 characters):<br><br>**Note: Emissions from the coal mill (S-17) are ducted to a common stack with the clinker cooler ESP (K-15).** | |

| | HEIGHT FT. | DIAM. FT. | TEMP. °F | ACFM | H20 | DSCFM |
|---|---|---|---|---|---|---|
| **S-17** | 197 | 9.0 | 150 | 24,000 | 6.5% | 19423 |
| **S-21** | 63 | 0.8 | 150 | 2,000 | 2% | 1697 |
| | | | | | **Total =** | **21,120** |

## H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
### (Regulated Emissions Units Only - Emissions Limited Pollutants Only)

**Pollutant Detail Information: Pollutant 1 of 2**

| | | |
|---|---|---|
| 1. Pollutant Emitted: **PM** | | |
| 2. Total Percent Efficiency of Control: | | % |
| 3. Potential Emissions: | **1.81** lb/hour | **7.9** tons/year |
| 4. Synthetically Limited?<br>[ ] Yes [X] No | | |
| 5. Range of Estimated Fugitive/Other Emissions:<br>[ ] 1 [ ] 2 [ ] 3 | | _______ to _______ tons/year |
| 6. Emission Factor: **0.01 gr/dscf**<br>Reference: **Vendor guarantee** | | |
| 7. Emissions Method Code:<br>[X] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 | | |
| 8. Calculation of Emissions (limit to 600 characters):<br>**21,120 dscfm x 0.01 gr/dscf x 60 min/hr x 1.0 lb/7000 grains = 1.81 lb/hr**<br>**1.81 lb/hr x 8760 hr/yr x 1.0 ton/2000 lb. = 7.9 tons/year** | | |
| 9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): | | |

**Pollutant Detail Information: Pollutant 2 of 2**

| | |
|---|---|
| 1. Pollutant Emitted: **PM10** | |
| 2. Total Percent Efficiency of Control: | % |
| 3. Potential Emissions: **1.81** lb/hour | **7.9** tons/year |
| 4. Synthetically Limited?<br>[ ] Yes [X] No | |
| 5. Range of Estimated Fugitive/Other Emissions:<br>[ ] 1 [ ] 2 [ ] 3 | _______ to _______ tons/year |
| 6. Emission Factor: **0.01 gr/dscf: PM10 assumed equal to PM**<br>Reference: **Vendor guarantee** | |
| 7. Emissions Method Code:<br>[X] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 | |
| 8. Calculation of Emissions (limit to 600 characters):<br><br>**21,120 dscfm x 0.01 gr/dscf x 60 min/hr x 1.0 lb/7000 grains = 1.81 lb/hr**<br><br>**1.81 lb/hr x 8760 hr/yr x 1.0 ton/2000 lb. = 7.9 tons/year** | |
| 9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): | |

PROJECT NAME :

**FENCELINE RECEPTORS**
**Plant Components**


| COMMENTS : | SOURCES : | COMPANY NAME : | |
|---|---|---|---|
| Coordinate System is meters, UTM Zone 17 | 0 | Koogler & Associates | |
| | RECEPTORS : 216 | MODELER : Steve Cullen | PROJECT NO. : |
| | | DATE : 2/19/99 | |

Suwannee American Cement

TABLE OF APPROXIMATE DIMENSIONS FOR MAJOR COMPONENTS

| UNIT NAME | DIMENSIONS IN FT. |
|---|---|
| RAW MATERIAL STORAGE | 150 X 808 |
| ROLLER MILL | 73 X 91 |
| KILN / MILL BAGHOUSE | 40 X 74 |
| MAIN STACK | DIA = 9 |
| HOMOGENIZING SILO | DIA = 49 |
| PREHEATER & KILN FEED | 68 X 53 |
| CLINKER COOLER | 61 X 91 |
| CLINKER COOLER BAGHOUSE | 32 X 59 |
| CLINKER STORAGE SILOS | DIA = 76 |
| ADDITIVE STORAGE | 102 X 82 |
| CEMENT STORAGE SILOS | DIA = 48 |
| PACKING PLANT | DIA = 76 |
| COAL / COKE UNLOADING | 14 X 50 |
| COAL / COKE STORAGE | 114 X 83 |
| COAL / COKE STORAGE BINS | DIA = 15 |
| COAL MILL | DIA = 11 |
| COAL MILL DUST COLLECTOR | 37 X 21 |
| CLINKER COOLER EXHAUST STACK | DIA = 7 |
| OFFICE | 40 X 40 |
| WAREHOUSE / MAINTENANCE BLDG. | 112 X 80 |
| LEACH FIELD | 139 X 124 |

| | EMISSION POINTS | EXHAUST ELEVATION |
|---|---|---|
| A | KILN / MILL STACK | 318' - 0" |
| B | AEROPOL to BLENDING SILO | 120' - 0" |
| C | TOP of BLENDING SILO | 310' - 0" |
| D | AEROPOL to PREHEATER | 115' - 0" |
| E | SEPERATOR VENT FINISH MILL | 182' - 0" |
| F | FINISH MILL VENT | 182' - 0" |
| G | EQUIPMENT VENT | 110' - 0" |
| H | CLINKER COOLER VENT STACK | 253' - 0" |
| J | CLINKER COOLER DISCHARGE & BREAKER | 100' - 0" |
| K | TOP of CLINKER SILOS | 250' - 0" |
| L | CLINKER / GYPSUM FEEDER | 80' - 0" |
| M | CEMENT SILO VENT | 270' - 0" |
| N | CEMENT SILO VENT | 270' - 0" |
| P | CEMENT LOAD OUT | 110' - 0" |
| Q | CEMENT LOAD OUT | 110' - 0" |
| R | PACKING PLANT | 210' - 0" |
| S | COAL MILL VENT | 160' - 0" |
| T | COAL MILL BIN VENT | 170' - 0" |

N

GRAPHIC SCALE

0 25 50 100

SCALE IN FEET
1"=50'

LEGEND

1. RAW MATERIAL TRANSPORT FROM QUARRY
2. RAW MATERIAL STORAGE
3. RECLAIMER
4. RAW MATERIAL TRANSPORT
5. RAW MATERIAL TRANSPORT TO ROLLER MILL
6. ROLLER MILL
7. ROLLER MILL EXHAUST FAN
8. KILN / MILL BAGHOUSE
9. BAGHOUSE EXHAUST FAN
10. MAIN STACK
11. HOMOGENIZING SILO
12. PREHEATER and KILN FED SYSTEM
13. KILN ID FAN
14. ROTARY KILN
15. CLINKER COOLER
16. CLINKER COOLER BAGHOUSE
17. BAGHOUSE EXHAUST FAN
18. CLINKER TRANSPORT
19. CLINKER STORAGE SILOS
20. CLINKER / ADDITIVE TRANSPORT TO FINISH MILL
21. LIMESTONE / GYPSUM STORAGE
22. ADDITIVE TRANSPORT
23. FINISH MILL
24. CEMENT TRANSPORT TO STORAGE SILOS
25. CEMENT STORAGE SILOS and LOAD OUT w/ SCALES
26. PACKING PLANT
27. COAL / COKE UNLOADING
28. COAL / COKE TRANSPORT
29. COAL / COKE STORAGE
30. COAL / COKE STORAGE BINS
31. COAL MILL
32. COAL MILL DUST COLLECTOR
33. CLINKER COOLER EXHAUST STACK
34. KILN SHELL SCANNER

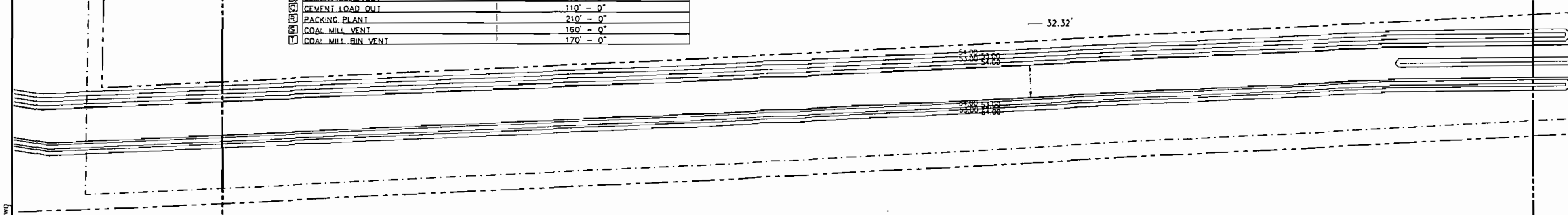
OVERHEAD ELECTRIC

PROPERTY BOUNDARY

75' PLANTED PINE BUFFER

MATCHLINE B-B

MATCHLINE C-C




| LTR. | DATE | REVISIONS | BY | APPRO. |
|---|---|---|---|---|

DESIGNED FAD
DRAWN TEC
CHECKED FAD
F.A. DARABI, P.E.
PROJECT ENGINEER

**DARABI AND ASSOCIATES INC.**
730 Northeast Waldo Road Suite A · Gainesville, Florida 32641 · (352) 376-6533

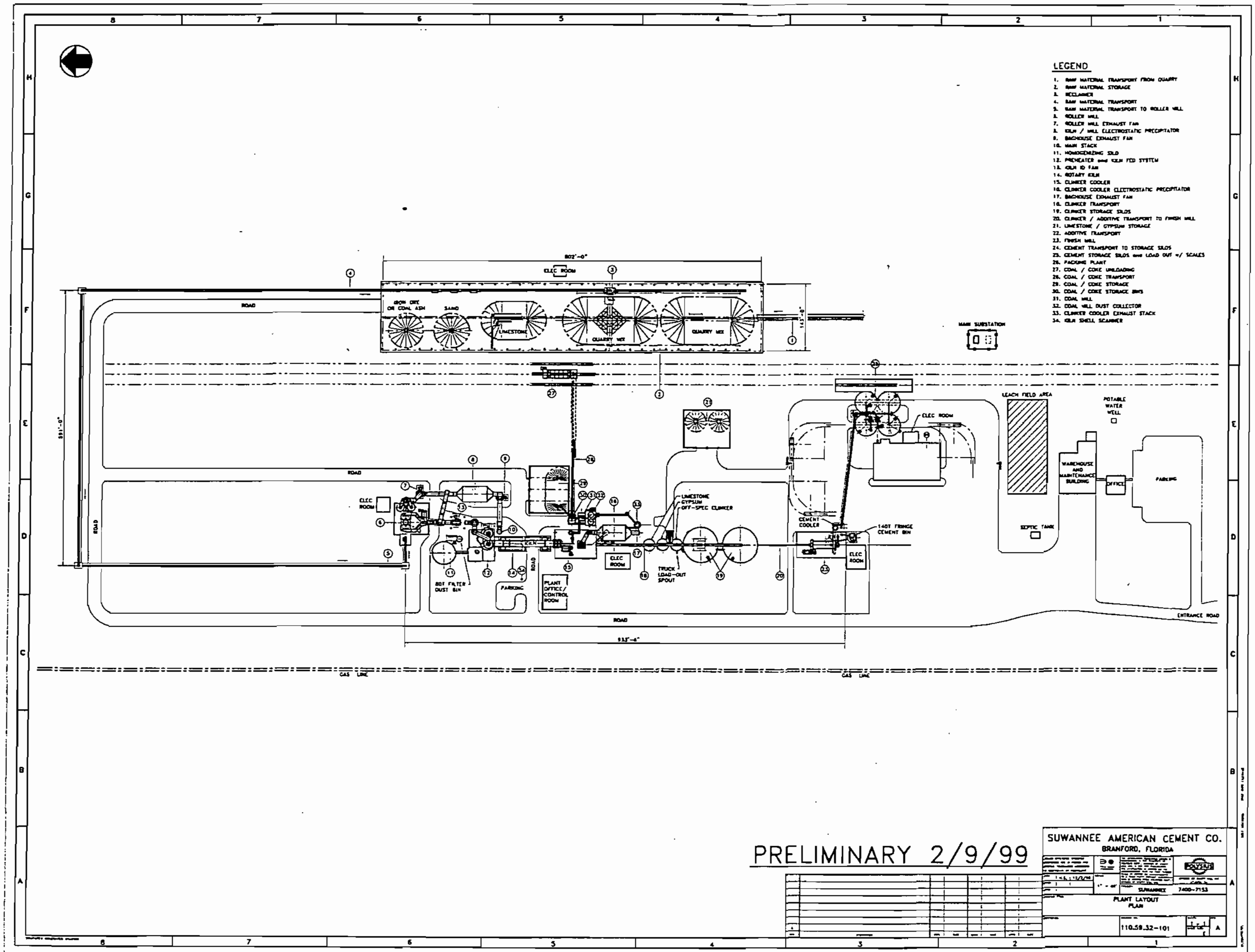
SUWANNEE AMERICAN CEMENT Co
BRANFORD PLANT

ACCESS ROAD

APPROVED FOR D&A BY
F.A. DARABI, P.E.
REG. PROF. ENGINEER

DATE NOV 1996
SCALE 1"=50'
PROJECT NO. 04100-323-C
DWG. NO.

01/08/99 08:47 ABG 323plan-50sc.dwg


LEGEND
1. RAW MATERIAL TRANSPORT FROM QUARRY
2. RAW MATERIAL STORAGE
3. RECLAIMER
4. RAW MATERIAL TRANSPORT
5. RAW MATERIAL TRANSPORT TO ROLLER MILL
6. ROLLER MILL
7. ROLLER MILL EXHAUST FAN
8. KILN / MILL ELECTROSTATIC PRECIPITATOR
9. BAGHOUSE EXHAUST FAN
10. MAIN STACK
11. HOMOGENIZING SILO
12. PREHEATER and KILN FED SYSTEM
13. KILN ID FAN
14. ROTARY KILN
15. CLINKER COOLER
16. CLINKER COOLER ELECTROSTATIC PRECIPITATOR
17. BAGHOUSE EXHAUST FAN
18. CLINKER TRANSPORT
19. CLINKER STORAGE SILOS
20. CLINKER / ADDITIVE TRANSPORT TO FINISH MILL
21. LIMESTONE / GYPSUM STORAGE
22. ADDITIVE TRANSPORT
23. FINISH MILL
24. CEMENT TRANSPORT TO STORAGE SILOS
25. CEMENT STORAGE SILOS and LOAD OUT w/ SCALES
26. PACKING PLANT
27. COAL / COKE UNLOADING
28. COAL / COKE TRANSPORT
29. COAL / COKE STORAGE
30. COAL / COKE STORAGE BINS
31. COAL MILL
32. COAL MILL DUST COLLECTOR
33. CLINKER COOLER EXHAUST STACK
34. KILN SHELL SCANNER
ROAD
ENTRANCE ROAD
GAS LINE
MAIN SUBSTATION
LEACH FIELD AREA
POTABLE WATER WELL
WAREHOUSE AND MAINTENANCE BUILDING
OFFICE
PARKING
SEPTIC TANK
ELEC ROOM
PLANT OFFICE/ CONTROL ROOM
TRUCK LOAD-OUT SPOUT
LIMESTONE GYPSUM OFF-SPEC CLINKER
CEMENT COOLER
140T FRINGE CEMENT BIN
80T FILTER DUST BIN
QUARRY MIX
LIMESTONE
SAND
IRON ORE OR COAL ASH
802'-0"
533'-0"
PRELIMINARY 2/9/99
SUWANNEE AMERICAN CEMENT CO.
BRANFORD, FLORIDA
POLYSIUS
SUWANNEE
7400-7153
PLANT LAYOUT PLAN
110.59.32-101
A

17. The emission sources used for both the NAAQS and PSD compliance modeling were selected based on the 20D rule. This rule does not consider the additive effects of a number of sources located in the same general location. Review of the 20D rule eliminated sources reveals a few NOx and many $PM_{10}$ sources that may need to be included in the impact modeling emission inventories. In addition, the application of the 20D rule starts at the edge of the significant impact area (7 km in this case) instead of at the center of the facility.

*Response:*

All inventory sources for PM10 and NOx with suitable information in the Department-provided source list were modeled with the facility. For PM10, 138 additional sources were modeled with the 18 Suwannee American Cement sources. The first-high concentrations are used in the table.

| PM10 Modeling Results with all Inventory Sources | | |
|---|---|---|
| Year & Avg. Period | Source-Alone, $\mu g/m^3$ | Source + Inventory |
| 1989, Annual | 1.87 | 2.90 |
| 1989, 24-hour | 9.86 | 13.12 |
| | | |
| 1990, Annual | 1.76 | 2.89 |
| 1990, 24-hour | 9.16 | 11.04 |
| | | |
| 1991, Annual | 1.75 | 2.71 |
| 1991, 24-hour | 12.01 | 13.08 |
| | | |
| 1992, Annual | 1.71 | 2.61 |
| 1992, 24-hour | 9.68 | 10.91 |
| | | |
| 1993, Annual | 1.73 | 2.69 |
| 1993, 24-hour | 11.92 | 12.47 |

For NOx, 43 additional sources were modeled with the one (1) Suwannee American Cement source. The first-high concentrations are used in the table.

| NOx Modeling Results with all Inventory Sources | | |
|---|---|---|
| Year & Avg. Period | Source-Alone, $\mu g/m^3$ | Source + Inventory |
| 1989, Annual | 2.05 | 3.33 |
| | | |
| 1990, Annual | 2.52 | 3.88 |
| | | |
| 1991, Annual | 2.08 | 3.43 |
| | | |
| 1992, Annual | 2.12 | 3.31 |
| | | |
| 1993, Annual | 2.13 | 3.50 |

18. Regarding secondary emissions, the PSD application does not address any increase in quarry production due to the operation of the Portland cement facility. Any increase in quarry emissions associated solely with the operation of the cement plant must be included in the cement company's PSD air quality impact assessment.

***Response:***

The estimated PM10 emissions from the quarry production due to the operation of the cement plant were addressed in the permit application. The quarry emissions associated with the operation of the cement plant have been addressed in the air quality impact assessment.

The quarry emissions were modeled as an area source of PM10:

| Name | X | Y | Q | Lx | Ly | Vol |
|---|---|---|---|---|---|---|
| QUARRY | 321654 | 3315618 | 1.24E-7 | 402 | 402 | 969624 |

Where:

**X** is the east-west coordinate for the southwest corner of the quarry
**Y** is the north-south coordinate for the southwest corner of the quarry
**Q** is the area source particulate matter emission rate in grams/second/$m^2$
**Lx** is the length of the X-side of the quarry in meters
**Ly** is the length of the Y-side of the quarry in meters
**Vol** is the volume of the open pit in $m^3$ (6.0 meter depth)

19. The PSD application does not provide specific modeling emission information associated with the cement company's operation. The individual emission sources for each applicable pollutant should be provided along with the location, emission rates, and stack/vent exit variables (e.g., exit temperature, velocity, etc.) for each appropriate level of operation (e.g., 50%, 75% and 100% loads). Where applicable, the emission rates and exit variables should be provided for each fuel source. The basis for each pollutant emission rate should be provided.

***Response:***

This information is provided with the response to Item 16. Only 100% operational load was modeled. Typical operation will approach 100% load (see response to Item 11). Emission rates and exit variables are considered to be independent of fuel source.

The basis for each emission rate was provided in the application. For this project, the emission rates used in modeling were those proposed as BACT in the application or suggested by the Department in the information request letter (PM10).

The emission rate of PM10 for the kiln/raw mill is equal to 0.11 lb/ton of dry feed. The emission rate of PM10 for the clinker cooler is equal to 0.07 lb/ton of dry feed. The emission rate used for NOx (45.89 g/s) is equal to 3.8 lb/ton of clinker, which is the proposed temporary NOx emission rate. The emission rate used for $SO_2$ (3.38 g/s) is equal to 0.28 lb/ton of clinker. . The emission rate used for CO (43.47 g/s) is equal to 3.6 lb/ton of clinker.

20. Lennon Anderson of the Bureau of Air Regulation provided comments related to the MACT determination for the proposed facility. Please provide a proposed MACT pursuant to 40 CFR 63.43(d) and (e). Please provide a MACT analysis including any new, similar emission sources contacted (best performing source).

***Response:***

This response, in combination with the application and report, constitutes an application for a case-by-case MACT determination. 40 CFR 63.43(c) provides that the MACT emission limitation and requirements established shall be consistent with the principles established in 40 CFR 63.43(d) and supported by the information listed in 40 CFR 63.43(e).

The Administrator has proposed a relevant emission standard pursuant to section 112 of the Clean Air Act. This application for a MACT determination considered those MACT emission limitations and requirements of the proposed standard determination.

**APPLICATION FOR A CASE-BY-CASE MACT DETERMINATION**

**PER SECTION 112(g), CAAA 1990**

**Introduction**

Suwannee Materials Corporation plans to construct a new dry-process, precalciner cement manufacturing kiln near Branford, Suwannee County, Florida.

This is subject to the Prevention of Significant Deterioration (PSD) application review process. The following background information will explain the justification for the submittal of this Application for Case-By-Case MACT determination for this project.

**Background**

On July 16, 1992, the USEPA published an initial list of source categories for which air toxics emission standards are to be promulgated. By November 2000, the USEPA must develop for all these categories rules that require the maximum achievable reduction in emissions, considering cost and other factors. These rules are generally known as "Maximum Achievable Control Technology" (MACT) standards.

In developing the 1990 Amendments to the Clean Air Act (CAAA), Congress recognized that the USEPA could not immediately issue MACT standards for all of the affected industries and that, as a result, there was a potential for significant new sources of toxic air emissions to remain uncontrolled for some time.

As a result, Section 112(g) of CAAA requires MACT-level control of air toxics when a new major source of any hazardous air pollutant (HAP) is constructed or reconstructed. The permitting authority must determine MACT for the source on a case-by-case basis when the USEPA has not yet issued a final (not proposed) relevant MACT standard.

On December 27, 1996, the USEPA promulgated regulations implementing certain provisions in Section 112(g) pertaining to construction and reconstruction. In accordance with FDEP policy effective July 1, 1997, all owners or operators of major sources of HAPs that are to be constructed or reconstructed in Florida will be required to install MACT.

The proposed project is a Portland cement plant, and the Section 112(d) MACT standard was promulgated March 24, 1998.

**Application Requirements for a Case-By-Case MACT Determination**

**Specified Control Technology**

The control technologies selected by Suwannee are:

- For inorganics (including metals) and dioxins/furans: Electrostatic Precipitator (ESP), with control device inlet temperature <400°F.
- For organics: Typically low levels of organic materials in raw materials, and the dry-process precalciner kiln design.

The ESP and the pyroprocessing system, when properly operated and maintained, will meet the MACT emission standards as determined according to the principles set forth in 40 CFR 63.43(d), and specifically 40 CFR 63.43(d)(4), as follows:

> *If the Administrator has either proposed a relevant emission standard pursuant to Section 112(d) or Section 112(h) of the Act or adopted a presumptive MACT determination for the source category which includes the constructed or reconstructed major source, then the MACT requirements applied to the constructed or reconstructed major source shall have considered those MACT emission limitations and requirements of the proposed standard or presumptive MACT determination.*

**Name and Address of Source**

Suwannee Materials Corporation
Branford Cement Plant
County Road 49 at US 27, east of Branford

Branford, Suwannee County, Florida

UTM Coordinates: Zone 17, 321.4 km East, 3315.9 km North

## Brief Description of the Source

Suwannee Materials Corporation plans to construct a new dry-process, precalciner cement manufacturing kiln near Branford, Florida. This kiln has a design capacity of 839,500 tons/year of clinker.

This source is included in the source category *Portland Cement Manufacturing.*

## Expected Commencement and Completion Dates for Construction

Expected commencement date for the construction of the source: June 1, 1999

Expected completion date for the construction of the source: June 1, 2001

## Anticipated Start-up Date

Assuming completion of construction on June 1, 2001, the start-up of plant operations is anticipated by September 1, 2001.

## HAP Emitted by the Source

The HAP potentially emitted from this source were determined from AP-42, and estimated emission rates were provided in the report.

## Federally Enforceable Emission Limitations Applicable to the Source

This project will be subject to federally-enforceable emission limitations imposed by NSPS, BACT and MACT. Federally-enforceable emission limitations are anticipated for:

- PM
- PM10
- $SO_2$
- NOx
- CO
- VOC/THC
- Dioxins/furans

## Maximum and Expected Utilization of Capacity of the Source

Typical utilization of capacity for cement kilns is estimated at approximately 85%, with a maximum utilization of 100%.

## Recommended MACT Emission Limitations for the Source

The recommended MACT emission limitations for the source are contained in the proposed NESHAP. These limitations were considered in the application and report.

## Selected Control Technology

An electrostatic precipitator (ESP) has been selected as the control technology for this plant. An ESP will be used to control emissions from the raw mill and the kiln, with a separate ESP for the clinker cooler. Baghouses will be used to control emissions from materials handling processes.

Technical information on the design, operation, size, and estimated control efficiency of the control technology (and the manufacturer's name, address, telephone number, and relevant specifications and drawings) are included with the response to Item 3.

References

*Guidance on the Implementation of the Section 112(g) Program*, FDEP--DARM, Howard Rhodes to Distribution List, July 28, 1997.

*40 CFR 63.43 -- Maximum Achievable Control Technology (MACT) Determinations for Constructed and Reconstructed Major Sources*, USEPA, promulgated December 27, 1996.

*Work Group Draft -- 1/3/97, Summary of Proposed Emission Limits for Affected Sources at Portland Cement Plants,* faxed from Joe Wood (USEPA) to Lennon Anderson (FDEP) on August 28, 1997. Tables 2, 3, 4.

*[Draft 2/14/97] Fact Sheet -- Proposed Air Toxics Regulation for Portland Cement Manufacturing Plants,* faxed from Joe Wood (USEPA) to Lennon Anderson (FDEP) on August 28, 1997.

*Clean Air Permits -- Manager's Guide to the 1990 Clean Air Act,* Thompson Publishing Group, 1991.

*AP-42 -- Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 11.6 -- Portland Cement Manufacturing, USEPA, January 1995.

*Emission Factor Documentation for AP-42 Section 11.6 -- Portland Cement Manufacturing,* Midwest Reassert Institute, May 1994.

*Role of Minor Elements in Cement Manufacture and Use,* Portland Cement Association, 1995.

*Summary of Emission Measurements under Baseline and Coal/TDF Firing Conditions -- Kiln No. 1, Florida Mining & Materials, Brooksville, Florida,* Koogler & Associates, May 4-5, 1993 and June 8-9, 1993.

21. In addition to addressing the previous comments from Mr. Anderson, please comment on the likely emissions of hydrogen chloride from the proposed process considering the design, fuels, and raw materials.

***Response:***

Hydrogen chloride emissions from the proposed process are likely. EPA data show HCl emissions from certain plants of less than 1 tpy, with ten plants reporting emissions of HCl greater than 10 tpy.

Analyses indicate that the ambient concentrations of HCl produced by emissions from existing kilns and in-line kiln/raw mills are below the health effects reference concentration for HCl.

No technologies that control HCl emissions have been identified that are currently being used by more than six percent of the cement kilns in the U.S. For this reason, there is no MACT floor for existing kilns. One technology considered as potential MACT for new kilns was an alkaline scrubber, since two kilns in the U.S. operate scrubbers to control sulfur emissions. However, these scrubbers are operated only intermittently . For this reason there is no MACT floor for new kilns.

Alkaline scrubbers were considered as a beyond-the-floor option for HCl control. Based on the costs of control and the emissions reductions that would be achieved, the Administrator determined that beyond-the-floor controls are not warranted. Therefore, there is no proposed emission limit for HCl from new and existing kilns and in-line kiln/raw mills.[1]

[1] Federal Register: March 24, 1998 (Volume 63, Number 56, Page 14181-14248)]. Proposed Rules. National Emission Standards for Hazardous Air Pollutants; Proposed Standards for Hazardous Air Pollutants Emissions for the Portland Cement Manufacturing Industry; Proposed Rule

22. The NPS commented to the Department that the applicant should re-evaluate the feasibility of applying SNCR to control NOx emissions from its proposed cement kiln. The NPS commented that the applicant incorrectly rejected SNCR by questioning its availability, by failing to document and compare estimated control costs, and by overstating environmental risks associated with the use of ammonia. The NPS suggested that the applicant provide well-documented costs for application of SNCR as well as a comparison to the costs of applying SNCR to the similar Great Star Cement facility. Please address these comments.

***Response:***

See Responses 6-8.

23. The NPS commented to the Department that the applicant did not perform visibility analyses to evaluate potential impacts to regional haze at Okefenokee or Chassahowitzka wildernesses. The NPS commented that the applicant incorrectly concluded that because predicted impacts to the Class I increments were less than significant, no air quality related values (AQRV) analyses were required. The NPS stated that increment analyses are independent of AQRV analyses; Class I increments were never intended to protect Class I AQRVs. Therefore, the applicant should perform regional haze analyses, following the recommendations of the Interagency Workgroup on Air Quality Modeling at: http://www.epa.gov/scram001/; "Model Support"; "6th Modeling Conference"; "IWAQM". Please address these comments.

***Response:*** Regional haze analyses were conducted for the Okefenokee, Chassahowitzka, and St. Marks wilderness areas. The analysis for St. Marks is included with the response to item 24. These analyses followed the recommendations of the Interagency Workgroup on Air Quality Modeling and also the guidance provided by NPS staff.

The primary purpose of this analysis is to identify regional haze impacts. For sources located more than 50 kilometers from a Class I area, the regional haze analysis is appropriate.

The primary sources of anthropogenically induced regional visibility degradation (also referred to as regional haze), measured as light extinction, are fine particles in the atmosphere. In the eastern U.S., these anthropogenic particles are composed primarily of sulfate ($SO_4$) compounds, organic compounds, and to a much lesser extent, nitrate ($NO_3$) compounds $SO_4$ has been identified as the primary constituent of visibility degradation in the eastern U.S. Therefore, it is critical to have estimates of $SO_4$ in order to estimate visibility impacts. Estimates of nitrates are also desirable. The methods are based upon analysis of ambient, speciated fine particulate data, correlated with visibility parameters.

The generally observed sulfate compound is ammonium sulfate $\{(NH_4)_2SO_4\}$, Particles composed of nitrate compounds usually take the form of ammonium nitrate $\{NH_4NO_3\}$. These compounds are generally not directly emitted from air pollutant sources, but are formed through a series of chemical reactions in the atmosphere. The gaseous emissions of oxides of sulfur and nitrogen ($SO_X$ and $NO_X$), ultimately react with natural and anthropogenic emissions of ammonia. In the presence of both $SO_4$ and $HNO_3$, $(NH_4)_2SO_4$ will be formed preferentially to $NH_4NO_3$.

In order to adequately account for the contribution to light extinction of either $(NH_4)_2SO_4$ or $NH_4NO_3$ the mass of these constituents and the relative humidity of the atmosphere in which these particles reside must be known. The most important constituents in these calculations are the concentrations of sulfate and the relative humidity. The calculations of the extinction due to primary fine particulates are assumed to be non-hygroscopic.[1]

## Method – Regional Haze Analysis

**I. Apply an appropriate air quality model to obtain 24-hour average concentrations of**

- $SO_2$
- NOx
- PM10

The ISC model was used to evaluate concentrations of PM10, NOx and $SO_2$ with respect to PSD Class I Area Significance levels. These analyses were documented in the original Report. Further analysis regarding regional haze and other visibility included St. Marks.

The concentrations for the highest 24-hour average sulfate impact were determined by the significance review. The receptor location and date are also obtained. The PM10 concentration at that receptor and date was retrieved. The NOx annual average provided by the significance review is used and multiplied by a factor of 5.0 to estimate 24-hour average impacts.[2]

II. **Multiply the 24-hour average estimated concentrations of $SO_2$ and $NO_X$ by the ratios of the molecular weights of the secondary species to the primary species.**

- The molecular weights of $SO_2$ and $SO_4$ are 64 and 96. Multiplying the concentration of $SO_2$ by 1.5 will yield the concentration of $SO_4$
- The molecular weights of $NO_2$ and $NO_3$ are 46 and 62. Multiplying the concentration of $NO_2$ by 1.35 will yield the concentration of $NO_3$.

III. **Correct the mass concentrations of SO and NO for the presence of $NH_4$. The PM10 is <u>not</u> be corrected for $NH_4$.**

- Multiply the mass concentration of SO by 1.375 to obtain $(NH_4)_2SO_4$
- Multiply the mass concentration of NO by 1.29 to obtain $NH_4NO_3$

IV. **Obtain an estimate of relative humidity appropriate for all receptors.**

Guidance provided by John Notar (NPS-AQD) states to use 80% relative humidity for Florida. The relative humidity correction factor (*f(RH)*) is 3.5.[3]

V. **Calculate the extinction based on the following equation.**

$$b_{ext} = 0.003 \times concentration \times f(RH)$$

where

$b_{ext}$ = The extinction coefficient due to particle scattering ($km^{-1}$)
0.003 = a nominal dry scattering efficiency
Concentration of $(NH_4)_2SO_4$, $NH_4NO_3$ and PM10 in $\mu g/m^3$
*f(RH)* = The RH correction factor.

To calculate the extinction due to PM10, use the above equation, but set the relative humidity correction factor (*f(RH)*) equal to 1.

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[1] IWAQM Guidance on
[2] User's Guides for CTSCREEN and TSCREEN models.
[3] Facsimile memorandum. John Notar (NPS-AQD) to Pradeep Raval (Koogler & Associates). March 29, 1995.

**VI. Obtain a value for the background visual range and calculate background extinction ( $b_{bgd}$)**

Guidance provided by John Notar (NPS-AQD) states to use 65 km for the background visual range. Background extinction ($b_{bgd}$) is calculated by:

**$b_{bgd}$ = 3.912 divided by background visual range = 3.912/65 = 0.0602**

**VII. Calculate change in deciviews (dV) by the following equation:**

$$\Delta dV = \ln ( 1 + b_{ext}/ b_{bgd} ) \times 10$$

NPS-AQD personnel stated recently that less than 0.5 dV change is acceptable.

**Chassahowitzka NWA -- Regional Haze Analysis**

The maximum 24-hour average $SO_2$ concentration was calculated to be 0.0314 μg/m$^3$ [February 6, 1993 @ UTM Zone 17, 331.5 km E, 3183.4 km N].

The PM10 concentration at the same location and date was calculated to be 0.0407 μg/m$^3$ and the NOx concentration was calculated to be 0.0665 μg/m$^3$.

Multiply the concentration of $SO_2$ by 1.5 will yield the concentration of $SO_4$.
0.0314 μg/m$^3$ x 1.5 = 0.0471 μg/m$^3$

Multiply the mass concentration of $SO_4$ by 1.375 to obtain $(NH_4)_2SO_4$
0.0471 μg/m$^3$ x 1.375 = 0.0648 μg/m$^3$

Multiply the concentration of $NO_2$ by 1.35 will yield the concentration of $NO_3$.
0.0665 μg/m$^3$ x 1.35 = 0.0898 μg/m$^3$

Multiply the mass concentration of $NO_3$ by 1.29 to obtain $NH_4NO_3$
0.0898 μg/m$^3$ x 1.29 = 0.1158 μg/m$^3$

Calculate the extinction by the following equation:

$b_{ext} = 0.003 \times concentration \times f(RH)$

| $(NH_4)_2SO_4$ | $NH_4NO_3$ | PM10 |
|---|---|---|

= [ 0.003 x 0.0648 x 3.5] + [ 0.003 x 0.1158 x 3.5] + [ 0.003 x 0.0407 x 1.0]

= 0.0007 + 0.0012 + 0.0001 = 0.0020

Calculate change in deciviews (dV) by the following equation:

$\Delta dV = \ln(1 + b_{ext}/b_{bgd}) \times 10 = \ln(1 + 0.0020/0.0602) \times 10 =$ 0.33 dV Change

**Okefenokee NWA -- Regional Haze Analysis**

The maximum 24-hour average $SO_2$ concentration was calculated to be 0.0400 $\mu g/m^3$ [February 19, 1990 @ UTM Zone 17, 359.4 km E, 3384.2 km N].

The PM10 concentration at the same location and date was calculated to be 0.0786 $\mu g/m^3$ and the NOx concentration was calculated to be 0.0883 $\mu g/m^3$.

Multiply the concentration of $SO_2$ by 1.5 will yield the concentration of $SO_4$.
0.0400 $\mu g/m^3$ x 1.5 = 0.0600 $\mu g/m^3$

Multiply the mass concentration of $SO_4$ by 1.375 to obtain $(NH_4)_2SO_4$
0.0600 $\mu g/m^3$ x 1.375 = 0.0825 $\mu g/m^3$

Multiply the concentration of $NO_2$ by 1.35 will yield the concentration of $NO_3$.
0.0883 $\mu g/m^3$ x 1.35 = 0.1192 $\mu g/m^3$

Multiply the mass concentration of $NO_3$ by 1.29 to obtain $NH_4NO_3$
0.1192 $\mu g/m^3$ x 1.29 = 0.1538 $\mu g/m^3$

Calculate the extinction by the following equation:

$b_{ext} = 0.003 \times \textit{concentration} \times f(RH)$

**$(NH_4)_2SO_4$** **$NH_4NO_3$** **PM10**
= [ 0.003 x 0.0825 x 3.5] + [ 0.003 x 0.1538 x 3.5] + [ 0.003 x 0.0786 x 1.0]

= 0.0009 + 0.0016 + 0.0002 = 0.0027

Calculate change in deciviews (dV) by the following equation:

$\Delta dV = \ln(1 + b_{ext}/b_{bgd}) \times 10 = \ln(1 + 0.0027/0.0602) \times 10 =$ <u>0.44 dV Change</u>

24. In addition to addressing the previous comments from the NPS for the Okefenokee or Chassahowitzka wildernesses, please address these issues for the St. Marks and Bradwell Bay wilderness areas, and perform an increment analysis and analysis of other AQRVs for these areas as well.

***Response:***

**St. Marks NWA -- Regional Haze Analysis**

The maximum 24-hour average $SO_2$ concentration was calculated to be 0.05228 $\mu g/m^3$ [February 6, 1993 @ UTM Zone 17, 331.5 km E, 3183.4 km N].

The PM10 concentration at the same location and date was calculated to be 0.09044 $\mu g/m^3$ and the NOx concentration was calculated to be 0.0883 $\mu g/m^3$.

Multiply the concentration of $SO_2$ by 1.5 will yield the concentration of $SO_4$.
0.05228 $\mu g/m^3$ x 1.5 = 0.0784 $\mu g/m^3$

Multiply the mass concentration of $SO_4$ by 1.375 to obtain $(NH_4)_2SO_4$
0.0784 $\mu g/m^3$ x 1.375 = 0.1078 $\mu g/m^3$

Multiply the concentration of $NO_2$ by 1.35 will yield the concentration of $NO_3$.
0.0883 $\mu g/m^3$ x 1.35 = 0.1192 $\mu g/m^3$

Multiply the mass concentration of $NO_3$ by 1.29 to obtain $NH_4NO_3$
0.1192 $\mu g/m^3$ x 1.29 = 0.1538 $\mu g/m^3$

Calculate the extinction by the following equation:

$b_{ext}$ = *0.003 x concentration x f(RH)*

**$(NH_4)_2SO_4$** **$NH_4NO_3$** **PM10**
= [ 0.003 x 0.1078 x 3.5] + [ 0.003 x 0.1538 x 3.5] + [ 0.003 x 0.09044 x 1.0]

= 0.0011 + 0.0016 + 0.0003 = 0.0030

Calculate change in deciviews (dV) by the following equation:

$\Delta dV = \ln(1 + b_{ext}/b_{bgd}) \times 10 = \ln(1 + 0.0030/0.0602) \times 10 =$ <u>0.49 dV Change</u>

**St. Marks NWA – PSD Incremental Analysis**

The concentrations of PM10, $SO_2$, and NOx at St. Marks are well below the significance thresholds. No further incremental analysis is warranted.

| Pollutant | Averaging Period | Max. Concentration µg/m³ | Significance Level µg/m³ |
|---|---|---|---|
| PM10 | Annual | 0.006 | 0.2 |
| | 24-hour | 0.142 | 0.3 |
| | | | |
| $SO_2$ | Annual | 0.003 | 0.1 |
| | 24-hour | 0.052 | 0.2 |
| | 3-hour | 0.300 | 1.0 |
| | | | |
| NOx | Annual | 0.042 | 0.1 |

**St. Marks NWA – Analysis of Other AQRVs**

No other AQRVs have been identified by the Federal Land Manager (FLM) for St. Marks.

## Bradwell Bay – Regional Haze Analysis

The Forest Service screening procedure states that visibility has been determined to be an important AQRV in all Class I areas except Bradwell Bay (FL).[1]

Rule 62-212.400(5)(e)(1)(c) requires an analysis of:

> The impairment to visibility, if any, which would occur in any Federal Class I area within 100 kilometers of the facility or modification, with the exception of the Bradwell Bay National Wilderness Area, as a result of emissions from the facility or modification. [emphasis added].

## Bradwell Bay – PSD Incremental Analysis

The concentrations of PM10, $SO_2$, and NOx at Bradwell Bay are well below the significance thresholds. No further incremental analysis is warranted.

| Pollutant | Averaging Period | Max. Concentration µg/m³ | Significance Level µg/m³ |
|---|---|---|---|
| PM10 | Annual | 0.004 | 0.2 |
| | 24-hour | 0.095 | 0.3 |
| | | | |
| $SO_2$ | Annual | 0.002 | 0.1 |
| | 24-hour | 0.045 | 0.2 |
| | 3-hour | 0.190 | 1.0 |
| | | | |
| NOx | Annual | 0.027 | 0.1 |

[1] Forest Service

**Bradwell Bay – Analysis of Other AQRVs**

The Forest Service has developed a list of AQRVs for Bradwell Bay. The list is included in Table 1.

All sensitive receptors for the flora AQRV reference visible ozone injury as the indicator. No levels of concern or critical loads have been identified by the FLM with respect to these other AQRVs.

# Table 24-1
# Bradwell Bay Wilderness

Air Quality Related Value Information

| AQRV Name | Sensitive Receptor Name | Sensitive Receptor Indicator Name | Unit Of Measure |
|---|---|---|---|
| FLORA | BLACKBERRY | OZONE INJURY VISIBLE FROM 6 FT | PERCENT |
| | STAGHORN SUMAC | OZONE INJURY VISIBLE FROM 6 FT | PERCENT |
| | SWEETGUM | OZONE INJURY VISIBLE FROM 6 FT | PERCENT |
| | T & E PLANT SPECIES | PRESENCE / ABSENCE | N/A |
| | YELLOW POPLAR | OZONE INJURY VISIBLE FROM 6 FT | PERCENT |
| ODOR | WILDERNESS USERS | UNNATURAL ODORS | N/A |
| SOILS | SURFACE SOILS | ACID NEUTRALIZING CAPACITY | MICROEQUIV. / LITER |
| | | BASE SATURATION | PERCENT |
| | | CATION EXCHANGE CAPACITY | MILLIEQUIV. / 100GMS |
| | | EXCHANGEABLE ALUMINUM | PARTS PER MILLION |
| | | EXCHANGEABLE CATIONS | PARTS PER MILLION |
| | | NITRATE | MILLIGRAMS PER LITER |
| | | SOIL PH | PH |
| | | SULFUR | PERCENT |

25. The segment description of the application for the in-line kiln/raw mill for natural gas usage shows the proposed maximum annual rate is equivalent to operating the pyroprocessing system continuously on natural gas. This is inconsistent with the segment comment that natural gas is to be used as a startup and supplemental fuel. Please comment. Also, please evaluate the feasibility of operating the pyroprocessing system exclusively on natural gas, or primarily on natural gas with coal and petcoke used for supplemental or backup fuels. Provide an estimate of emissions of all pollutants under these scenarios. Please provide an estimation of the number of truck trips that would be reduced by these scenarios considering the offset of coal and petcoke that must be delivered to the proposed plant site by truck.

***Response:***

According to Krupp Polysius, use of natural gas as a primary fuel (i.e., 100 percent of the fuel input to the main kiln burner, the kiln inlet burner and the precalciner burner) will result in about a 10 percent volume increase in the combustion products, an increase in the water vapor in the exhaust gas and, as a result, a decrease in the clinker production by as much as 20 percent. This production decrease is a product and financial penalty that Suwannee American cannot afford.

Total gas firing would lead to greater thermal NOx generation at the main kiln burner but lower fuel NOx. As a result, the net NOx emissions from the kiln burner will remain approximately the same as with coal firing (pounds of NOx per ton of clinker). The 20 percent capacity reduction would however result in a decrease in mass emission rate of NOx from the kiln burner.

Krupp Polysius does not have much experience with MSC in gas fired calciners. It is expected, however, that if Suwannee American was to switch to 100 percent gas firing at the kiln inlet burner and in the precalciner, the overall mass emission rate of NOx would stay about the same or decrease slightly (as a result of the 20 percent decrease in production). The pounds of NOx per ton of clinker is anticipated to be higher than with 100 percent coal firing.

The principal of MSC as applied to NOx reduction is the creation of a reducing zone (low oxygen in the presence of free radicals) between the kiln inlet in the upper stages of the precalciner. Firing natural gas at the kiln inlet burner and in the precalciner can be accomplished under starved oxygen conditions; however, natural gas combustion will not generate the free radicals that a fuel with more volatiles will generate (e.g., tires and coal).

The most practical mode of operation, if natural gas was considered as a fuel, would be the firing of 50-60 percent gas at the main kiln burner and with the remaining 40-50 percent of the total system heat input provided in the precalciner by coal or a mix of coal and tires. This mode of operation would allow the MSC system to operate most effectively as more free radicals and longer chain hydrocarbons are released from the combustion of tires and coal and from the combustion of natural gas.

For either of the scenarios (100 percent gas firing or a gas/coal/tires mix), the mass emission rate of NOx is expected to stay about the same as expected from coal/tire firing and the mass emission rates of $SO_2$ and CO are expected to be reduced somewhat. Reduced $SO_2$ and CO emissions are a result of the decreased production and not a lower $SO_2$ and CO emission rate per ton of clinker produced. There will be no significant reduction in $SO_2$ emission (pounds of $SO_2$ per ton of clinker) due to the firing of natural gas as $SO_2$ emissions from precalciner kilns are due to sulfur in the raw feed and not sulfur in the fuel.

In summary, the firing of 100 percent natural gas will result in a production decrease of approximately 20 percent. As a result of the reduced production, the $SO_2$ emissions (pounds per hour) and the CO emissions rate (pounds per hour) are expected to decrease. The emission rate of $SO_2$ and CO per ton of clinker produced are not expected to change. Even with the expected production decrease, the mass emission rate of NOx is not expected to decrease and the NOx emissions per ton of clinker are expected to increase. This is because of the decrease efficiency of the MSC system as a result of natural gas firing.

If the plant were to operate entirely on natural gas, approximately 14 round-trip truck trips per day (for coal/coke delivery) would be eliminated. Fourteen truck trips per day at a facility the size of the Suwannee American plant and on the highways serving the plant are not considered significant or excessive.

26. Please evaluate the feasibility of using low NOx burner technologies such as precessing gas jet burners (Gyro-Therm from Fuel and Combustion Technology, Inc.) or other burner technologies. Please provide a detailed cost analysis for these technologies in terms of overall and marginal cost effectiveness (annualized dollars/ton of nitrogen oxides removed) for NOx control using these technologies, including all references and assumptions.

***Response:***

Low NOx burner technology, as commonly used in power plants, has not been found effective in the cement industry. Krupp Polysius has installed and operated, at client's request, numerous "Low NOx" burners in cement kilns around the world. These burners are always the main burner and are commonly provided from Pillard (Rotaflam) or from KHD (Pyrojet). The only way these burners have demonstrated significant NOx reduction is through reduced heat output of the burner and the associated decrease in production. The quality of the clinker is dependent upon the quality of the main burner flame, consequently resulting in a short, compact, intense flame which generates thermal NOx. The best control method to reduce the thermal NOx in a precalciner kiln is to operate the calciner with reducing zones to reduce the NOx back to $N_2$. This is best accomplished with Multi-Stage Combustion. Krupp Polysius has no evidence of any main burner that appreciably reduces NOx without reducing capacity or that reduces the overall NOx emission of precalciner plants, as well as MSC.

27. The NPS has commented that Holnam Cement in Colorado is proposing a new cement plant using a wet scrubber at 85% efficiency to control $SO_2$ and has requested that you evaluate installation of a wet scrubber for your proposed project.

***Response:***

See responses to Item 5 and Item 21.

A press release from Holnam states that the installation of a scrubber at their Dundee, Michigan plant was to eliminate odors. The press release further states that the odors stem from the limestone raw material that contains oily compounds in the rock formation.

The raw materials (limestone) at the Suwannee American Cement plant have consistently low levels of organic materials, and essentially no pyritic sulfur. Very low emission rates of $SO_2$ are expected from this plant due to the alkaline environment of the pyroprocessing system.

The system and raw materials proposed for the Suwannee American Cement plant represent BACT for $SO_2$.

Department of
Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

February 16, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Joe Anderson, III
President
Suwannee American Cement Company, Inc.
PO Box 410
Branford, Florida 32008

Re: Additional Request for Additional Information
DEP File No. 1210465-001-AC (PSD-FL-259)
Proposed Portland Cement Plant

Dear Mr. Anderson:

The Department previously sent letters dated December 29, 1998 and January 8, 1999 requesting additional information required to make your application complete for an air construction permit for a Portland cement plant at US 27 at County Road 49, east of Branford. The Department has received additional comments from the National Park Service (NPS) regarding this application. Please also provide a response to the NPS comments. Should your response to any of the below items require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

1. The NPS has commented that Holnam Cement in Colorado is proposing a new Portland cement plant using a wet scrubber at 85% efficiency to control $SO_2$ and has requested that you evaluate installation of a wet scrubber for your proposed project.

The Department has also received a letter regarding phosphate mining wastes at or near your proposed project site. A copy of that letter is enclosed. Note that I contacted the Florida Department of Health's (DOH) office of Environmental Radiation Programs (407/297-2095) and spoke with Mr. Charlie Adams about this matter. Mr. Adams told me that waste from phosphate mining is often slightly radioactive (elevated gamma radiation) and that typically the only problem associated with such waste is radon accumulation in enclosed, unventilated structures. He also stated that DOH does not believe that there is scientific evidence that elevated gamma radiation is generally an environmental problem, but he does recommend that the property owner have the property surveyed for gamma radiation. Since this is a DOH matter, this information is being provided to you as a courtesy and should not be construed as a request of the Department.

Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. If there are any questions, please call me at 850/921-9519.

Sincerely,

Joseph Kahn, P.E.
New Source Review Section

/jk

Enclosure

cc: Mr. Frank Darabi, P.E.
Mr. Steve Cullen, P.E.
Mr. Gregg Worley, EPA
Mr. John Bunyak, NPS
Mr. Chris Kirts, NED
Mr. Jim Stevenson, DEP Ecosystem Mgmt.
Mr. Tom Workman, DEP Recreation & Parks
Ms. December McSherry
Mr. Svenn Lindskold
Mr. Tom Greenhalgh
Mr. Al Mueller
Mr. Dave Bruderly
Mr. J. Calvin Gaddy
Ms. Patrice Boyes, Esq.
Mr. Chris Bird, Alachua County DER
Ms. Kathy Cantwell
Mr. Chuck Clemons, Chairman, Alachua Co. Board of Co. Commissioners

Joe Kahn

JW

P.O. Box 147
St. James City, Fl. 33956

RECEIVED

JAN 14 1999

BUREAU OF
AIR REGULATION

BOARD OF COUNTY COMMISSIONERS
Suwannee County Offices
224 Pine Ave.
Live Oak, Fl. 32060

Ref: ANDERSON MINING COOP.
AND
SUWANNEE AMERICAN CEMENT CO. INC.

Please be advised property shown on applicant notice was in or very near a staging area used by T.A. Thompson's processing plant for hard rock phosphate. Proof of this would be high radiation count on said property. This operation was in late 1895 - 1918 era.

Slag from this operation would also be radioactive and should never be used for anything.

Use of that property for anything other than farming and lime rock mining is not in the best interest of the people of your county.

Please seek advice from the Radiation Division of Dept of Health, phone No. 800-543-8279,before taking action in this matter.

Sincerely,

J. Calvin Gaddy

cc:
Senator, Burt Saunders
Jax.office DEP
Tall. Dept.of Health

RECEIVED

DEC -7 1998

DEPT. OF ENV. PROTECTION
NORTHEAST DISTRICT - JAX

Is your RETURN ADDRESS completed on the reverse side?

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Joe Anderson, III, Pres.
Suwannee American Cement
PO Box 410
Branford, Fl 32008

4a. Article Number
P 265 659 422

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
2/26/99

5. Received By: *(Print Name)*

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X

PS Form **3811**, December 1994 102595-97-B-0179 **Domestic Return Receipt**

Thank you for using Return Receipt Service.

P 265 659 422

US Postal Service
## Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

| | |
|---|---|
| Sent to | Joe Anderson |
| Street & Number | Suwannee Ameri. |
| Post Office, State, & ZIP Code | Branford, Fl |
| Postage | $ |
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| TOTAL Postage & Fees | $ |
| Postmark or Date | 2-16-99 |

POD-Fl-259

PS Form **3800**, April 1995

Date: 02/10/1999 1:46:44 PM
From: Alvaro Linero TAL
Subject: FWD: Fwd:Suwannee Cement
To: Joseph Kahn TAL

See Park Sevice message. Al.

Date: 02/10/1999 8:50:19 AM
From: Ellen_Porter
Subject: Fwd:Suwannee Cement

Al, please see note below.

______________________Forward Header______________________
Subject: Suwannee Cement
Author: Don Shepherd
Date: 02/09/1999 12:11 PM

Ellen,

Since we submitted comments on Suwannee, I have learned that Holnam Cement in Colorado is proposing a new portland cement plant using a wet scrubber at 85% efficiency to control SO2. I suggest that we send along a message to FDEP requesting that Suwannee evaluate installation of a wet scrubber there.

Don

RFC-822-headers:
Received: from oriole.itc.nps.gov by EPIC66.DEP.STATE.FL.US (PMDF V5.1-4 #7204)
with ESMTP id <01J7KRFH5QWG002W6N@EPIC66.DEP.STATE.FL.US> for
linero_a@dep.state.fl.us; Wed, 10 Feb 1999 11:06:06 EST
Received: from ccmail.itd.nps.gov (ccmail.itd.nps.gov [165.83.216.134])
by oriole.itc.nps.gov (8.8.7/8.8.7) with SMTP id MAA06236 for
<linero_a@dep.state.fl.us>; Wed, 10 Feb 1999 12:12:38 -0500
Received: from ccMail by ccmail.itd.nps.gov
(IMA Internet Exchange 2.12 Enterprise) id 000DE13A; Wed,
10 Feb 1999 10:57:01 -0500
Content-description: cc:Mail note part

ALACHUA COUNTY
Board of County Commissioners

Kurt Larsen, AICP
*Growth Management Director*

Richard E. Wolf
*Director Codes Enforcement*

Wendy V. Kinser
*Principal Planner Development Services*

Ken Zeichner
*Principal Planner Comprehensive Planning*

Marilyn Wagener
*Director Tourist Development*

# ALACHUA COUNTY
# DEPARTMENT OF GROWTH MANAGEMENT

*10 SW 2nd Avenue • Third Floor • Gainesville, Florida 32601-6294*
*Tel: (352) 374-5249 • Fax: (352) 338-3224*
*Suncom: 651-5249*
*Home Page: www.co.alachua.fl.us*



January 29, 1999

Florida Department of Environmental Protection
Division of Air Resource Management
2600 Blairstone Road
Tallahassee, FL 32399-2400

Gentlemen:

Please add the Alachua County Board of County Commissioners to your notification list for the proposed cement plant in Suwannee County. The Board would like to receive a copy of the permit application (1210465-001-AC) and all responses.

Please direct the information to the following person:

Chuck Clemons, Chairman
Alachua County Board of County Commissioners
P. O. Box 2877
Gainesville, FL 32602
(352) 374-5210

Thank you for your attention to this matter.

Sincerely,

Wendy V. Kinser

Wendy V. Kinser, AICP
Chief of Development Services

WVK/hec

xc: Kurt Larsen, AICP, Director of Growth Management

Attachment

FCT

Jan 8/98.

Joe,

I hope the attached is what your looking for. Please call if you need any further information.

Regards,

Rick



FCT

*Publisher: 'Burning Issues'*
AUSTRALIA, ASIA AND SOUTH AMERICA
**Fuel & Combustion Technology International (Aust.) Limited**
PO Box 165
296 St Vincent Street
Port Adelaide
South Australia 5015

*Editor: 'Burning Issues'*
**Fuel & Combustion Technology International (Aust) Limited**
3 Henville Street,
Fremantle
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USA
**Fuel & Combustion Technology International Inc.**
283 Great Valley Parkway
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# Low $NO_x$ clinker production

C.G. Manias, Adelaide Brighton Management Ltd
and Dr G.J. Nathan, Adelaide University.

REPRINTED FROM WORLD CEMENT MAY 1994

# Low $NO_x$ clinker production

C.G. Manias, Adelaide Brighton Management Ltd and Dr G.J. Nathan, Adelaide University.

## General background

Swan Portland Cement Ltd was established in 1927 and began producing cement for sale soon after. It is located at Rivervale, an inner city residential and tourist suburb of Perth, Western Australia and is therefore conscious of strict environmental performance requirements inherent with such a location.

The plant currently operates two wet process rotary kilns with satellite coolers for clinker production, and a third rotary kiln producing quicklime from dry chip feed. The kilns began operation in the 1950s and therefore belong to a previous generation of technology. Kiln 3, the 2.9 m dia. x 77 m wet process test kiln, is fuelled by natural gas, has an output of 10 tph, and utilizes a planetary cooler. Fuel consumption is 7.7 MJ/kg of clinker, and $No_x$ levels at 10% $O_2$ are 450 ppm.

All kilns currently use natural gas fuel, although coal has been used in the past. The kiln burners were replaced in the early 1980s with sophisticated UK designed gas burners. These burners included an axial gas channel, a swirl gas channel and low volumes of high pressure primary air. At the time, these burners were responsible for a marked improvement in kiln operation, refractory life and clinker quality from the Swan Portland Cement gas-fired kilns.

A decision was taken in 1993 to trial a prototype of a new burner design developed in Adelaide, South Australia, with expectations of production efficiency improvements and reduced $NO_x$ emissions, based on the results of earlier trials on a cement plant at Angaston in South Australia.

## Gyro-Therm burners

The Gyro-Therm gas burners have been developed over the last two years for rotary kiln use by a joint programme between Adelaide Brighton Management Ltd and Adelaide University. They are based on the new and innovative precessing jet technology invented and patented by Adelaide University researchers. The early development history, results from initial plant trials designed to demonstrate the practical application of the concept, and description of the precessing jet principle have been given in an earlier *World Cement* publication[12].

The precessing jet provides a unique way for mixing natural gas fuel into a surrounding air stream by utilising a gyratory motion of a fluid jet induced by a particular nozzle design, rather than relying solely on jet momentum of the gas or air jets to diffuse the gas fuel into the air stream through turbulence created at the boundary of the two jets. The advantages achieved have been considerable when applied to gas-fired rotary kilns in the cement industry. In particular, the results have shown:

- Rapid large scale mixing of fuel and secondary air giving early heat release at the front of the kiln. This improves heat flux profiles for clinker quality.
- An engulfment of air pockets within the gas envelope, thus giving combustion under fuel rich conditions. This creates soot internally in the flame making it highly luminous for good radiant heat transfer and also suppresses thermal $NO_x$ formation.
- An extremely stable flame burning close to the nozzle over a wide turndown ratio.

These attributes have in practice led to fuel savings, production increases, improved clinker quality and $NO_x$ reductions of 50% or more. This is achieved with a fairly simple gas nozzle arrangement of robust construction and requiring no primary air whatsoever.

Following the development work at Adelaide Brighton Cement's Angaston works, a prototype burner was designed and built which included a co-annular gas jet around the precessing gas nozzle. The flame shape and heat flux profile can be adjusted by varying the proportion of gas passing through the two channels. When all the gas fuel is passed through the precessing gas jet nozzle, the gas air mixing is very rapid, producing a short heat release zone near the discharge end of the kiln. This would require a major readjustment of refractory lining in the kiln to conform with the new heat flux profiles. The co-annular flow around the precessing jet serves to modify the heat flux profile by extending the heat release further down the kiln. An increase in the co-annular flow causes an increase in the length of the kiln burning zone, so that an optimum burning zone length can be established for a given situation. This versatility is an important attribute during commissioning, allowing some adjustment to suit the particular circumstances of a specific kiln. It allows the refractory to be re-adjusted over a normal life span to an optimum design, in line with operating experience using Gyro-Therm on a particular kiln. It is anticipated that some co-annular flow will always be required with the Gyro-Therm burners, as the precessing gas jet nozzle by itself produces a flame which is probably too short for stable kiln operation. However, best fuel efficiency and clinker product quality will result from as short a flame as possible with stable operation, so that each kiln's operation can be adjusted in this direction with Gyro-Therm to achieve the optimum result. The construction of the Gyro-Therm burner is shown in Figure 1.

## Gyro-Therm prototype installation

The Gyro-Therm prototype was installed in kiln 3 at Swan Portland Cement in August 1993. The kiln was brought back on line with no abnormal occurrences. The thick full-bodied bulbous nature of the flame's appearance (Figure 2) was a stark contrast to the longer, slimmer and transparent nature of the previous burner flame, but the kiln operators

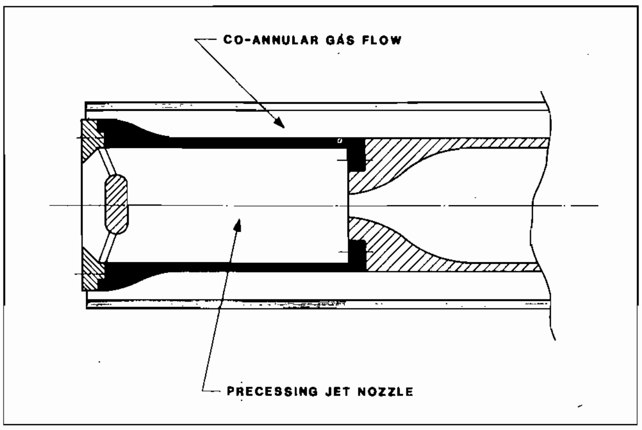


*Figure 1. Diagram of Gyro-Therm burner configuration, showing the central precessing jet nozzle and the co-annular gas channel for adjustment of flame shape and heat flux profiles in the kiln.*

had little difficulty in adjusting to the new look. Kiln operation was very steady with uniform free-lime in the clinker.

Kiln operation was stabilised and optimized over the next week, with an eventual setting on the burner to give 80% of gas flow through the precessing jet nozzle and 20% through the co-annular channel. This prototype burner was operated for several months, during which time data was collected on fuel consumption, production outputs, and $NO_x$ emissions. Eventually, however, the mild steel construction of the prototype burner suffered heat damage, as had been expected, and the original kiln burner was reinstalled.

Orders were soon placed for three kiln burners to replace the existing burners on all of the Swan Portland Cement kilns, on the strength of the excellent results achieved with the prototype. The first of the new burners was installed in late January this year, and performance evaluation was still in progress at the time of writing, however, indications show that the performance of the prototype is at least being met.

## Kiln outputs/fuel consumption

Figure 3 is a plot of the average weekly fuel consumption and average weekly outputs for the trial kiln at Swan Portland Cement taken from the normal plant records.

The prototype burner was installed in week 8 of the monitored period, with several weeks afterward spent on adjustments and optimization of the burner itself, while kiln operation was in the normal control of the kiln operators. Firstly, there was a clear downward trend in fuel consumption during the period of the prototype installation, as was anticipated to occur as a result of more effective heat transfer from the flame to the kiln charge. The average fuel saving over the period of Gyro-Therm operation was 5% in comparison to average fuel usage in the months preceding the trial, and in the months following the trial when the original burner was reinstated.

In the same period, kiln average hourly outputs increased by almost 10% compared to the outputs which could be achieved using the original burner. This was due to a combination of better heat efficiency and also the ability of the kiln to burn more fuel with Gyro-Therm without losing operational stability. A further benefit to production was the reduced dust loss from the back of the kiln during the trial period. This was presumed due to the lower back-end temperatures achieved, and hence maintaining of moist slurry further down in the chain

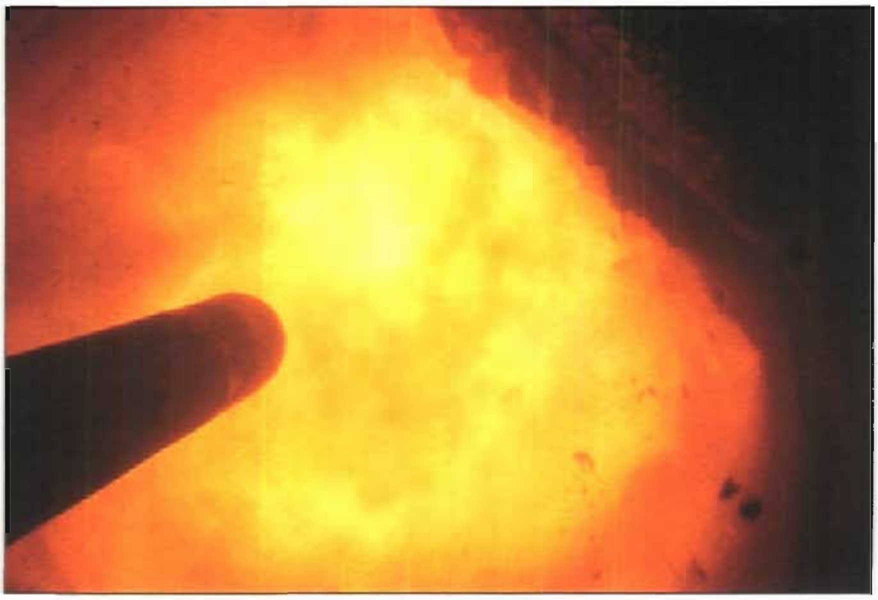

*Figure 2. Gyro-Therm gas flame operating in kiln 3 at Swan Portland Cement.*

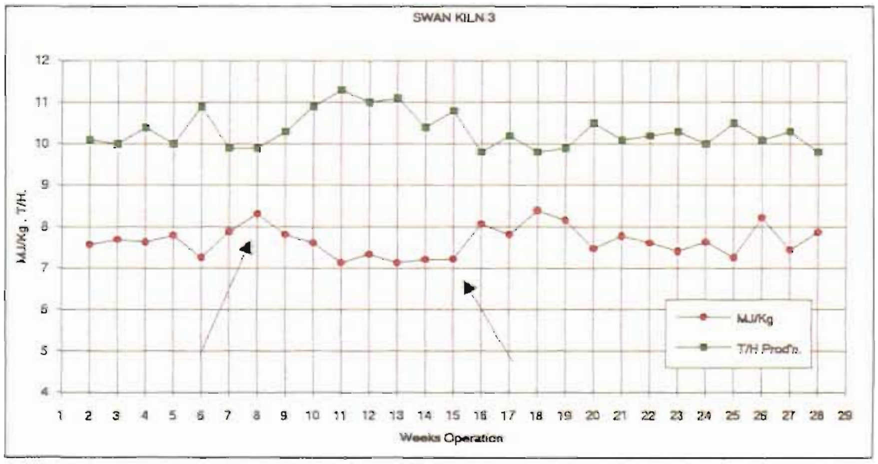


*Figure 3. Kiln outputs and fuel consumptions for kiln 3 at Swan Portland Cement covering the period of operation with the Gyro-Therm prototype kiln burner. The Gyro-Therm was installed at week 8 and removed at week 16.*

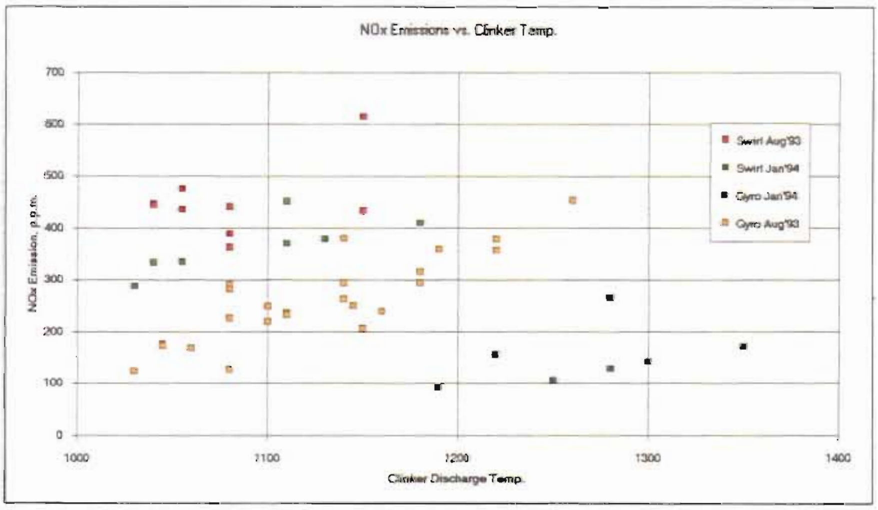


*Figure 4. $NO_x$ emissions from kiln 3 at Swan Portland Cement covering the period of operation with the Gyro-Therm prototype and the commercial burner later supplied.*

section. The increased production was a major boost to Works' economics, given the demand for cement from the Rivervale works.

## $NO_x$ emissions

The Swan Portland Cement kilns operate with low efficiency satellite clinker coolers, with secondary air temperatures estimated to be only around 300°C. Consequently, $NO_x$ emissions are lower than what may be expected from a gas-fired wet process clinker kiln.

A good correlation seemed to exist between $NO_x$ levels, as measured at the back-end of the kiln, and clinker discharge temperature from the kiln. Figure 4 shows this correlation for the original Swan Portland Cement burner, with readings taken over two periods of time before and after the prototype Gyro-Therm was installed. The correlation is also shown for the prototype burner, with $NO_x$ levels reduced to approximately 50% of those with the original burner for a given nose ring clinker temperature. A further set of data shows the NOx levels achieved with the final burner design installed in January 1994. For a given nose ring clinker temperature, this shows a spectacular reduction in $NO_x$ emission to approximately 25% of the original level. This kiln is now producing good quality clinker of normal free-lime content, with $NO_x$ levels of 100 - 200 ppm on a 10% oxygen basis. It should also be mentioned at this point that carbon monoxide levels are also maintained at levels typically below 100 ppm with the Gyro-Therm burner. This kiln is operating with what is probably the lowest $NO_x$ levels of any rotary cement kiln anywhere in the world.

## Product quality

Clinker quality evaluation to date has been confined to microscopic examination using both the Ono method of 28 day strength prediction and polished section microscopy. This work is continuing, but the results to date show a reduction in alite size to around 30 μm with clear reactive crystals having clean well-defined edges (Figures 6 & 7). The Ono evaluation shows a strength improvement of perhaps 5%, but requires further investigation to increase confidence in the results, as the clinker samples show considerable variability due to poor homogenisation of kiln feed. An important observation is that there is no indication of reducing conditions in the clinker produced. Ground cement strengths are not readily interpreted yet, as it is difficult for Swan Portland Cement to isolate clinker from one kiln, and clinker from other sources is also used to supplement the plants production in order to meet its demand.

*Figure 5. Commercial Gyro-Therm burner prior to installation.*

## Refractory life

Evaluation of kiln refractory life can only be established over the longer term, but the kiln has formed a good stable coating throughout the burning zone. Kiln shell temperatures are consistent and generally lower in the burning zone area as a result of the coating, despite the greater concentration of heat load over a shorter distance. It is anticipated that refractory life will improve as a result.

## Conclusion

The first installation of a Gyro-Therm kiln burner of commercial design has produced a marked improvement in production efficiency on kiln 3 at Swan Portland Cement, as well as a spectacular reduction in $NO_x$ emissions. Other factors, such as refractory life and cement strengths are still to be properly evaluated, but the indications are that the results will be positive.

## References


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3. NATHAN, G.J. *The Enhanced Mixing Burner* PhD. Thesis, Department Mechanical Engineering, University of Adelaide, 1988.
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9. NATHAN, G.J. and LUXTON, R.E. Mixing Enhancement by a Self-Exciting, Assymmetric Precessing Flow Field, *4th International Symposium of Transport Phenomena*, 4, 1511-1521, Sydney, Australia July 14-18, 1991.
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11. NATHAN, G.J. and LUXTON, R.E. A Low $NO_x$ Gas Burner with a Radiant Flame, Energy Efficiency in Process Technology - *Commission of the European Communities*, 19-22 October, 1992, Vouliagmeni, Greece.
12. MANIAS, C.G. and NATHAN, G.J. The Precessing Jet Gas Burner - A Low $NO_x$ Burner Providing Process Efficiency and Product Quality Improvements, *World Cement*, March 1993.


*Figure 6. Polished section of clinker produced with the original burner on kiln 3 at 500x magnification. Alite crystal size of up to 90 μm can be seen throughout the sample, indicating a long burning zone section.*

*Figure 7. Polished section of clinker at 500x magnification produced with the Gyro-Therm kiln burner in operation on kiln 3. Alite crystal size and shape appear considerably improved.*

# Burning Issues

**FCT**

Vol. 1, Edition 6
June 1998

*Fuel and Combustion Technology*


## CONTENTS



*'Burning Issues'* will interest all persons involved in the process industries. Our aim is to provide well informed comment, news of innovations in technology and interesting related articles.

Similar news for publication will be greatly appreciated by the Editor, Mary Ann Robinson - who has **moved to a new address.** For editorial content, please contact at:


3 Henville Street, Fremantle 6160
Western Australia
telephone +61 8 9431-7771
facsimile +61 8 9431-7772




**'Take time to think':**

***A Thing is complete when you can let it be*** - Gita Bellin

Cheers for now - Editor, *MA*

# Adelaide Brighton Cement signs FCT Partnering document

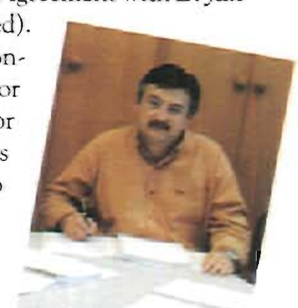
***Dr Dilip Manuel,* FCT Corporate Team Leader for the Agreement - reports:**

**Adelaide Brighton Cement** is first in Australia to sign with FCT, a ***"General Understanding in Partnering"* document.** The formal partnering agreement has been established for the Angaston Works and is set to provide a breakthrough in operational cost savings.

Adelaide Brighton is the largest and most modern manufacturer of cement and lime in Australia. Origins go back to 1882 with the first production of cement at Brighton near Adelaide, South Australia. During 1940, suitable raw materials were not plentiful in the area so an extensive deposit of marble at Angaston was purchased. Work then started on a new cement plant, the first kiln in 1952 producing 100,000 tonnes per year of Ordinary Portland Cement. Subsequent expansion of the Angaston works occurred; second and third kilns with further upgrades lifting production to exceed 300,000 tpy.

A change of direction for operations was heralded with the development of 'Brightonlite' a cement suitable for producing light coloured, architectural concrete. Wool Bay Lime production facilities were purchased by ABCL and in 1972, the smallest kiln at Angaston was converted to manufacture quicklime, with a lime hydrating plant built in 1973. Other technological advances were being made, including 'Austwell', a product suitable for the cementing of oilwell casings. General Purpose cement is no longer made at Angaston, and the plant is now a specialist cement and lime manufacturer.

FCT Engineering Team Leader, **David Retallack,** signed the Agreement with ***Bryan Gillis,* General Manager - Angaston Division** (photographed).



David is confident that results from the partnering relationship should significantly reduce cost of plant operations. For example, with the current slump in gold prices, markets for lime have recently diminished, hence Angaston Works is keen to reduce operational costs of the lime plant, to increase their market share in Australia. A site survey on (Lime) Kiln 2 is currently in progress. Data collected will enable the Engineering Team to carry out a detailed process analysis and recommend strategies to improve operations and reduce operating costs at the Plant.

*The Angaston Division of Adelaide Brighton Cement Ltd. Australia.*

## SOUTH EAST ASIA

### sees first FCT partnering agreement

*Dr Dilip Mauel - FCT Corporate Team Leader, Unichamp reports:*

**UNICHAMP MINERAL SDN. BHD,** ***has recently signed a partnering agreement*** **with FCT.**

Established just 6 years ago in 1992, **Unichamp is now the largest producer of quicklime in Malaysia.** Their plant in Kemaman, Terengganu, employs ultramodern processing machinery and is the only company in Malaysia producing milk of lime. Hydrated lime as well as limestone powder are also produced at the fully automated, computerised and integrated plant.

Introductions were made in March last year, when FCT was invited by the management of Unichamp, to advise technicalities on **the options of firing waste fuel in the lime kilns.** *Dr. Dilip Manuel*, FCT Corporate Team Leader for Unichamp, attended the Kuala Lumpur offices and met Technical Manager *Mr Leong Nam Yang* for the discussions.

Unichamp currently produces its lime in a Cimprogetti, double shaft vertical kiln, fired by natural gas. The local supplier, Gas Malaysia, is paid in US$, however, recent crisis events in Asia have created 30% relative depreciation of the Malaysian Ringatte currency. Accordingly, fuel costs on the plant have increased considerably- **hence the requirement by Unichamp to seek alternative fuels.**

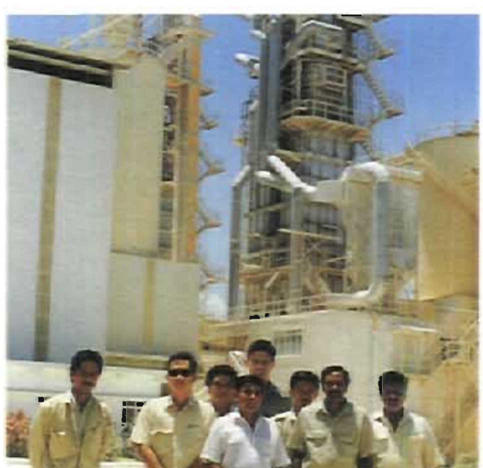
During the recent site survey, partly carried out at evenings, personnel who assisted were *understandably alarmed, when a python of considerable length and girth* **(gad, another version of 'The Full Monty')** *was found keeping warm in the same vicinity near the kiln, a short time after their data gathering activities!*

Photographed, calm after the event are: *(l to r, front row)* Ahmad Nazri Bin Othman and Say Kwee Jin, both of Unichamp, with Dilip Manuel and Aloysius Balendra (Engineering Team Leader, FCT).


Han Tong Juan of Unichamp keeps his hands safely in pockets. Plant Manager, Lim Gaut Beng and Kumar Velugopal are behind, with David Retallack of FCT between them.

## In Top Gear *'Downunder'*

***Dr Peter Mullinger,*** **Deputy Chairman and co-founder of FCT** has re-located to Adelaide office for a period of two years. Apart from his role at monthly Board Meetings, **Peter's new purpose is to transfer his experience and that of the Company, to new engineers joining us.** The 'user-friendly' and keyworded information will facilitate our expansion and meet Partnering needs. This extensive task is being achieved by a combination of formal training, mentoring, and working with Mary Ann to prepare a series of Project Profiles, making our 500 or so past projects, electronically accessible.



## *Email Semaphore*

The article included last edition titled ***"Environmental Issues Threaten Low Cost Fuels",*** evoked strong comment from **Richard Boarder of Castle Cement.**

Richard was disappointed that we could *'peddle innuendoes, half truths and untruths and publish the article without views from the cement industry.'* He continues - *'The New Scientist Article was clearly written to be controversial and is not worthy of being repeated.'* And that yours truly *'ought to have more sense than try to give the impression the cement industry did not know or tried to hide the calcination $CO_2$.'*

Richard has not heard of Nick Syred, nor read his paper, but disputes as nonsense the increase in heavy metal deposition mentioned - He explains further, *'heavy metal emissions are divided between volatile and refractory metals. Refractory metals in the fuel are locked in the cement products and volatile metals are excluded from the fuel. Metal emissions arise from the metal content of the raw meal and as such are highly dependent on the dust arrestment efficiency. There is ample evidence the cement industry has been reducing dust emissions and consequently metal emissions.*

*Environmental Agencies protocol for BPEO assessment of Castle Cement demonstrated insignificant emissions.'*

Richard suggests that Nick Syred has been misquoted or used the wrong data and takes umbrage at the indications of land adjacent to cement plants being unsuitable for agriculture. He concluded, *'the judicial review of the Environmental Agency was thrown out by the High Court'* further suggesting we *'ignored the fact that good quality bituminous coal has a higher carbon content per unit of energy than Cemfuel.'*

Thanks Richard for your input, however, in reply to the query on integrity of the article, a distinguished professor's paper, presented at an international conference would normally be considered well informed. Our intention was for the article to raise awareness in the industry - ***it seems we succeeded!***

**- Editor,** MA

# The Environment

*"Action for a Sustainable Future"*

# NOx Emissions from Rotary Kilns

*Low level ozone, is a respiratory irritant* and the role of oxides of nitrogen (NOx) in its formation, is well documented. Motor vehicles have a major role in the production of these pollutants; despite this fact, environmental enforcement agencies continue to focus on reducing NOx from industrial sources - ***probably because they are easy to track down, don't move and can't vote!***

Unfortunately rotary kilns are also major producers of NOx, (fuel and thermal). Fuel NOx originates from nitrogen in the fuel, and from fixing atmospheric nitrogen by the flame - producing Thermal NOx: formed by the combination of both oxygen and nitrogen radicals, with molecular nitrogen at very high temperatures. Thermal NOx is extremely temperature dependent because the reaction has high activation energy.

Apart from temperature, the final thermal NOx emissions are influenced by the in-flame oxygen concentration and residence time in the high temperature zones.

Most fuels, other than gas, contain nitrogen bound as an organic compound in the structure. When the fuel is burnt, this organic nitrogen converts to a range of cyanide and amine species that are subsequently oxidised to NOx, depending on available local oxygen. Fuel NOx formation is less dependent on temperature than thermal NOx.

Owing to the very high temperatures which occur in rotary kilns, especially cement kilns i.e. above 2000°C (3600°F), thermal NOx is generally the dominant pollutant, but fuel nitrogen makes a substantial contribution to the NOx emissions from coal, oil and petroleum coke firing. In gas fired plant, fuel NOx is absent so all the NOx is thermal. However, **it should be noted** *that the absence of fuel NOx in gas fired kilns does not necessarily lead to a reduction in NOx emissions, since flame temperatures are often higher.*

**Kiln operators will come under increasing pressure to reduce NOx emissions.** Unfortunately most techniques involve reducing fuel/air mixing rates to reduce oxygen concentration in the flame and hence reduce flame temperatures. Whilst this is effective in reducing NOx, the lower temperature also reduces the heat transfer rates and has a potentially adverse effect on both product quality and output.

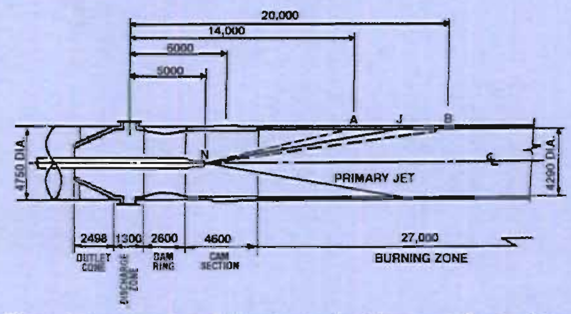
**Some of the NOx limits** currently being considered by the enforcement authorities **cannot be met by combustion modifications** but will, if passed into law, ***require post process emission control equipment.***

*Next edition:* NOx reduction techniques.

# Technical Tips

## Burner Alignment

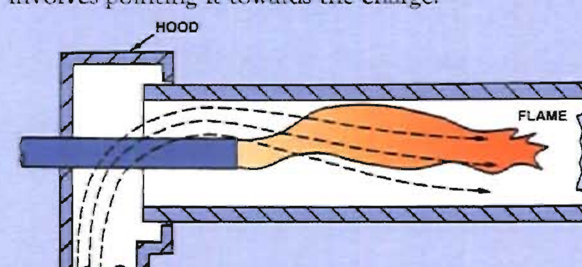
***Burner alignment is critically important*** in rotary kilns, but unfortunately there is no common position suitable for all types of kilns - *optimum location depends on secondary air flow patterns*. The general principle is, that the burner nozzle should be located in the centre of the secondary air stream, enabling the air to be entrained evenly into the fuel and primary air jet. In modern kilns with large hoods, this optimum position is generally on the kiln axis, forward of any dam.




*Flame Impingement on Refractory in the Absence of Recirculation.*

*Note: Dams increase the secondary air velocity, and in doing so, reduce fuel/air mixing rates, lengthening the flame and reducing peak heat transfer. Therefore, if a dam is installed to increase bed depth, it should be as shallow as possible to minimise any adverse effects on the combustion and heat transfer.*

Older kilns with small hoods, have poor secondary airflow pattens because the high velocity in the hood causes a downward deflection of the secondary air, often towards the charge owing to an offset cooler chute. In these circumstances, aligning the burner with the airflow involves pointing it towards the charge.




*Flame Deflected by High Secondary Air Velocity in Narrow Kiln Hood.*

**Better fuel/air mixing** and hence, **higher rates of heat release** which accompany this alignment, ***improves heat transfer for these older kilns.*** Previously it was commonly thought that direct flame contact with the charge gave the improved transfer of heat.

Aligning the burner towards the charge, in a kiln with good secondary air distribution, will cause it to perform poorly, compared with an axially aligned burner.

# science SCENE

# *Flame Structures - Order from Disorder*

***Dr. Peter Mullinger, reports on an enlightening paper presented at the McClaren Vale Workshop.***

*– see last Burning Issues.*

When visiting plants, a question often asked of me is - ***"...what do you think of the flame?"*** Working with industrial flames for over thirty years, I have always found it very difficult to assess a flame visually. Expecting some 'pearls of wisdom', inevitably the questioner is disappointed.

Therefore, I was fascinated to meet ***Dr. Godfrey Mungal,*** Associate Professor at Stanford University in California, who has been looking at flames in a different way.

***His revealing insight, excites me.***

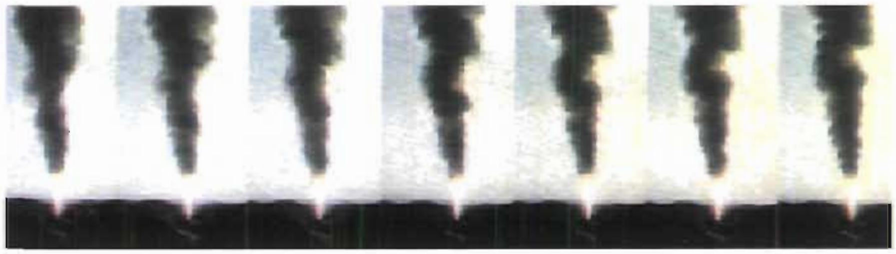
Most of the flames we use in industry, and all rotary kiln flames, are of the turbulent, jet diffusion type. Their structure has been discussed and researched for decades, and as might be expected, the subject is very complex. To date flames have largely defied effective mathematic modelling; requiring over-simplification of time averaged conditions, to produce any useable results.

***Godfrey and his co-workers have taken a different approach.***

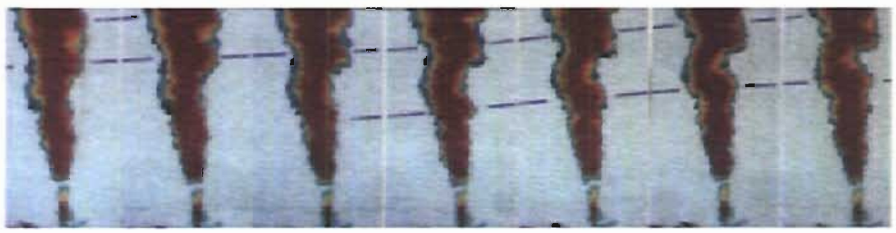
Using various visualisation techniques, they have studied a wide range of jet flames, from the smallest laboratory flame, to those produced by large industrial burners, such as petrochemical flares and even huge rocket motors - see photos adjacent.

## The research has revealed that -

**Far from being time averaged, turbulent jet flames have relatively organised structures, that originate close to the jet and persist throughout the flame.** A diagrammatic comparison of the difference between the time averaged approach and Godfrey's approach, is shown below.

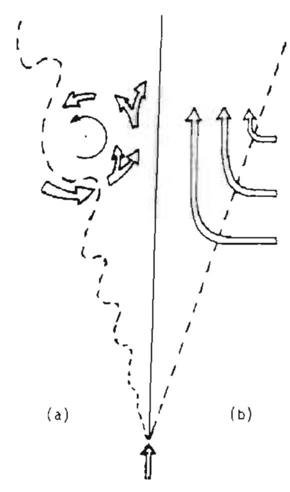


Top row: *A movie sequence of the flame and exhaust plume from a Titan IV rocket motor. The bright flame is approximately 400 ft (120m) with the overall plume 5000 ft (1500m) high.*



Bottom row: *Processed images showing the evolution of the structure.*

The structured approach (a) ***shows all the lumps and bumps we see so clearly, when we look at an industrial flame, and explains why the flame length fluctuates as we look at it*** - something that could not possibly happen, if it really was time averaged (b). Furthermore, ***the structured approach is compatible with burning pockets of reacting gases being shed from the flame end*** - which is seen both in real life flames, and on the acid alkali models used by FCT.




All this makes a great deal of sense to me and I shall never look at flames in the same way again. **I believe that Godfrey's work will lead to a complete reassessment of flame modlling,** which will become structure based in the near future.

# Kiln flame shape optimisation using a Gyro-Therm gas burner

David Rapson, Advanced Cement Technologies, Brian Stokes, Geelong Cement and Steven Hill, University of Adelaide, chart the ongoing development of a variable flame burner.

## Introduction

Optimised combustion is crucial to the efficient operation of a rotary kiln process, particularly for cement manufacture, yet its ability to influence the performance of the whole plant is often under estimated.

The nature of the combustion in the kiln can have a pronounced effect on fuel efficiency, product quality, emissions (CO, $SO_x$ and $NO_x$), refractory life, output, kiln and flame stability and plant safety. It therefore follows that a given kiln system will require an optimum flame shape and hence heat flux profile to achieve its optimum performance.

Often there is little scope on a kiln burner to adjust the flame significantly and usually there is little science on which to base any adjustment.

It is well documented[1] that cement clinker manufacture is best carried out with a short hot flame burning near the front of the kiln. The best clinker quality is produced when the raw meal experiences a rapid heat up to a high peak clinkering temperature for sufficient time followed by a rapid cooling to freeze the reactive calcium silicate crystal phases. Most microscopic analysis of clinker quality is based on an assessment of the heat flux profile through which the clinker has passed in the kiln. Grindability is also a function of the thermal history of the clinker. A short hot flame is also the most fuel efficient leading to lower back end temperatures, lower average shell temperatures and less over burning of kiln product. Savings can be substantial.

Emission of $SO_x$ and $NO_x$ can also be affected by the length of the burning zone. Each is time and temperature dependant, so the less time that the material and gases spend at high temperature the lower the $SO_x$ and $NO_x$ emissions respectively. If however, the burning zone is too short for a given kiln and its inherent process variability, then kiln stability and refractory life will suffer, leading to unsatisfactory operation. As a consequence, operators may tend to over burn in an effort to improve stability, the results of which can be very costly in terms of fuel efficiency, emissions, refractory life and product quality.

In order to gain the substantial benefits from a short flame, the objective should be to operate with as short a burning zone as possible while still maintaining operating stability. This would normally require a concerted effort to reduce the chemical and physical variability of process inputs, (i.e. feed composition, fuel rate, feed rate, dust return) and any other operationally induced variations which may influence stability. Along with this, a comprehensive operator training programme may be required to realise the full potential benefits and maximise the economic returns.

Given the requirement to optimise the flame in a kiln and knowing that the optimum will differ from one kiln to another, the ability of a burner to give genuine adjustment of flame shape and heat flux profile is a major benefit.

Physical modelling techniques using acid/alkali solutions are now employed in the design stages of a burner project. Accurate scale models of the kiln, cooler and depending on the configuration, the preheater are built for each burner application in order to examine the interaction between the aerodynamics of each system under differing conditions. With this knowledge and a burner with sufficient adjustment capability, flame optimisation is soundly based on scientific knowledge rather than trial and error.

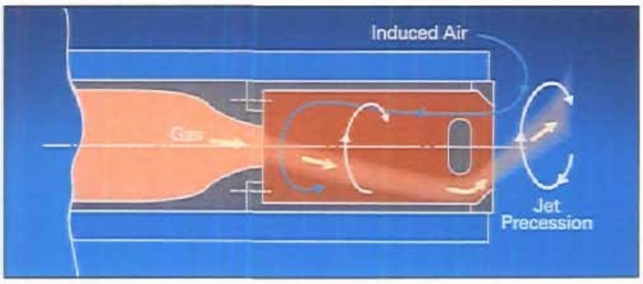



Figure 1. The precessing jet nozzle.

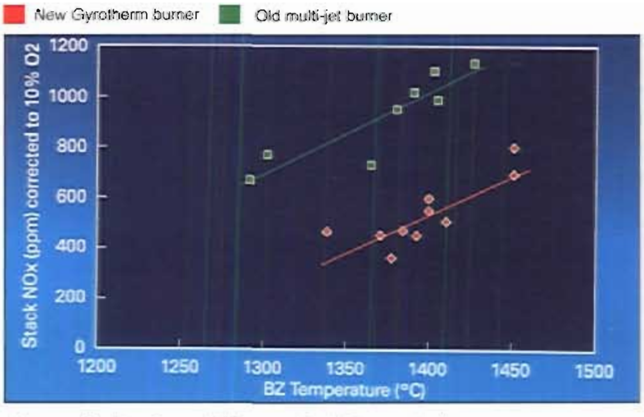



Figure 2. Geelong kiln no. 8: $NO_x$ emissions.

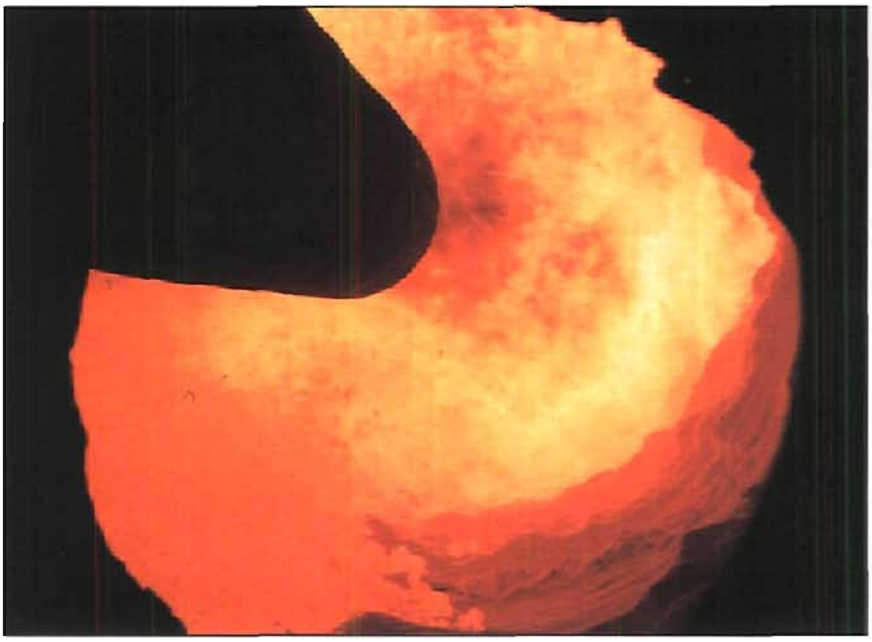


Figure 3c. Gyro-therm flame using centre body jet for flame shaping.

Figure 3a.

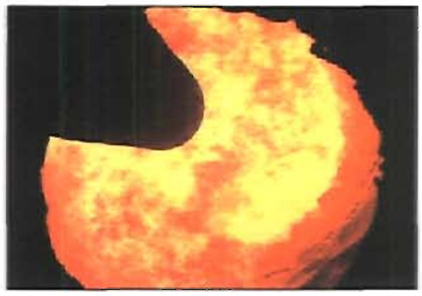


Figure 3b.

## Technical background

Natural gas is a convenient fuel to use because it is easy to measure and handle. It does not lead to dust emissions and there are low capital costs associated with its use. However, with natural gas the typical flame produced in a kiln is long and poor in luminosity. This is the opposite of what is usually required for optimum efficiency, product quality and lowest emissions. Furthermore, the poor flame luminosity means that a kiln needs to be 'burnt harder' to achieve the same degree of heat transfer to the kiln charge as would result from a more luminous flame.

The Gyro-Therm burner was developed using the newly discovered and patented precessing jet technology to overcome many of the disadvantages of conventional natural gas flames. The unique mixing mechanism for the gas and secondary air produces a short, highly radiant (luminous) and bulbous flame without the need for any primary air. The flame produced is self-staging, with the majority of gas burned under fuel rich conditions. Soot is formed as a temporary intermediate product which burns out giving the flame its highly luminous character. The fuel-rich combustion mechanism also suppresses formation of $NO_x$, making the Gyro-Therm burner an extremely cost effective $NO_x$ reduction technology. The development of this revolutionary gas burner, its theory of operation, operating experience and performance has been discussed previously in *World Cement*[2,3].

It became apparent during the development trials that the precessing jet flame was extremely short, even without primary air, and that unless kiln feed and operational variability were minimal, kiln stability would suffer. The burners were therefore developed with the ability to adjust flame length and heat flux profiles.

The initial design included a two channel gas burner, with the precessing jet central channel surrounded by a co-annular axial gas channel as shown in Figure 1. The precessing jet on its own produced an extremely short and broad flame, whereas the co-annular channel on its own produced a long narrow flame. A simple valve arrangement on the burner allowed the proportion of gas between the two channels (and hence flame shape and heat flux patterns) to be adjusted.

## The Geelong Gyro-Therm

Geelong Cement is situated 100 km south west of Melbourne, Australia, close to its limestone deposit. The plant operates two wet process kilns which produce cement for the local market. The largest kiln is 4.65 m dia. x 171 m and produces 1,250 tpd of clinker. The kiln was operating with a multi-jet two channel gas burner of European supply, rated at 11 000 $m^3$/h of natural gas. The flame is shown in Figure 3a.

In June 1994, this burner was replaced with a Gyro-Therm burner of the original precessing jet design with a co-annular gas channel. It included a flame front ignition system, pilot burner and provision to burn waste liquid fuels. The driving force for the burner change was the very low $NO_x$ limits imposed by environmental legislation. It was also expected that additional benefits would include improved fuel consumption, product quality, refractory life and kiln stability. Because the kiln's thermal loading was already excessive at 6.9 million kcal/hr/$m^2$ (being some 25% above normal), an increase in production was not recommended.

At this time, the techniques for modelling a kiln with a Gyro-Therm burner were still under development. The flame was so markedly different from that of a conventional gas flame in both appearance and performance, that new knowledge was required to validate the modelling.

For the same output, even without modelling, the immediate effects on kiln performance were:

- A reduction in the $NO_x$ levels of around 40% (Figure 2).
- A reduction in the back end temperature of 20 - 30°C.
- A reduction in kiln dust losses of around 15%.
- A wide, bulbous and highly luminous flame filling most of the kiln's cross-sectional area and similar in appearance to an oil flame.

The evidence confirmed that expectations of reduced emissions and improved efficiency were being met with a Gyro-Therm burner. There were no start up or operational difficulties with the benefits continuing for the duration of the campaign while operators became accustomed to the look of the new flame and its heat flux patterns.

The following points are worthy of note during this early period:

- There was a high degree of over burning evident as plant operators became accustomed to the new burner and the very short burning zone.

- There was a loss of 45 mm from the hot face dolomite brick which spalled during the initial light up. This was due to impingement from a lazy flame at 10% of normal gas flow during the start up phase. This has since been rectified. Despite the spalling the initial three month refractory campaign was considerably longer than the previous seven campaigns. This comment must be considered in the context of the extremely high thermal load on the burning zone refractories and the sporadic experimentation with waste fuels (oil and tyres) over recent campaigns.

After this initial period some minor modifications were made to the Gyro-Therm burner in order to enhance performance during a planned tyre burning trial. However, during this trial brown centred clinker became evident, implying severe reducing conditions. Because this had not been noticed previously with the Gyro-Therm it was assumed that the tyres were responsible. However after the tyre burning trial was abandoned the clinker colour did not return to normal. The previous burner modification was reversed, even though this was not thought to be the cause of the problem.

Continued operation revealed that clinker colour was extremely sensitive to burning intensity. With softer burning, kiln operation and clinker colour remained satisfactory for a period until more light brown product was again produced but this time with a loss of cement strength. This problem was due to a significant increase in alkali content of the raw materials which caused kiln instability, harder burning and cement strength reductions.

It was decided that it would benefit kiln operation if the flame shape could be adjusted further. It became apparent that the high thermal load on this kiln had produced a problem not previously encountered. The amount of gas burned relative to the diameter of the kiln resulted in a much wider flame than previous Gyro-Therm installations. Consequently a small change in secondary air temperature and flow patterns caused flame impingement and reducing conditions in the clinker. The short burning zone caused the operators to burn harder to reduce the risk of a dust run, compounding these effects.

The requirement was therefore to produce a slightly longer heat flux profile to permit stable operation without the need to burn hard and a narrower flame to eliminate any likelihood of flame impingement on the clinker or refractories.

## Flame shape control

Whilst the existing two channel design could provide adequate control over the heat flux profile it could not prevent flame impingement under some operating conditions.

Some timely new discoveries on the flame shape control of Gyro-Therm burners were made by researchers at the University of Adelaide. Flame control was achieved without the co-annular channel. The new technique for flame shape adjustment is based on a high momentum gas jet injected at a critical point into the precessing jet flow field. This jet (termed the centre body jet) is expelled through the centre body of the precessing jet nozzle, modifying the pressure fields within the vicinity of the burner in such a way that the flame is directed more toward the kiln axis. As the proportion of gas is increased through the centre body jet, the flame spread is reduced and the heat flux profile lengthened. Figure 4 shows a cross-section through the modified nozzle.

It was decided to modify the Geelong burner to include this latest innovation for flame shape control. Once again a simple valve adjustment provided a balance of gas flow between the channels allowing changes to the flame shape and the heat flux profile. This control has proven to be far more potent than previous techniques. The dramatic effects on flame shape can readily be seen in Figures 3b and 3c where the centre body gas jet is varied from 0 to 13%. This provides the means for adjusting the flame shape from very short and bulbous, to long and slender with matching heat flux profiles.

The success of the new flame shaping technique has been spectacular. There has been no more light brown clinker, a direct result of the reduced flame spread.

There is also a strong indication that kiln stability is much improved, which is allowing softer burning of clinker, due to the slightly longer heat flux profile produced. Should it become necessary to lengthen the heat flux profile further, this can easily be done during operation. It should be kept in mind that the shortest possible burning zone should always be targeted for best product quality and efficiency. As a result of softer burning, the $NO_x$ emissions are in fact even lower than before the modification, with routine operation of this gas fired wet kiln now possible at around 600 ppm $NO_x$ at the kiln exit.

It is also anticipated that improved refractory life and further reductions in fuel consumption will result from softer burning. The refractory coating has been a little thinner through the burning zone, but it is more stable and more evenly distributed. A propensity for ring formation in the upper transition zone, which was evident prior to the Gyro-Therm installation has reduced, whilst thicker coating is observed in the lower transition zone.

There is no doubt that $NO_x$ levels have reduced by 40% and kiln efficiency has improved significantly. Other factors such as the continued sporadic use of supplementary fuels and the variability of raw materials have made the quantification of other benefits more difficult.

## Conclusion

A Gyro-Therm burner installed at the Geelong Works has produced some very positive effects with huge reductions in $NO_x$ emissions and with improved kiln efficiency. In this installation it was thought to be of further benefit if the flame spread could be reduced.

The existing means for controlling flame shape incorporated into the Gyro-Therm had worked well in all previous installations. However, in this case the flame spread had to be reduced more than normal because of the unusually high thermal load in the burning zone.

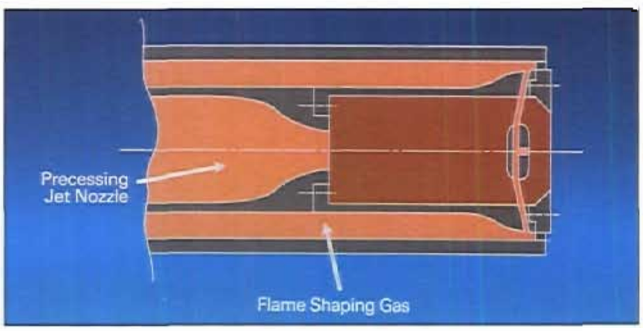



Figure 4. The Gyro-Therm burner nozzle, MkII.

A newly developed means for controlling the flame spread of the Gyro-Therm was added to the Geelong burner with spectacular success. Controlling flame spread and heat flux profile is by a simple valve adjustment. This modification was put in place without any detrimental effect on the ability of the Gyro-Therm to slash $NO_x$ emission and to improve operating efficiency. It appears that these benefits have been further enhanced by this development. Clinker and cement quality has been consistently excellent through this recent period.

Physical modelling techniques have now been developed for the Gyro-Therm burner and are employed to optimise the flame for a given kiln and provide accurate prediction of flame shapes and heat flux profiles. This ensures optimum burner design and removes a great deal of the trial and error associated with commissioning.

## References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2. MANIAS, C.G. and NATHAN, G., The precessing jet gas burner - a low $NO_x$ burner providing process efficiency and product quality improvements. *World Cement*, March 1993.
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# Optimising precalciner design and performance

Dr. Peter J. Mullinger and Dr. Barrie G. Jenkins,
Fuel and Combustion Technology International, discuss the use of combustion process modelling to improve precalciner design and performance.

## Introduction

The principle advantages of precalciner kilns include, increased output, reduced thermal stresses on the kiln, improved process stability and lower $NO_x$ emissions. However the precalciner itself is a difficult environment for combustion with its relatively low temperature and high dust concentration. Some types of calciner using kiln gas as the source of oxygen for combustion have the additional disadvantage of a low oxygen concentration. It is little wonder therefore that the combustion is often less than perfect, with high emissions of carbon monoxide and other unburnts. Furthermore $NO_x$ emissions are sometimes disappointingly high. Natural gas is particularly difficult to burn in precalciners owing to its narrow flammability limits and high ignition temperature, a fact that takes most process engineers by surprise. Very low volatile fuels, such as petroleum coke are equally difficult to burn under the conditions prevailing in calciners.

The combustion and heat transfer regime in a precalciner is fundamentally different from that which occurs in a rotary kiln. Product heating in rotary kilns is determined by the flame's heat flux profile. By way of contrast a flash calciner, is effectively an isothermal system with heat being removed by the calcination reaction almost as soon as it is liberated by the combustion process.

The importance of the flame on rotary kiln processes was first recognised by Martin[1] in the late 1920's when studying the rotary cement kiln. In attempting to overcome the traditional limitations of rotary kilns Martin built the first flash calciner but it was abandoned following a withdrawal of funding. A method of optimising the flame for an individual kiln was first developed in the early 1970's by Moles and Jenkins[2]. Early applications of this technique, dubbed Flame Control by Moles, were very successful[3]. These early techniques used empirical formula together with physical modelling. With the advent of the PC heat transfer modelling was also utilised.

This article is concerned with the application of both physical and computer modelling techniques to the optimisation of combustion and heat transfer in commercial precalciners. The increasing use of these techniques leads to improved process stability and a more consistent product, reduced fuel consumption and emissions, more stable plant operation and improved refractory life.

## Combustion and heat transfer in precalciners

Combustion is the oxidation of fuel to release heat. The objective of the combustion engineer and plant operator is to obtain a steady heat release at the required rate. The chemistry of the oxidation of hydrocarbon fuels is very complex and has been described previously in *World Cement*[4,5]. None of the reactions can take place until the oxygen in the air is brought into contact with the fuel. As a result all combustion processes take place in the following stages:

**Mixing**
⇓
**Ignition**
⇓
**Chemical reaction**
⇓
**Dispersal of products**

The rate of combustion is dependent on the slowest of the above stages. In most industrial combustion systems, the mixing is slow whilst the other steps are very fast. The rate and completeness of the combustion process is therefore controlled by the rate and completeness of fuel/air mixing. Insufficient mixing produces unburnt CO in the flue gases, wasting fuel. For good combustion, it is necessary to ensure that adequate air is supplied and that the burner mixes the fuel and air streams effectively and efficiently, hence the combustion is controlled by the rate and completeness of the fuel/air mixing i.e., if its mixed, its burnt.

For kiln burners, fuel/air mixing occurs as a result of jet entrainment. Figure 1 shows a fuel jet issuing from a burner nozzle in a rotary kiln. Friction occurs between the boundary of the jet (which is normally fuel and primary air) and its surroundings, causing the surrounding secondary air to be locally accelerated to the jet velocity. The accelerated air is then pulled into the jet thus expanding it. This process is momentum controlled and continues until the velocity of the jet is the same as that of its surroundings. The greater the momentum of the jet, the more rapidly the surrounding secondary air is entrained into the fuel and the shorter the flame.

In precalciners the fuel/air mixing is more complex. The burners are often installed through the wall and much of the mixing is in cross flow, Figure 2. Since most of the combustion air must still be entrained into the primary air and fuel jet, the air flow patterns within the calciner have a huge effect on the fuel/air mixing. The aerodynamics are largely determined by the design of the calciner vessel and the tertiary air inlet. The combustion is also greatly affected by the flame buoy-

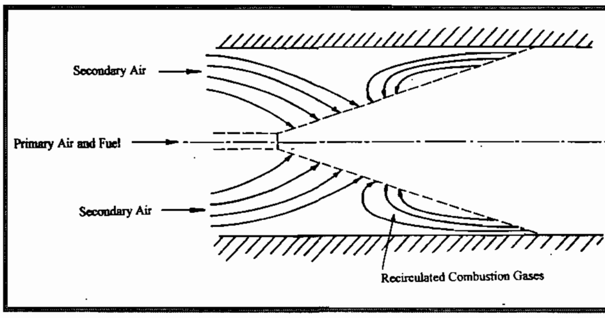



**Figure 1. Entrainment and recirculation in a confined jet.**

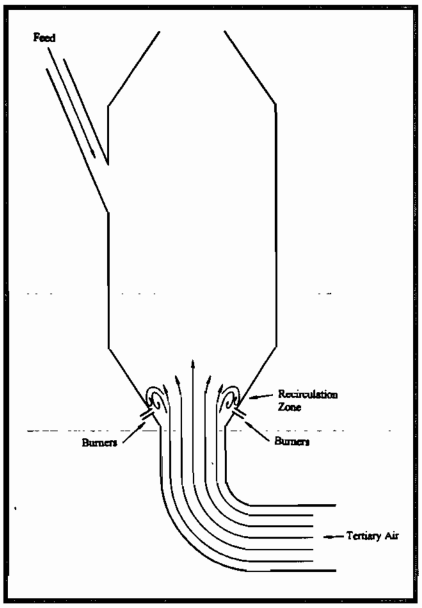



**Figure 2. Typical arrangement of burners in a precalciner.**

ancy, feed concentration and flow patterns since the calcining feed absorbs heat from the combustion process which lowers the combustion reaction rates, and can in extreme circumstances cause a 'flame out'. Thus the 'mixed is burnt' assumption mat not be completely true for flash calciners.

As a result the design of the calciner vessel and its tertiary air inlet, the position and type of burners and the feed inlet arrangements all significantly affect the combustion and calcination process. Any effective modelling of the precalciner process must take these factors fully into account.

## $NO_x$ formation in precalciners

The $NO_x$ formation in flames is generally by both thermal and fuel routes (for coal, oil and petroleum coke). In gas fired plant, fuel $NO_x$ is absent so all the $NO_x$ is thermal $NO_x$. However, it should be noted that the absence of fuel $NO_x$ in gas fired plant does not necessarily lead to a reduction in $NO_x$ emissions, since flame temperatures can be higher.

Thermal $NO_x$ is formed by the combination of atmospheric nitrogen and oxygen at high temperatures, generally over 1200°C. The high temperatures are required because of the high activation energy of the reaction, it is therefore highly temperature dependent. The reaction takes place between oxygen radicals, nitrogen radicals and molecular nitrogen in the Zeldovich reaction couple. Apart from temperature, the in-flame oxygen concentration and the residence time in the high temperature zones influence the final thermal $NO_x$ emissions.

Most fuels, other than gas contain nitrogen bound as an organic compound in the structure. When the fuel is burnt this organic nitrogen becomes converted into a range of cyanide and amine species which may be subsequently oxidised to $NO_x$, depending on the local oxygen availability, but this mechanism is less dependent on temperature.

## Heat transfer

A precalciner is a relatively well mixed system with most of the heat transfer taking place by convection owing to the intimate mixing between the hot gases and the feed. By way of contrast, rotary kilns are much more complex with significant variations in gas concentrations, heat release, and temperature both along the flame and through its cross section. In pre-calciners the combustion, heat transfer, and with it the degree of calcination, can be adversely affected if the air or feed flow patterns are unstable.

## Common precalciner problems

### *Incomplete combustion*

Carbon monoxide and unburnt hydrocarbon emissions are often higher from precalciners than older wet and dry process kilns. Whilst some of these increased emissions may arise from poor fuel/air mixing in the kiln as the result of the use of low primary air burners, most arise from poor fuel/air mixing or by flame quenching in the calciner itself. These problems are normally more severe in natural gas fired calciners, because of this fuel's narrow flammability limits, or calciners using difficult fuels, such as petroleum coke.

This poor combustion is often considered an inevitable feature of precalciner operation but, in reality, it is the result of inadequate design procedures, and combustion efficiency can often be greatly improved by the application of modelling techniques and implementation of the results on the full size unit.

### *Unstable operation*

Where the combustion process is particularly poor, or where the feed flow patters are unstable, calciners can be subject to unstable operation with cyclic or random variations in degree of calcination, outlet temperature, oxygen, $NO_x$, and CO concentrations. Modelling leads to rapid identification of the real cause of such problems and usually can provide an effective low cost solution.

### *Excessive $NO_x$ formation*

Since heat is rapidly absorbed by the calcination of the feed and bulk temperatures do not exceed 1000°C thermal $NO_x$ should be very low. However $NO_x$ emissions are often higher than expected as a result of a 'hot core' in the combustion process. Where this is the case and it is required to reduce the $NO_x$ emissions this can be achieved by modelling both the combustion process and the feed distribution to ensure as even temperatures as possible throughout the vessel.

### *Material build-up*

Local overheating or excessive material residence times in high temperature zones can cause material build-ups due to surface melting of the material or re-combination to form calcium carbonate. This problem can generally be minimised or eliminated by improving the combustion, and the aerodynamics of the feed distribution. Again modelling can be used to identify the cause of the problem and provide a solution.

## Modelling of precalciners

Combustion and heat transfer are very complex subjects which are not readily amenable to rigorous mathematical analysis. Prediction of the performance of burners and combustion equipment and associated plant is therefore extremely difficult. There are essentially three choices for designing combustion and heat transfer systems:

- Guesswork,
- Simple calculations combined with the extrapolation of experience,
- Modelling the system.

To obtain the best potential performance from any precalciner, it is absolutely essential that the combustion and feed distribution is optimised to give the most stable operation at relatively low temperatures and high feed concentrations. This will in turn give the best product, and requires that the aerodynamic characteristics of the calciner and feed concentrations are taken fully into account when designing the system. This can only be achieved using process modelling.

Effective modelling requires that the important parameters of the process being studied are identified and represented in the model. Since it is not possible to scale nature, physical modelling can only give part of the answer.

Mathematical modelling is similarly limited both by computing power available and our ability to describe the combustion and heat transfer process mathematically. As a result each modelling technique represents a partial understanding of the process. The objective is to provide predictive techniques which work for real flames in real systems and contribute to improved performance. To achieve this objective normally requires the use of several modelling techniques simultaneously.

### *Physical modelling of flames*

Despite the growth in computer modelling, physical modelling is still the most effective method for determining flame length and shape in rotary kilns and stationary calciners. Acid/alkali modelling was developed by Sir William Hawthorne[6] at MIT as long ago as 1938 and is used to model the combustion process where fuel/air mixing determines the flame characteristics. A physical model of the plant is constructed to an appropriate scale in clear acrylic plastic. The fuel is represented by dilute caustic soda solution containing phenolphthalein indicator, whilst the combustion air is represented by dilute hydrochloric acid. The concentration of the alkali and the stoichiometric ratio of alkali to acid is chosen to represent the correct air/fuel requirement for the particular fuel. The flow of acid is adjusted to simulate different excess air levels, hence determining the relationship between flame envelope and excess air. The phenolphthalein becomes colourless at the boundary where the mixing is complete, thus the model flame envelope is defined by the coloured region. The aerodynamics of the full size system are reproduced on the physical model thus allowing an accurate simulation of the fuel/air mixing characteristics and hence flame envelope under representative conditions. A typical acid/alkali model of a cement kiln precalciner is shown in Figure 3.

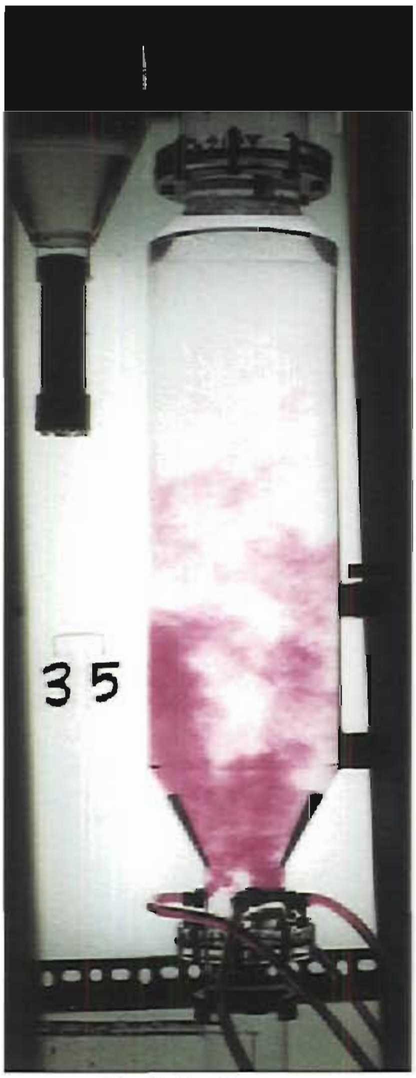



Figure 3. Typical acid/alkali model of combustion in a precalciner.

### *Heat transfer modelling*

The combustion process and its integration into energy transfer equipment design, is the most complex of all process engineering problems, requiring the simultaneous solution of heat, mass and momentum transfer. Owing to the significant differences between rotary kilns and flash calciners many different factors must be taken into account if modelling of combustion and heat transfer is to be effective. Mathematical modelling is used for a wide range of combustion and heat transfer processes including the burnout of oil, coal and coke particles, heat transfer and the residence time and concentrations of feed and product in the process.

A flash calciner is a relatively well mixed system and the simple well stirred furnace model developed by Hottel[7] can be used. By way of contrast, rotary kilns are much more complex with turbulent jet diffusion flames and significant variations in gas concentrations, heat release, and temperature both along the flame and through its cross-section.

### *Computational fluid dynamic modelling*

FCT is currently using the commercially available PHOENICS computational fluid dynamics (CFD) package as a design tool for an increasing number of flow problems, particularly problems involving materials in suspension, such as feed in a precalciner. The calculation commences by sub-dividing the solution domain into cells, thus forming the computational grid. When the grid has been constructed, the fluid properties and boundary conditions are specified. Having specified the grid, the fluid properties and the boundary conditions, discretised versions of the Navier-Stokes partial-differential equations that govern the dynamics of fluid flow are generated internally and solved by PHOENICS using a variety of finite-volume techniques.

PHOENICS can solve for up to 50 dependent variables, but the most common variables solved are pressure, three velocity components for each phase present, enthalpy, turbulence properties and concentrations of the various chemical species present. Auxiliary variables such as temperature, density, Mach number or absolute velocity are normally deduced directly from the solved

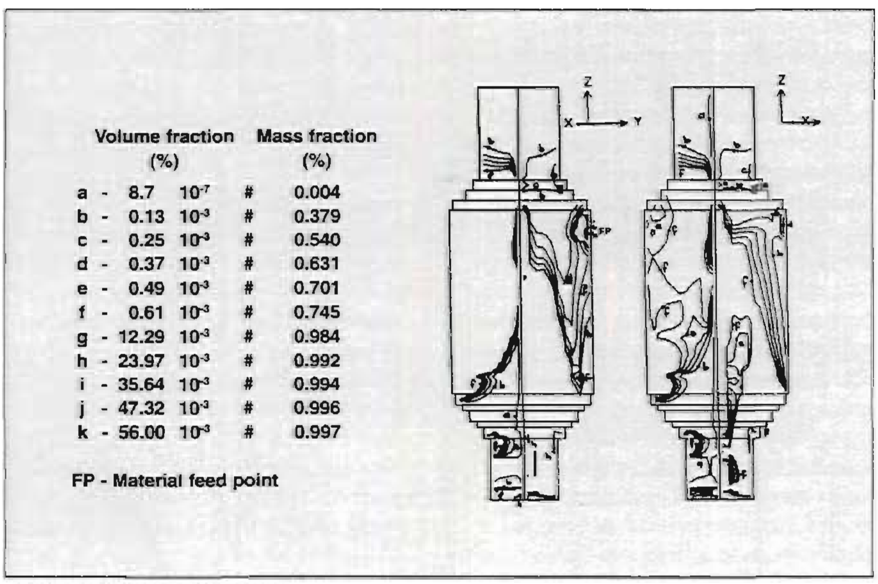



Figure 4. Typical CFD model results showing particle concentrations in a precalciner at three cross sections.

variables outlined above, and the values are stored at each computational cell for subsequent analysis or plotting.

CFD Modelling[8] can play an important role in the design of the precalciner feed systems where it is used to study the particle trajectories, concentrations and residence times, Figure 4, in flash calciners, and to optimise these by suitable adjustments to the feed inlet position and velocity. These techniques result in optimised designs for new plants and improved output for existing units.

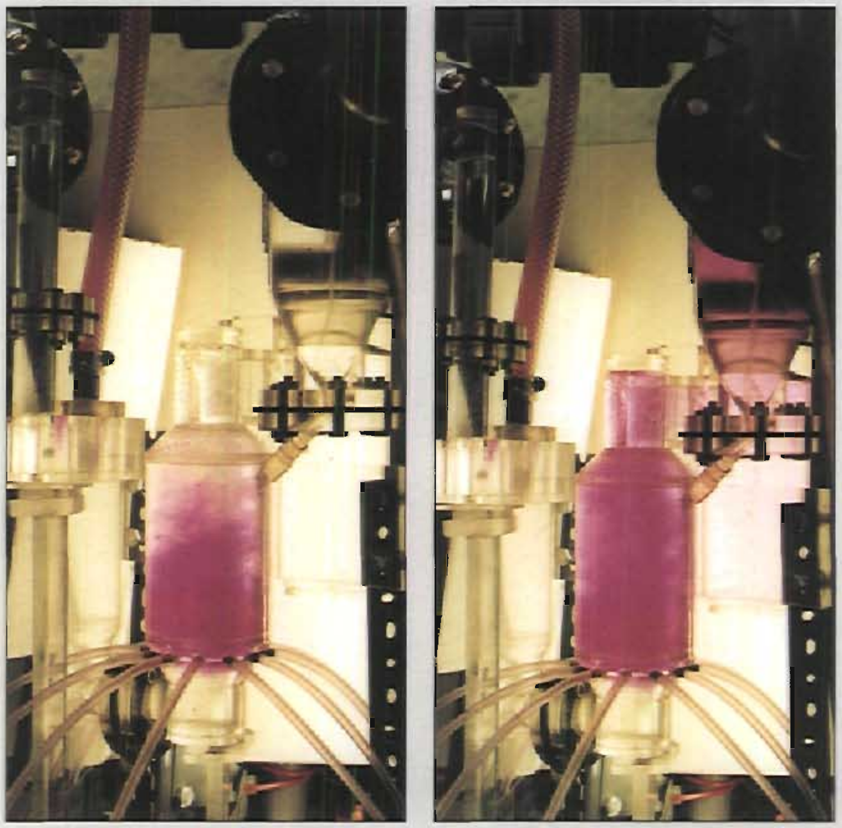
## Validation of modelling

It is one thing to produce a predictive method, and quite another to ensure that its predictions are correct i.e., in agreement with experimental observations. Consequently, considerable effort has been made by FCT. to 'validate' these computer models. The method is to make detailed comparisons between predictions and experiments; to interpret whatever discrepancies are discovered in terms of computational inaccuracies, inadequacies of the assumptions, and imprecisions of measurement; and then to implement improvements which result finally in the reduction of the discrepancies to acceptably-small values. FCT's computer models have been sufficiently validated for designers and operators of equipment to use reliably.

## Application of modelling to plants

Modelling can be used to solve problems with existing plants, optimise the performance of existing systems, assess the effect of fuel or other process changes in advance of the changes being made or optimise the design of new precalciners. FCT uses modelling for all these purposes. Typically more than one modelling technique is used for a particular application because each technique provides only part of the answer required. Acid/alkali modelling is used to simulate the combustion whilst the well stirred method of heat transfer is used to predict heat transfer from the flame to the product, with CFD modelling used to predict the particle trajectories and residence times.

It is vitally important that valid operational data is used in the modelling. This is particularly relevant where unstable operation is being investigated. In certain circumstances site measurements may be required using specialist instrumentation. Figure 5 shows acid/alkali modelling of unstable combustion conditions in a calciner. This unit was modelled following an extensive site investigation. Initially the combustion conditions flipped between the two conditions shown and the problem was resolved by relocation of the burners. This was implemented on the plant and it was found that the more stable the calcination process the better the product quality and the lower the fuel consumption. The characteristics of the fuel also significantly affect process stability owing to their different combustion characteristics and hence different heat release patterns they produce.



Normal combustion regime | Incomplete combustion

**Figure 5. Acid/alkali model of unstable combustion in a precalciner.**

## Conclusions

The success of the modelling process is more dependent on the engineer's skill at interpreting the plant data and determining the relevant modelling techniques to use than the elegance of the techniques themselves.

Only engineers adequately trained in modelling generally, and computer modelling of combustion in particular, can be used to 'operate' these models.

One technique used alone rarely gives sufficient information to provide a reliable solution. Engineers using modelling must therefore be skilled in the use of all the methods so that they do not favour the use of one technique above the others in possibly unsuitable circumstances.

The application of modelling techniques to precalciners has resulted in improved stability of operation, increased output, reduced specific fuel consumption and reduced emissions

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# COMBUSTION OPTIMIZATION IN, AND $NO_X$ EMISSION CHARACTERISTICS OF, ROTARY KILN FLAMES

**By**

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## ABSTRACT

Guesswork, simple calculations combined with the extrapolation of experience and model the system are the options for designing combustion systems for rotary kilns. While pure guesswork is rare, simple calculations and extrapolation are still the norm despite the availability of proven modelling techniques. This paper provides a brief background to combustion, heat transfer and NOx formation in rotary kilns and demonstrates how these modelling techniques, a detailed knowledge of the interaction of the combustion process with the process itself and a consideration of NOx formation chemistry can be successfully applied to rotary kilns particularly when considering conversion of kilns from solid fuels to gas firing, product quality improvements, and waste and multiple fuel firing. Any one modelling technique gives only part of the answer and several methods have to be used to provide reliable answers for real industrial problems. Major benefits that can be realised taking this approach are reduced costs and increased profits for the kiln operator with reduced environmental impact. Much of the future emphasis will be directed towards NOx reduction while maintaining and improving predictability and product quality.

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**Dr. Peter J Mullinger** is co-founder and Deputy Chairman of Fuel and Combustion Technology Ltd. He has specialised in combustion since leaving school and has a lifelong interest in applying more scientific methods to the solution of real combustion and heat transfer problems particularly where products are directly heated by the flame. He is Director & Secretary of the International Kiln Association, a Fellow of The Institute of Energy (CEng) and a member of Council.

**Dr. Barrie G Jenkins** is co-founder and Technical Director of Fuel and Combustion Technology Ltd. He has specialised in combustion and heat transfer modelling since graduating from the University of Surrey. He is a director of the International Kiln Association, a Member of The Institute of Energy (CEng) and Chairman of the British Flame Research Committee.

## INTRODUCTION

Rotary Kilns are used for the processing and production of many materials in industry. Typical examples are: Cement clinker, lime, alumina, calcination of petroleum coke and many other ore beneficiation processes. There are similarities between all rotary kilns; they are all cylindrical, rotate at between 0.5 and 4 rpm and are fired by a single flame. However, here the similarity ends. Kiln configurations are process dependent, the required process temperatures vary widely, secondary air temperatures are highly variable as is firing system employed. This is in combination with a wide range of fuel types that are typically fired. But by far the largest industry using the rotary kiln is the cement industry with circa 2000 cement rotary kilns worldwide. Consequently, this paper is principally concerned with the cement rotary kiln but the general approach to resolving combustion problems, improving process efficiency and consideration of the complex interaction between the combustion process and the process itself is applicable across the range of processes employing the rotary kiln technology.

Optimisation of the energy consumption and process efficiency of cement kilns involves both fossil fuel and electrical energy. This paper is principally concerned with the former. Optimisation encompasses minimising fuel consumption, unburnts, NOx, $SO_2$ and cement linker grinding energy.

Cement clinker with small crystals and sharp boundaries assists easy grinding and gives the cement a high early strength. The crystal growth is strongly influenced by the heat transfer from the flame, favourable conditions being rapid heating from calcining temperature to sintering temperature and sudden quench in the cooler to freeze the crystal structure. These conditions are produced by a flame with a high heat flux close to the burner nozzle. Flames with very flat heat flux profiles give slow rates of heating and large crystals. The resultant clinker is hard to grind and produces cement with poor early strength. To compensate and meet market requirements the raw mix is sometimes adjusted, the kiln burnt harder, and the cement ground finer, thus increasing the energy consumption both in the kiln and in the grinding mill. The difference in energy consumption in the kiln and grinding mill between clinker produced by an optimised flame and a poor flame can be as much as 10%. With energy being a major cost in cement manufacture (between 40-50% of production costs) a poor flame heat flux profile therefore imposes a high economic cost as well as a significant increase in atmospheric emissions.

The importance of the flame on the cement clinker manufacturing process was first recognised by Martin (1) back in the late 1920's. A method of optimising the flame for an individual kiln was first developed by Moles and Jenkins (2) in the early 1970's. Early applications of this technique, dubbed Flame Control by Moles, were very successful (3). These early techniques used empirical formula together with physical modelling. The advent of the PC in the early 1980's permitted heat transfer modelling to be included. Today, with much more powerful PCs available, computational fluid dynamic modelling is also utilised.

This paper is concerned with the application of both physical and computer modelling techniques to the optimisation of combustion and heat transfer in commercial cement plants. The increasing use of these techniques leads to improved product quality, reduced fuel consumption and emissions, more stable kiln operation and improved refractory life. A section is also included on NOx and techniques to control NOx emissions.

## MODELLING OF COMBUSTION AND HEAT TRANSFER

Combustion and heat transfer are very complex subjects which are even today not readily amenable to rigorous mathematical analysis. Prediction of the performance of burners and combustion equipment and associated plant is therefore extremely difficult. There are essentially three choices for designing combustion and heat transfer systems:

1 Guesswork

2 Simple calculations combined with the extrapolation of experience

3 Modelling the system

Fortunately the use of simple guesswork is probably quite rare but the majority of kiln burner systems are still designed using simple calculations with the extrapolation of experience. Since the secondary air provides most of the combustion air in cement kilns, its temperature, velocity and flow distribution has a significant effect on the performance of the burner. There are unique differences between kilns (even those of the same size and nominal design) in respect of cooler and hood and hence secondary air temperature, velocity and flow distribution. This vital fact is largely ignored by most kiln builders and burner suppliers. It is little wonder therefore that kiln performance is often unsatisfactory, with the resulting problems giving unstable operation, poor clinker quality, high fuel consumption and CO emissions, and poor refractory life.

**Combustion in Cement Kilns**

Combustion is the oxidation of fuel to release heat. The objective of the combustion engineer and plant operator is to obtain a steady heat release at the required rate. The chemistry of the oxidation of hydrocarbon fuels is very complex but none of the reactions can take place until the oxygen in the air is brought into contact with the fuel. As a result all combustion processes take place in the following stages:-

MIXING - IGNITION - CHEMICAL REACTION - DISPERSAL OF PRODUCTS

The overall rate of combustion is dependent on the slowest of the above stages. In most industrial combustion systems, the mixing is slow while the other steps are very fast. The rate and completeness of the combustion process is therefore controlled by the rate and completeness of fuel/air mixing. Insufficient mixing produces unburnt CO in the flue gases, wasting fuel. For good combustion, it is necessary to ensure that adequate air is supplied and that the burner mixes the fuel and air streams effectively and efficiently, hence the combustion is controlled by the rate and completeness of the fuel/air mixing i.e.;

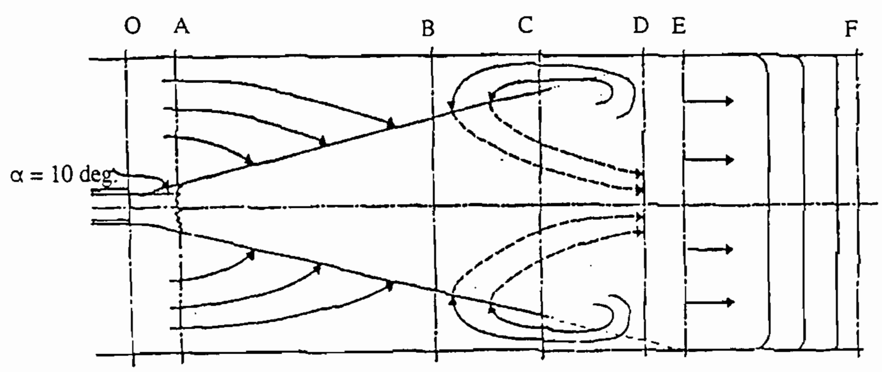
IF IT'S MIXED, IT'S BURNT

For kiln burners, fuel/air mixing occurs as a result of jet entrainment. Figure 1 shows a schematic of a fuel jet issuing from a burner nozzle in a rotary kiln. Momentum exchange occurs between the boundary of the jet (which is normally fuel and primary transport air) and its surroundings, causing the surrounding secondary air to be locally accelerated to the jet velocity. The accelerated air is then pulled into the jet thus expanding it. This process is momentum controlled and continues until the velocity of the jet is the same as that of its surroundings. The greater the momentum of the jet, the more rapidly the surrounding secondary air is entrained into the fuel.

If the jet has momentum in excess of that required for the complete entrainment of the secondary air, then recirculation will occur. A moderate degree of recirculation is a positive indication that fuel/air mixing is complete, while its absence is a clear indication that not all of the secondary air has been entrained into the fuel jet up to the point at which the fuel jet impinges on the kiln refractory wall. In the latter case, the production of significant levels of carbon monoxide is normal, as hot reducing gases will then be in direct contact with the coating and refractory, tending to "wash" away the coating and causing subsequent brick failure. The recirculating gases from a high momentum flame, however, provide a 'cushion' of cooler neutral gases which prevents this direct impingement of the flame on the coating and refractory.

Since the secondary air must be entrained into the primary air and fuel jet, the secondary air flow patterns and temperature have a huge effect on the fuel/air mixing. The aerodynamics are determined by the design of the cooler and secondary air inlet system (hood). As a result the design of these items significantly affects the combustion in the kiln. Any effective modelling of the combustion process must take these factors fully into account.

Typical Gas Flow Pattern in the Burning Zone




OA - Ignition distance

B - Position by which all secondary air is entrained into the jet boundary

C - Mid-point between B and D, "Eye" of recirculation bubble

D - Position by which all secondary air is mixed into the jet axis

E - Impingement point of non-swirl primary air jet on kiln shell (N.B. Not flame)

F - End of "Effective" flame

**Figure 1 Entrainment and Recirculation in a confined jet**

For any given kiln, the flame length and heat transfer are determined by the fuel/air mixing rate and the quantity of excess air. Increasing either the fuel/air mixing rates or excess air gives a shorter flame. The fuel/air mixing rate is dependent on the ratio of the momentum between the combined primary air and fuel jet and the momentum of the secondary air. Thus, the higher the velocity and mass flow of the primary air, the more rapid the fuel/air mixing.

Kiln operators will invariably run the kiln to give the best product he can achieve. If the fuel/air mixing is poor the kiln has to be operated at a higher excess air to shorten the flame to give adequate heat transfer. Operating at a relatively high excess air is detrimental to the kiln thermal efficiency, figure 2 This shows the relationship between the oxygen level and the measured daily heat consumption for a semi dry process cement kiln. Increasing the oxygen level in the kiln from 1% to 5% causes an increase in the heat consumption of more than 10%.

To obtain the best potential performance from any kiln, it is absolutely essential that the flame is optimised to give the best product crystal structure at low excess air. This requires that the aerodynamic characteristics of the kiln are taken fully into account when designing the burner.

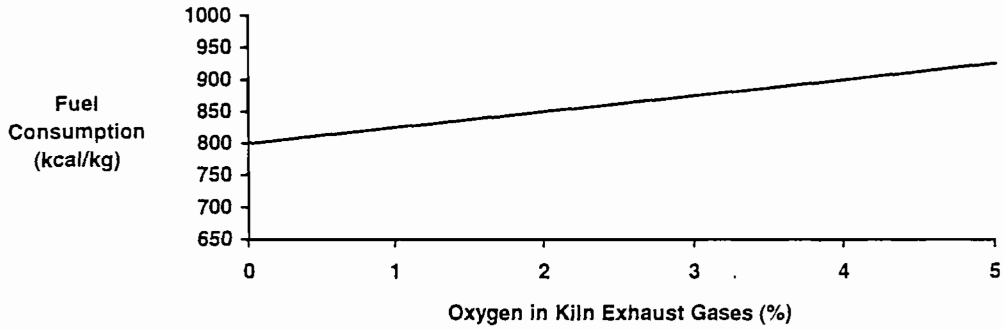



**Figure 2** **Effect of Excess Air on Kiln Fuel Consumption**

**Modelling of Combustion and Heat Transfer in Cement Kilns**

Effective modelling requires that the important parameters of the process being studied are identified and represented in the model. Since it is not possible to scale nature completely, physical modelling can only give part of the answer. Mathematical modelling is similarly limited both by computing power available and our ability to describe the combustion and heat transfer process mathematically. As a result each modelling technique represents a partial understanding of the process. The objective is to provide predictive techniques which work for real flames in real kilns and contribute to improved kiln performance. To achieve this objective normally requires the use of several modelling techniques simultaneously.

**Physical modelling of flames**

Despite the growth in computer modelling, physical modelling is still the most effective method for determining flame length and shape in rotary kilns. Acid/alkali modelling was developed by Sir William Hawthorne (4) at MIT as long ago as 1938 and is used to model the combustion process in rotary kilns where fuel/air mixing determines the flame characteristics. A physical model of the cooler, hood and kiln is constructed to an appropriate scale in clear acrylic plastic. The fuel is represented by dilute caustic soda solution containing phenolphthalein indicator, while the combustion air is represented by dilute hydrochloric acid. The concentration of the alkali and the stoichiometric ratio of alkali to acid is chosen to represent the correct air/fuel air requirement for the particular fuel. The flow of acid is adjusted to simulate different excess air levels, hence determining the relationship between flame length and excess air. The phenolphthalein becomes colorless at the boundary where the mixing is complete, thus the model flame envelope is defined by the coloured region. The aerodynamics of the full size system are reproduced on the physical model thus allowing an accurate simulation of the fuel/air mixing characteristics and hence flame length under representative conditions.

These model results have to be corrected since the model is run under isothermal conditions, while in the kiln, considerable changes in temperature usually occur as combustion takes place. This results in a reduction in the gas density and an increase in volume giving a longer flame in the kiln than in the model. For most practical purposes the model flame length has only to be corrected for the density changes. When the corrections are applied to the model results a series of curves of predicted flame length against excess air are produced see Figure 3.

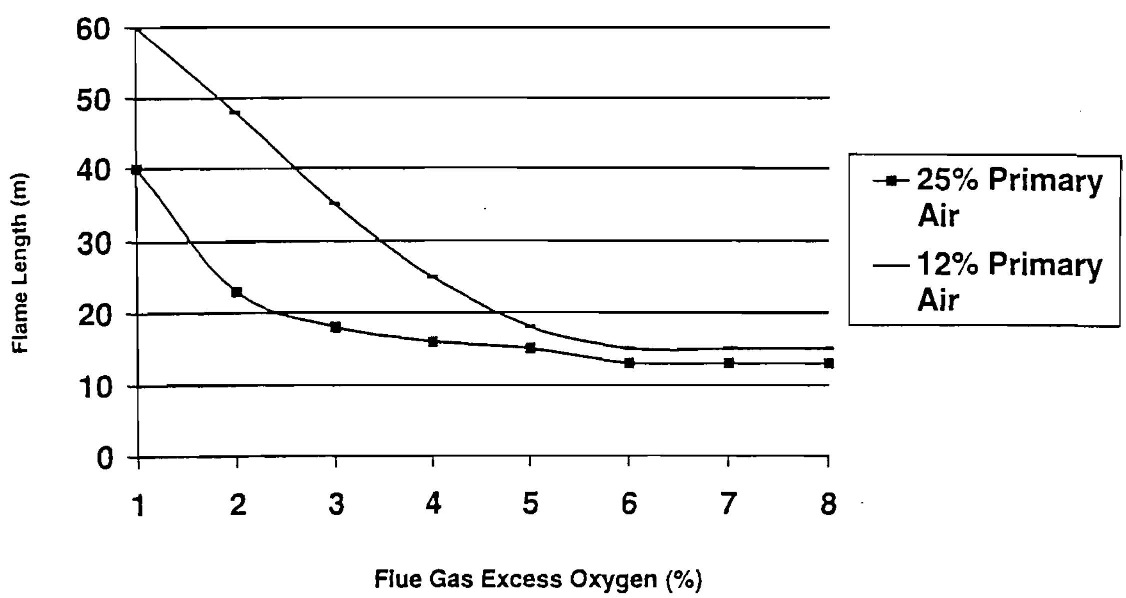



**Figure 3 Predicted Effect of Excess Air on Flame Length for Various Primary Airflows**

### Heat Transfer Modelling

The combustion process and its integration into energy transfer equipment design, is the most complex of all process engineering problems, requiring the simultaneous solution of heat, mass and momentum transfer. For effective modelling of combustion and heat transfer in a rotary kiln many factors must be taken into account. Rotary kiln flames are turbulent jet diffusion flames which are fortunately relatively well understood owing to the work of Thring and Newby (5), Craya and Curtet (6), and Becker (7). Their analysis of momentum transfer in free and confined jets has yielded theories to predict the macro-turbulent entrainment characteristics for both cold and hot systems. Mathematical modelling is used for a wide range of combustion and heat transfer processes including the burnout of oil, coal and coke particles, heat transfer and the residence time and concentrations of feed and product in the process.

For heat transfer modelling the kiln is divided into axial slices, typically 100mm thick, and the mixing rates, combustion heat release, and radiative effects of the gases and particles calculated within each slice to determine the radiant heat transfer to the product and walls. Convective heat transfer effects are also calculated within each slice. By stepping the calculation through the system, a realistic estimate of the burnout, gas temperature, heat transfer and product temperatures can be obtained. The flame itself and the combustion products absorb, and emit, thermal radiation. Both gases and particulate material present in the flame contribute to the absorbing propensity of the flame. Within the flame, the chemical effects of the combustion process are secondary, since the reaction time constants are orders of magnitude faster than the diffusional mixing constants. Thus, the combustion process can be reduced, with a 'mixed is burnt' assumption controlling the rate of heat release. The mathematical model used by FCT for calculating the heat transfer from flames in rotary cement kilns takes these factors fully into account and is described in reference 8.

### Computational Fluid Dynamic Modelling

FCT uses commercially available CFD software packages (PHOENICS, CFDS FLOW-3D, FLUENT) as design tools for an increasing number of flow and combustion problems, particularly problems involving materials in suspension, such as feed in a rotary kiln precalciner and the incineration of sewage sludge in a vortex combustor. In simple terms, the calculation commences by sub-dividing the solution domain into cells, thus forming the computational grid. When the grid has been constructed, the fluid properties and boundary conditions are specified. Having specified the grid, the fluid properties and the boundary conditions, discretised versions of the Navier-Stokes partial-differential equations that govern the dynamics of fluid flow are generated internally and solved by the applicable CFD solvers. More complex systems including two phase and combustion flows are also mathematically simulated.

### NOx assessments

The NOx formation in kiln flames is generally by both thermal and fuel routes (for coal, oil and petroleum coke which contain fuel nitrogen). Owing to the very high flame temperatures which occur i.e., above 2000$^{o}$C thermal NOx is generally the dominant mechanism and typically accounts for circa 70% of the total

NOx emission dependent on secondary air preheat temperature. In gas fired kilns fuel NOx is absent so all the NOx is thermal NOx. However, it should be noted that the absence of fuel NOx in gas fired kilns does not necessarily lead to a reduction in NOx emissions, since gas flame temperatures are often higher than of coal or oil. Apart from temperature, the in-flame oxygen concentration and the residence time in the high temperature zones influence the final thermal NOx emissions.

The formation of NOx is complex and still not a well understood process consequently, modelling these of the NOx formation process is still very difficult. Some of the currently available models are capable of predicting the trends of NOx formation with change in flame conditions and fuel type, but the accuracy is poor and sometimes little better than orders of magnitude. Currently, the most reliable methods of predicting NOx emissions from full scale flames is by empirical scale up from test flames. FCT has achieved good results using the data from the test work undertaken by The International Flame Research Foundation for the **CEMFLAM 1** consortium (9) and the main results of this work are described in some detail in a subsequent Section of this paper. In addition, for prediction of NOx in rotary kilns, FCT utilise a customised version of the FACSIMLE kinetic package produced by AEA Technology. This computer package consists of a suite of closely related programmes for the modelling of complex steady state and time-dependent chemical reactions including an extensive NOx modelling capability. To allow for acceptable NOx predictions to be made in industrial combustion processes, FCT have modified the code to take account of gas temperature-time history and fuel air mixing. This latter data is generated from the associated physical and heat transfer modelling. To date results have been encouraging with predictions of NOx emissions from an existing "dead burned" dolomite kiln being within 10% of measured values. Further validation of this programme over a broad range of combustion processes is currently in being undertaken by FCT.

**Validation of Modelling**

It is one thing to produce a predictive method, and quite another to ensure that its predictions are correct i.e., in agreement with experimental observations. Consequently, considerable effort has been made by FCT. to "validate" these computer models. The method is to make detailed comparisons between predictions and experiments; to interpret whatever discrepancies are discovered in terms of computational inaccuracies, inadequacies of the assumptions, and imprecisions of measurement; and then to implement improvements which result finally in the reduction of the discrepancies to acceptably-small values. To date FCT'Is computer models have been sufficiently validated for designers and operators of equipment to use reliably.

## APPLICATION OF MODELLING TECHNIQUES TO REAL KILNS

Modelling can be used to solve problems with existing kilns, optimise the performance of existing kilns, assess the effect of fuel or other process changes in advance of the changes being made or optimise the design of new plant. FCT uses modelling for all these purposes. Typically more than one modelling technique is used for a particular application because each technique provides only part of the answer required. Within the kiln itself acid/alkali modelling is used to simulate the combustion while the zone method of heat transfer is used to predict heat transfer from the flame to the product. For flash calciners both techniques can be used together with CFD modelling of the particle trajectories and residence times.

The major benefits are reduced costs and increased profits for the kiln operator with reduced environmental impact. The former is attributable to reduced fuel consumption, improved refractory life, and shorter downtime, with potentially greater sales resulting from longer production runs and improved product quality. The reduced emissions are the result of reduced flue gas volumes and less unburnt fuel. A few examples are described below.

### Kiln conversions to gas firing

FCT first applied these techniques to lime kilns over ten years ago during the conversion of a lime kiln in the Cheddar Gorge to gas firing. The first cement application came a year later with the conversion of Cockburn Cement's kilns in Western Australia to gas firing. Cockburn Cement operates three cement kilns and two rotary lime kilns. Four of the kilns at Cockburn Cement had originally been oil fired and then converted to coal using a very difficult local coal. The coal firing systems were designed using Moles and Jenkins Flame Control Techniques back in 1981. The initial conversion to gas firing was undertaken using the traditional technique of simple calculations combined with the extrapolation of experience. While these burners were satisfactory in the two smaller cement kilns they gave serious problems with product quality on the largest cement kiln and on one of the lime kilns. FCT was called in and asked to assist with identifying and resolving these problems and designing a burner for the second lime kiln. Acid/alkali modelling of the combustion and mathematical modelling of the heat transfer was undertaken for both kilns and new burners designed and successfully installed.

### Product quality improvements

Adelaide Brighton Cement operated a gas fired preheater kiln rated at 2000 tonnne/day using a high velocity gas burner without primary air. The plant management used the Ono method for assessing burning conditions in the kiln and this indicated a slow rate of heating of the charge. The kiln flame was modelled using the acid/alkali technique which confirmed a long slow mixing flame, Figure 4. Heat transfer modelling confirmed a flat heat flux profile consistent with large crystals and high proportion of glass phase.

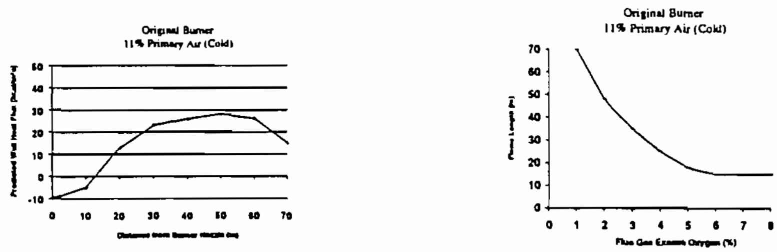



**Figure 4 Flame lengths and Heat Flux Profiles for Existing Combustion Conditions**

Improving the heat flux profile by better fuel air mixing is a matter of increasing the burner jet momentum relative to the secondary air momentum. With the maximum gas velocity already in use this could only be achieved by adding some primary air to the burner, hence increasing the overall mass flux of the burner jet. To achieve the most suitable flame length and heat flux profile the flowrate and velocity of this primary air has to be optimised. This is essentially a trial and error technique with the equivalent of various primary air flows and velocities tried on the acid/alkali model. This is a time consuming business but much quicker than a similar trial and error exercise on the full size kiln! Once conditions are optimised then the heat transfer model is used to assess the heat flux profile. The modelling confirmed that improving the mixing by using some primary air would produce considerable benefits in terms of flame length excess air and heat flux profile, Figure 5. A suitable burner was designed and installed.

Following commissioning of the new burner there were several significant improvements in kiln operation including improved stability, better coating and improved clinker quality. CO emissions and specific energy consumption were reduced. The clinker was also easier to grind.

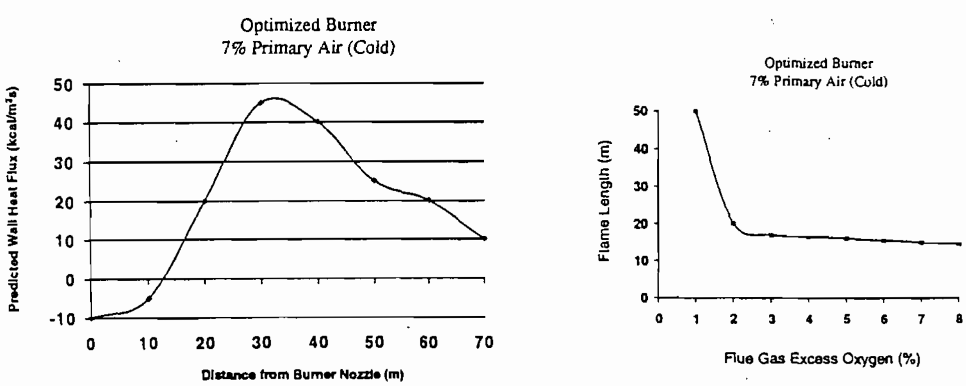



**Figure 5 Flame lengths and Heat Flux Profiles for Optimised Combustion Conditions**

**Precalciner conversion modelling**

Later this kiln was converted to a precalciner kiln and the new kiln process conditions modelled. Operation in precalciner mode requires lower primary air flowrates and velocities than preheater mode for optimum performance. Modelling also played an important role in the design of the calciner with acid/alkali modelling used to determine the optimum position for the burners. In more recent times CFD modelling has been used to study the particle trajectories, concentrations and residence times in flash calciners (10) and to optimise these by suitable adjustments to the feed inlet position and velocity. These techniques result in improved output for existing units.

**Waste fuels and multiple fuels**

The modelling techniques outlined above can cope with multiple fuel firing. Hence waste derived fuels can be effectively utilised with minimum disruption to both the kiln and environment by the use of modelling to ensure that the fuel/air mixing is excellent. This allows unburnts to be minimised while optimising the heat flux profile produced by the combination of waste and main fuel firing.

## NOx FORMATION IN ROTARY KILNS

### NOx Formation Mechanisms

Thermal NOx is formed by the combination of atmospheric nitrogen and oxygen at very high temperatures. The high temperatures are required because of the high activation energy of the reaction, due particularly to the energy required to break the bond in the nitrogen molecule. The reaction is therefore highly temperature dependent. The reaction takes place between oxygen radicals, nitrogen radicals and molecular nitrogen and oxygen in the Zeldovich reaction couple. Apart from temperature, the in-flame oxygen concentration and the residence time in the high temperature zones influence the final thermal NOx emissions.

Most fuels, other than gas, contain nitrogen bound as organic compounds in the fuel structure. When the fuel is burnt this organic nitrogen becomes converted into a range of cyanide and amine species which are subsequently oxidized to NOx, depending on the local oxygen availability, but this mechanism is less dependent on temperature.

A third mechanism of NOx formation has been identified by some workers which involves the fixation of nitrogen by hydrocarbon compounds in fuel rich areas of the flame. This mechanism is known as prompt NOx. The formation mechanisms of prompt NOx, thermal NOx and fuel NOx are described in more detail below.

### Thermal NOx

The common approach for explaining the formation of thermal NOx is to base the theory on two basic Zeldovich reactions.

$$O + N_2 \underset{k_{1b}}{\overset{k_{1f}}{=}} NO + N \qquad \text{- (R1)}$$

$$N + O_2 \underset{k_{2b}}{\overset{k_{2f}}{=}} NO + O \qquad \text{- (R2)}$$

$K_{1f}$ is strongly dependent on the local temperature. $[N_2]$ and $[O_2]$ are traditionally set to the equilibrium conditions at the prevailing temperature but in coal flames the temperatures are probably too low for this equilibrium assumption to be valid for $[N_2]$ and it is virtually impossible to measure [O] using currently available techniques.

The above is a limited and greatly simplified approach to the theory of thermal NOx formation and is included to allow an appreciation of the complexity of the theory and the difficulty of making theoretical predictions of thermal NOx emissions. Figure 6 shows the extreme temperature dependence of thermal NOx formation.

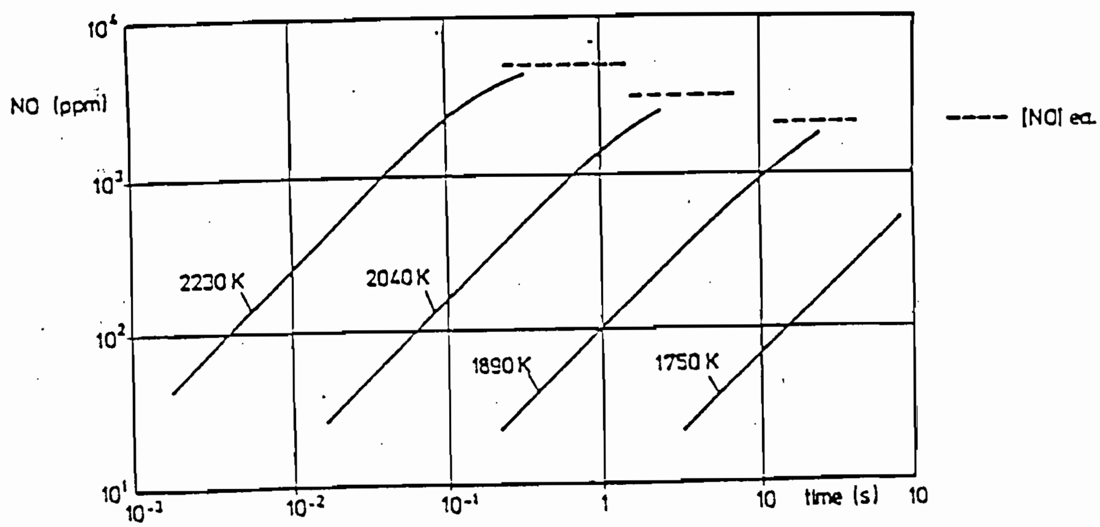



**Figure 6 Dependence of Thermal NOx Formation Rate on Temperature**

**Fuel NOx**

Fuel NOx is generally associated with coal or petroleum coke combustion which contain nitrogen chemically bound within their structures, and to a lesser extent with oil. Most studies on fuel derived NOx have been performed on coal and the main focus of this section is related to fuel NOx derived from coal combustion. The mechanisms by which NOx is formed from the chemically bound nitrogen in coal is extremely complex, even the structure of the nitrogen in the coal is subject to considerable conjecture. The nitrogen is believed to be in the form of pyridine, pyrrol and amine type structures, Figure 7. The actual structure in any coal or oil is believed to be strongly dependent on coal type or the origin of the oil. The predominant forms of nitrogen in most coals are the pyrrolic and pyridine forms and that the former tends to decrease with increasing coal rank. However, at present, the importance of the structure of the nitrogen in the coal on the final NOx emissions is not well established.

When coal is burnt in suspension as in rotary kilns, it is heated very rapidly to high temperatures and pyrolysis occurs, producing solid and gaseous products. The nitrogen present will divide between these with typically 20% of the nitrogen in the char and 80% in the gaseous phase, the latter both as the light fractions and tars. For any coal, the distribution of nitrogen between the gaseous phase and char is heavily dependent on the conditions in the flame such as heating rate, peak temperature, and residence time at high temperature.

A simplified NOx formation path is shown in Figure 8. Most of the gaseous nitrogen pyrolyses either directly or indirectly to HCN. This complex process is not instantaneous but dependent on the conditions in the flame. The HCN then oxidizes to NO, Figure 9, with this reaction being both temperature and time dependent, Figure 10.

**Prompt NO**

In low temperature fuel rich flame zones, NO is found to form more rapidly than predicted from considerations of the thermal NO mechanism. The difference is due to the so called "Prompt NO" formation mechanism. Prompt NO is formed by the rapid fixation of atmospheric nitrogen by hydrocarbon fragments. Reactions of the following form are involved:

$$CH + N2 = HCN + N$$

$$C + N2 = CN + N$$

NO is subsequently formed from the oxidation of the nitrogen atom:

$$N + O = NO$$

HCN and CN also react to form NO by reactions important in the fuel nitrogen conversion mechanism. Prompt NO is formed in all combustion systems but its contribution to the total NOx emission is combustion system and fuel dependent. In cement kilns its contribution to the total NOx is negligible.

To control NOx emissions it is important to identify the dominant source during the combustion process. If thermal NOx is dominant, reduction in flame temperature is required or reduced residence time at high temperature in the flame gases. This, however, may compromise process requirements. If fuel NOx is dominant, manipulation of the fuel air mixing ,creating fuel rich zones (restricting oxygen availability during volatiles combustion) where fuel bound nitrogen can react to molecular nitrogen as opposed to NOx, offers significant potential. Work performed within the aforementioned CEMFLAM research programme at the IFRF (9) demonstrated a very important feature of rotary kiln flames. Dependent on burner type, primary air momentum and primary air percentage, a distinct ignition delay is generally observed before the flame is initiated. During this pre-ignition period, secondary air is being entrained into the primary air/fuel jet. The greater the ignition delay distance, the greater the amount of air entrained into the fuel jet prior to ignition. This results in higher flame temperatures resulting in increased thermal NOx formation and a more oxygen rich flame environment with consequential more effective conversion of fuel bound nitrogen to NOx. Experimental results confirming this effect is shown in Figure 11 where NOx levels are plotted

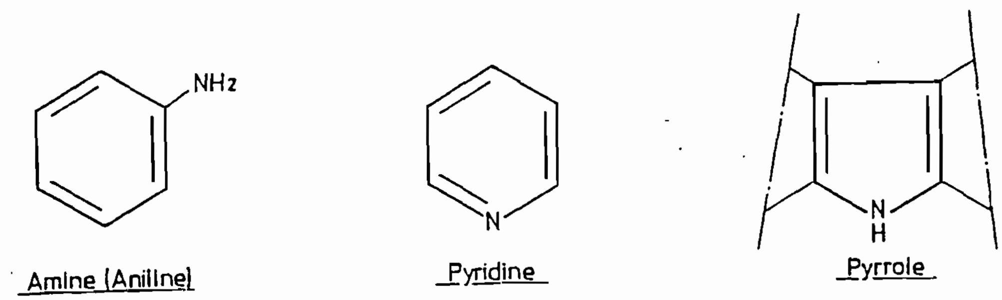



**Figure 7 Characteristic Forms of Nitrogen in Coal**

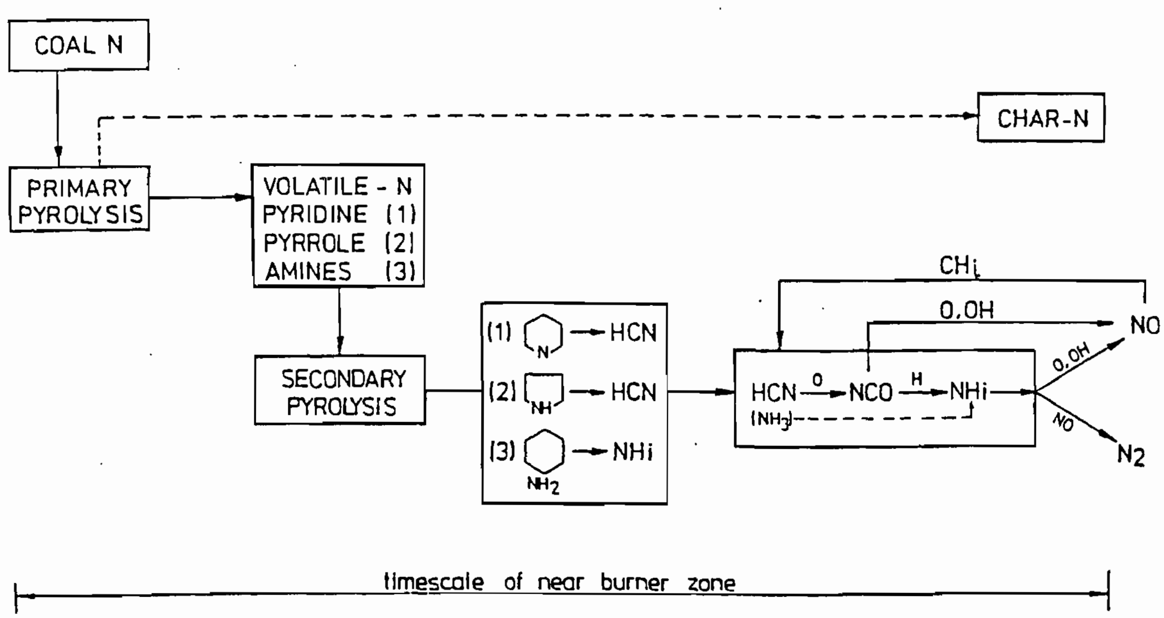



**Figure 8 Outline of Fuel NOx Formation Path**

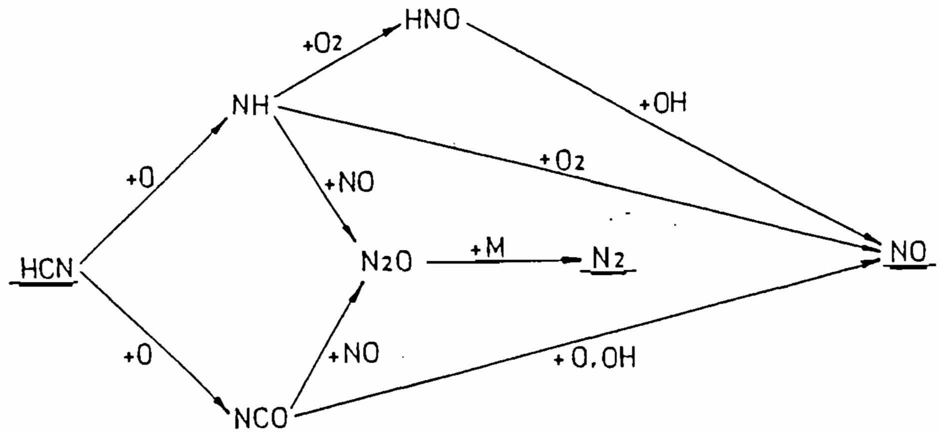



Figure 9 Mechanism for Conversion of HCN to NO in Flames

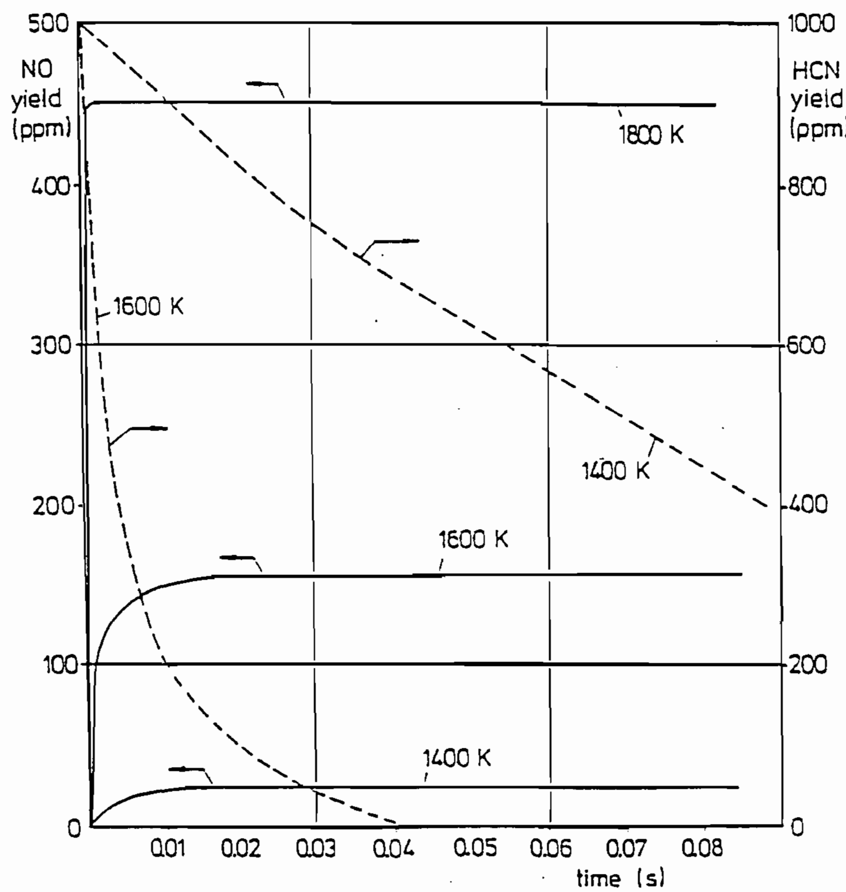
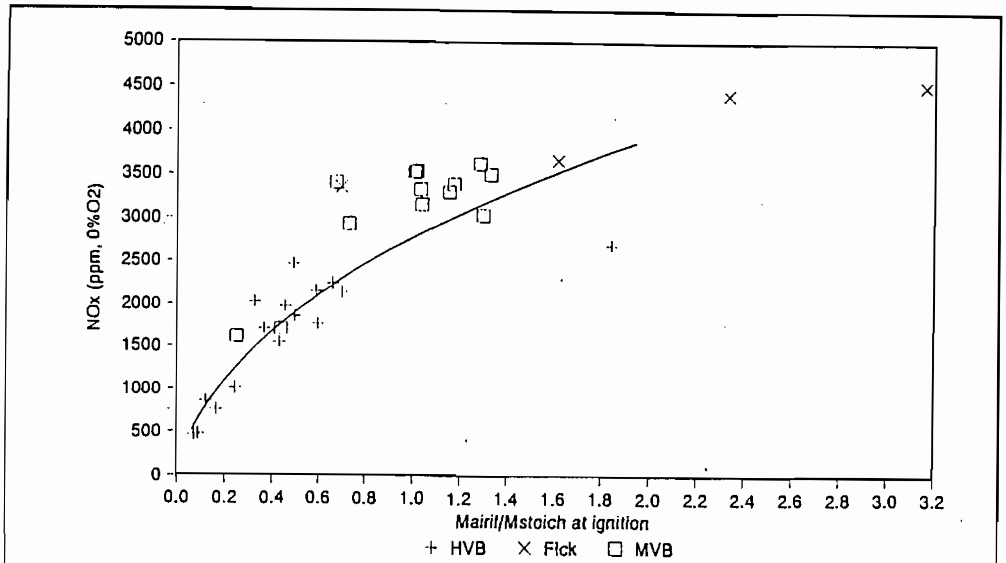



Figure 10 Effect of Temperature on the Rate of Conversion of HCN to NO in Flames

against calculated amount of air entrained into the fuel jet at the point of ignition. FCT are actively exploiting this phenomenon in the design of low NOx rotary kiln burners.




IFRF

**Fig. 6.1: NOx versus $M_{airinflame}/M_{stoich}$ at ignition (mono channel)**

**Figure 11 NOx Emissions as a Function of the Amount of Air Entrained into the Fuel Jet at the Point of Ignition Relative to Stoichiometric**

## NOx Reduction with Natural Gas

The Gyro-Therm burner uses the patented Precessing Jet (PJ) nozzle developed at the University of Adelaide, in combination with other jet flows, to provide a high radiation, low NOx flame tailored for a given application. To date its principal application has been in gas-fired rotary lime, alumina, cement and zinc oxide kilns but new developments are in progress and it is anticipated that it will soon find application using other fuels and in other processes.

Precession is a term used to describe the "gyroscopic" like rotation of a body about an axis other than its own centerline, such as a spinning top that is leaning to one side. In the case of a precessing jet, at any instant the jet is directed at an angle to the nozzle axis, about which it precesses. The precession creates a much larger scale of mixing than occurs in a conventional jet, as well as increased spreading of, and entrainment by, the jet. The precessing motion is generated without any moving parts by the patented Gyro-Therm nozzle. A naturally occurring fluid-mechanical phenomenon is established when the nozzle dimensions are correctly selected. This causes rapid jet precession (typically 10 Hz, depending on the burner size and flow rate), so that the flame itself does not precess. Rather the effect is to produce large-scale mixing, via the "stirring" type action of the jet, and a flame which spreads rapidly. In addition the rapid precession also generates a low pressure region along the nozzle axis which limits the total spread of the jet by causing the precessing jet to bend inward toward the nozzle axis. The consequence of this is that, although the flame spreads more than that from a conventional single jet nozzle, the amount of spread is limited and can be controlled, figure 1. This fact is important in cement kilns where direct impingement of a flame on the clinker would produce reducing conditions, which would be detrimental to product quality.

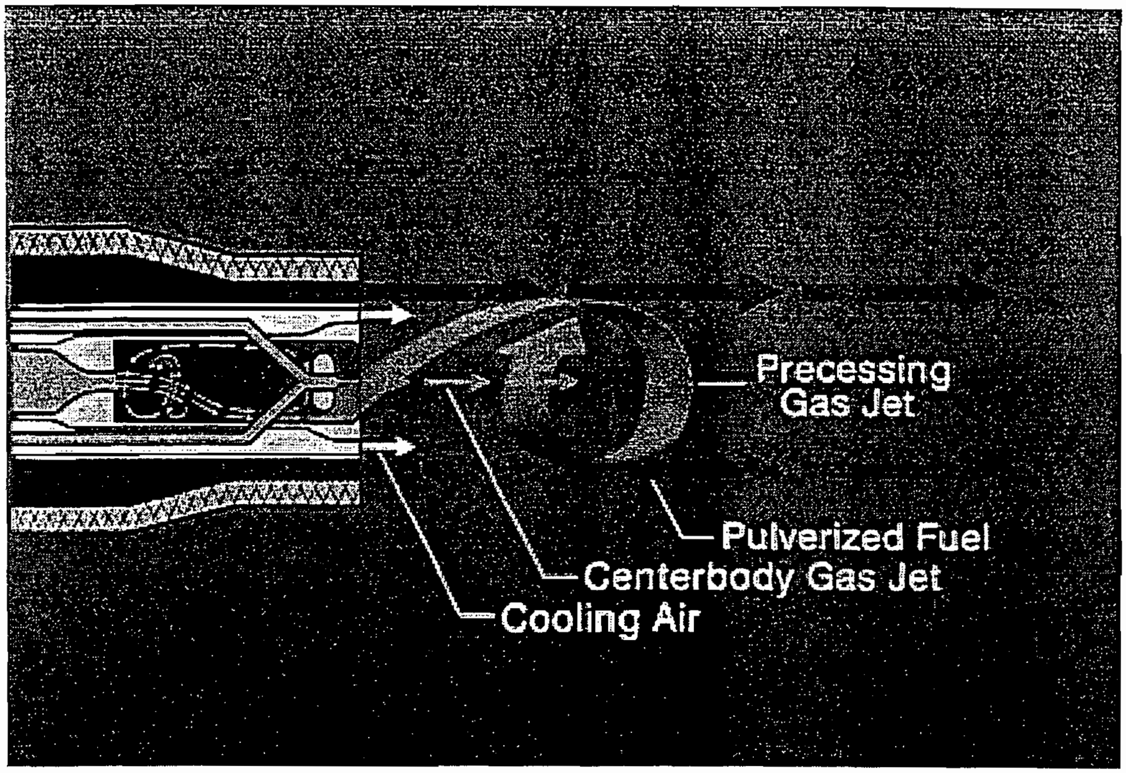



**Figure 1 Precessing Jet nozzle with a simplified schematic of the flow-field generated**

The effect of the jet precession on a gas flame is dramatic. Measurements conducted in industrial plants and in recognized research institutions have shown that in general there is a simultaneous increase in flame luminosity, reduction in peak flame temperatures, reduction in NOx emissions and an increase in flame stability. While the extent of the these changes depends upon specific conditions, they tend to be significant. For example, in a simulated boiler configuration in the 2 MW gas fired facility at the International Flame Research Foundation (IFRF), the Netherlands, the characteristic flame temperatures were about 150$^{0}$ C lower than the equivalent swirl burner and the NOx emissions were about 50% lower (Nathan, Luxton and Smart, 1992). In a cement kiln, the increased radiation translates to increased heat transfer to the product near the front of the kiln which improves specific fuel consumption, product quality and output. While the extent of these changes depends upon the type of burner to which it is being compared, the reductions in NOx emissions are typically 30-60%, and the reduction in fuel consumption 3-5%. Because the Gyro-Therm flame generally produces a shorter heat release profile than the burner it replaces, a reduction in the back-end temperature of the kiln by 20-60 degrees typically follows, which can also result in reduced dust losses. Likewise the increase in bed temperatures at the front of the kiln, typically by 100 degrees, are beneficial for product quality in cement and lime kilns (Manias & Nathan, 1993, Balendra, Manias & Rapson, 1996).

The reduction in NOx emissions caused by jet precession is, at least in part, a direct consequence of the increased size of the largest scales of turbulence. In contrast to the intense, fine-scale mixing of a high momentum jet burner, which produce produces intense combustion with high temperatures and a clear blue colour in natural gas flames, the precessing jet flow produces fuel-rich combustion at the interface of the fuel and air within large pockets. This causes cracking in the flame which in turn produces a luminous, lower temperature flame front and minimises the NOx produced. Any soot produced is a local phenomena and burns out completely within the flame. The CO emissions are comparable with other well designed burners.

The mixing generated by the precessing jet nozzle is produced directly by the gas stream, utilising the potential energy which is available in the high pressure gas supply rather than requiring a high momentum ``primary" air stream. This means that the primary air fan size can be reduced relative to most burners, or eliminated in some cases. In most high temperature rotary kilns a Gyro-Therm burner is typically designed to use a small quantity of primary air, say 1-3% of the total air. The primary air is used at low firing rates for flame shaping and for cooling the burner in the event of a kiln stoppage. Being able to reduce the primary air has the dual advantage of reduced operating and maintenance costs of a primary air fan and, more importantly in many applications, increased thermodynamic efficiency. The efficiency gains occur when cold primary air is introduced at the expense of reduced amounts of hot secondary air, such as in a rotary kiln with a product cooler.

**Flame Shaping and control of Heat Flux**

The precessing jet nozzle, by itself, produces a gas flame which spreads rapidly and releases a lot of radiant energy close to the burner. In some applications, such as many of the larger rotary cement kilns, such a flame could create impingement problems or result in reduced kiln stability. To provide a simultaneous reduction in the spread of the flame and a lengthening of the heat release profile, the Gyro-Therm incorporates a centre-body jet into the precessing jet nozzle design. The centre-body jet is a high momentum jet located on the axis of the burner which, acting alone would create a conventional high momentum, low luminosity flame with a relatively long heat release profile. By adjusting the ratio of flows between these two jet streams, an intermediate flame can be obtained although the interaction between the two flows is complex and non-linear, figure 2.

A relatively small proportion of gas introduced through the centre-body jet, typically 10-30% of the total gas flow, is sufficient to provide good flame shaping in rotary cement, lime, and alumina kilns (Rapson, Stokes & Hill, 1995). Within this range the center-body gas flow appears to have only a secondary influence on NOx emissions, that is through its effect on the temperature profile of the bed which, in turn, effects the secondary air temperature and the radiant feedback to the flame (Hill, Rapson & Nathan, 1995).

The formation of NOx in flames is generally by both thermal and fuel routes (for coal, oil and petroleum coke and other fuels containing fuel bound nitrogen). The total NOx emission is always made up of contributions from both sources. The dominant source, however, is dependent on the amount of nitrogen contained in the fuel and the flame temperature with the latter being highly dependent on secondary air preheat temperature and the thermal requirement of the material being processed. Secondary air temperatures can vary from ambient in the case of petroleum coke calcination to in excess of 1100°C for the production of cement clinker. Dependent on the process, reactions can be exothermic of endothermic or the process may merely require the material in the kiln to be heated to a pre-specified temperature. If NOx emissions are an issue for a particular process, the dominant source of NOx in the flue gases must be identified if the appropriate NOx reduction technology is to be employed to facilitate it's reduction without compromising the process thermal requirements. In the cement industry specifically, with the kiln fired with solid or liquid fuels, very high flame temperatures occur i.e.., above 2200°C, and thermal NOx is generally the dominant mechanism accounting for between 60 and 70 % of the total NOx appearing in the flue gases.

In gas fired plant, by contrast, fuel NOx is absent so all the NOx is thermal NOx. However, it should be noted that the absence of fuel NOx in gas fired plant does not necessarily lead to a reduction in NOx emissions, since flame temperatures are often higher.

## FUTURE DIRECTION

With over two hundred examples of the aforementioned modelling techniques successfully applied to a wide range of real plants over the past 15 years the authors have considerable confidence in the use of these techniques. Much of the future emphasis of FCT's work will be directed towards NOx reduction while maintaining and improving predictability and product quality.

## CONCLUSIONS

1. The success of the modelling process is more dependent on the engineer's skill at interpreting the plant data and determining the relevant modelling techniques to use than the elegance of the techniques themselves.

2. Only engineers adequate trained in modelling generally, and computer modelling of combustion in particular, can be used to 'operate' these models.

3. One technique used alone rarely gives sufficient information to provide a reliable solution. Engineers using modelling must therefore be skilled in the use of all the methods so that they do not favour the use of one technique above the others in possibly unsuitable circumstances.

4. The users and designers of combustion equipment have tasks to perform of such magnitude that failure is not to be contemplated. No one should be willing to employ predictive means which have not been validated and in which they do not have complete faith.

5. A thorough understanding of the various NOx formation mechanisms in combination with a detailed knowledge of the combustion process and the thermal and chemical requirements of the material being heated in a rotary kiln is necessary to design an effective low NOx combustion system.

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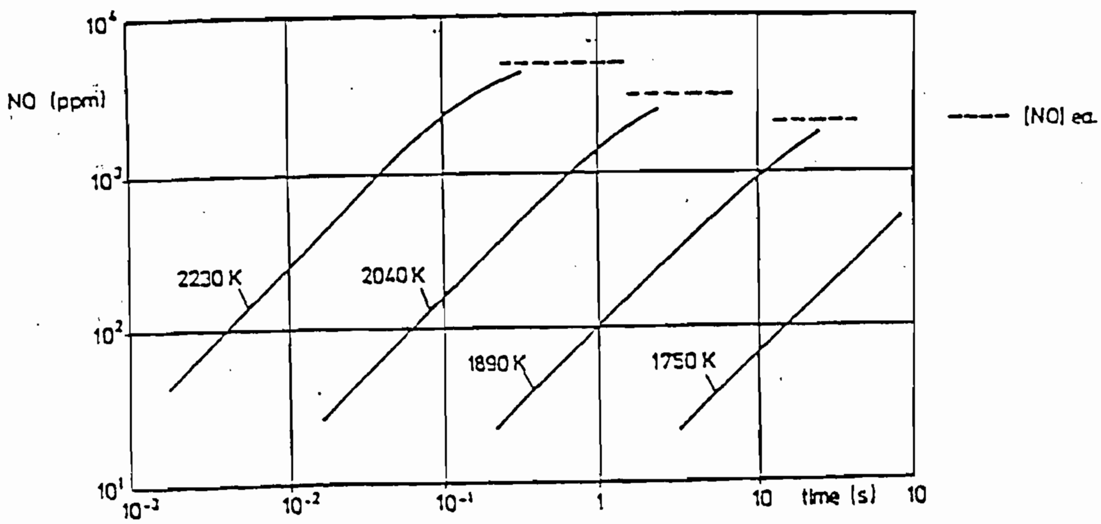


**Figure 6 Dependence of Thermal NOx Formation Rate on Temperature**

**Fuel NOx**

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# PROCESS OPTIMIZATION AND FUEL COST REDUCTION IN CLINKER PRODUCTION. THE APPLICATION OF FLAME CONTROL

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## INTRODUCTION

Fuel costs are normally a major factor in cement production costs whatever fuel or manufacturing process is used. The relative cost of fuel as a proportion of the manufacturing costs is, of course, different for the different processes but fuel savings normally result in significant cost savings and increasing profits for the operator/owner, whatever the manufacturing process.

Cement manufacture requires a very precise rate of heating and cooling of the charge in order to complete the chemical reactions and achieve the appropriate crystaline structure.

To achieve the appropriate charge heating rates, the flame must produce the correct heat flux to the product (1). Too low a heat flux produces high free lime material whilst too high a heat flux produces overburnt clinker with excessive liquid phase. In both cases poor cement strengths result. In practice the plant operator adjusts the heat flux to the product by changing the flame length by altering the excess air, figure 1. Increasing the excess air, shortens the flame and increases the heat flux to the charge. At the same time the increased air flow carries more heat to the preheating zone of the kiln and hence to the atmosphere thereby increasing the kiln heat losses and hence increasing the fuel consumption.

In a cement kiln the increased air flow through the coolers also causes a reduction in the secondary air temperature, and therefore a reduction in the flame temperature, thus requiring even more fuel to heat the charge to the required sintering temperature. The total increase in fuel consumption due to excess air is much greater than that necessary to heat the excess air to back-end temperature alone.

Reducing the excess air increases the flame length and reduces the heat flux to the charge. The reduced air flow through the kiln carries away less heat and hence the fuel consumption is lower. Figure 2 shows the effect of kiln oxygen level on the measured heat consumption for a pulverised coal fired cement kiln (2). It can be seen that the effect of excess air on kiln thermal efficiency is very considerable.

There is a clear advantage in low excess air operation, since the kiln fuel consumption is minimised. However, it is not possible to operate at low excess air if the kiln flame is too long and the heat flux is inadequate to make good clinker. This is the reason that, the instructions to plant operators by senior works staff to reduce oxygen levels, during and following the energy crisis in the early 1970's, appeared to fall on deaf ears. It was not possible for kiln operators to reduce the kiln oxygen level and still manufacture satisfactory clinker. Since the operator got into more trouble for making bad clinker, than for running the kiln at a higher oxygen level than was ideal for fuel economy, his choice of action was obvious.

## Effect of Burner Design on Combustion Efficiency

The burner is one of the most critical components of the kiln system. It is only in recent years that the real importance of burner design has become recognised. However, even today, it is unusual for the burner to be considered as an integral part of the kiln and cooler system, which is essential for optimum operation of a cement kiln. Most kiln burners will operate in most kilns reasonably satisfactorily but in many cases it is difficult to achieve oxygen levels below 2-4% without carbon monoxide and still maintain product quality. To operate consistently at an oxygen level of 1-2%, and maintain product quality, requires that the burner is matched to the aerodynamics of the kiln/cooler system. This technique, pioneered by Moles of the Fuels and Energy Group at the University of Surrey is known as "Flame Control" (3). It can typically save in the order of 5% of the fuel which would otherwise be used on a kiln utilising a burner which was not matched to the kiln aerodynamics. Flame control applies equally to oil, gas or pulverised coal firing.

## Combustion In Rotary Kilns

The heat producing components of oil, coal and natural gas are carbon and hydrogen and these are oxidised to release heat. The chemistry of this oxidation process is a very complex chain reaction. However, for our purposes we can reasonably simplify the chemistry to three basic equations:-

1. The Complete Oxidation of Carbon

$C + O_2 \longrightarrow CO_2$ + 394 kJ/mol

2. The Complete Oxidation of Hydrogen

$2H_2 + O_2 \longrightarrow 2H_2O$

$\nearrow$ +572 kJ mol
water condensed

$\searrow$ + 484 kJ/mol
water as steam

The difference in the physical states of the water vapour produced as a result of the oxidation of the hydrogen is the reason for the complexity of the net and gross calorific values for hydrocarbon fuels.

3. The Incomplete Oxidation of Carbon

In the event of imperfect fuel/air mixing not all of the carbon in the fuel will be oxidised to carbon dioxide but a proportion will remain as carbon monoxide. The main effect of carbon monoxide production is to reduce the heat released from the fuel, this is because the oxidation of carbon to carbon monoxide releases less heat than the oxidation to carbon dioxide.

$2C + O \longrightarrow 2CO$ + 221 kJ/mol

It can be seen that only just over half of the heat is released in the production of carbon monoxide compared with the production of carbon dioxide. Thus, any burner producing carbon-monoxide, as a result of bad fuel/air mixing, will cause a significant reduction in combustion efficiency and a consequent increase in the heat consumption of the kiln.

## Stage in Combustion

Even an apparently instantaneous explosion does not, in fact, take place instantaneously but all combustion processes take place in the following stages;

MIXING - IGNITION - CHEMICAL REACTION.

The rate of combustion is dependent on the slowest of the above stages. In most industrial combustion systems the mixing is slow whilst the ignition and chemical reaction are very fast. The rate and completeness of combustion are therefore controlled by the rate and completeness of fuel/air mixing hence the saying of combustion engineers;

"IF ITS MIXED, ITS BURNT".

Figure 3 shows the heat loss in the flue gases plotted against the excess air level. As the excess air level is reduced so the heat loss in the flue gases is also reduced until a minimum is reached. Reducing the excess air level further causes a rise in heat loss in the flue gas due to the incomplete combustion of the carbon. The more efficient the burner, the lower the excess air level at which this minimum occurs. The position of this minimum is almost entirely a function of the efficiency of fuel/air mixing of the burner system. Furthermore, the nearer to zero excess air at which the minimum occurs, the lower is the quantative heat loss at the minimum condition.

The process design of kiln burners often occurs in isolation from the kiln system itself, and only factors such as fuel flowrate and primary air are considered. However, in practice, a kiln burner system consists of: the burner itself, the primary air system, the fuel supply system and the secondary air. Since the majority of the combustion air is secondary air supplied from the cooler directly into the kiln, the kiln and cooler aerodynamics play a critical part in the fuel/air mixing and hence the overall performance of the burner. It is therefore absolutely essential when designing a burner for a cement kiln firing system to ensure that the burner is correctly matched to the individual kiln aerodynamics.

Flame control in rotary kilns consists essentially therefore, of matching the burner characteristics to the aerodynamics of the particular kiln.

## Factors Controlling Fuel/Air Mixing

Fuel/air mixing occurs as a result of jet entrainment. Friction occurs at the boundary between the fast moving primary jet and the slower secondary air, Figure 4. As a result of this friction the secondary air near to the jet boundary accelerates to the jet velocity, which is thereby slightly reduced by momentum transfer. The jet expands because of the increased mass resulting from the entrained air. This process continues until the jet velocity is the same as the velocity of its surroundings. If the primary jet has sufficient momentum to entrain all the secondary air and still has a greater velocity than its surrounding atomosphere, the excess momentum will entrain flame gases from further up the kiln. This phenomenom is known as 'recirculation', see Figure 5. The presence or absence of recirculation has a great effect on the flame characteristics. A moderate degree of recirculation is a positive indication that fuel/air mixing is complete, whilst the absence of recirculation is a clear indication that not all of the secondary air has been entrained into the primary jet. Furthermore, in the absence of recirculation there is a tendency for the primary jet to expand until it impinges on the brickwork. Figure 6 shows the primary jet in a planetary cooler kiln. The jet expands such that the theoretical point of impingement is at J. Rapid wear occurred to the brickwork between A and B and led to repeated and early failure of the kiln lining.

The onset of recirculation for axial flow burners can be calculated using the Craya-Curtet (4) parameter M:-

$$M = -1.5\, R^2 + R + \frac{KR^2}{(do/D)^2}$$

where K = 1 for cement kilns and

$$R = \frac{(Uo - Ua)\left[\frac{do}{2}\right]^2}{Ua\left[\frac{D}{2}\right]^2 + (Uo - Ua)\left[\frac{do}{2}\right]^2}$$

$U_o$ = nozzle velocity
$U_a$ = Secondary air velocity
$d_o$ = nozzle diameter
D = kiln diameter (inside bricks)

For Craya-Curtet parameters of less than 1.5 recirculation is absent, whilst for Craya-Curtet parameters greater than 1.5 recirculation occurs.

The effect of swirl on the primary jet is to open the primary jet and increase the rate of entrainment. Internal recirculation occurs but the risk of jet impingement on the kiln brickwork is greatly increased. It is much more difficult to calculate the conditions for the onset of recirculation with swirl burners than for axial flow burners. The modified Thring-Newby parameter is normally used for calculating the onset of swirl for swirl burners. However, this parameter does not really apply within the close confines of the cement kiln. In fact, the benefits of swirl are greatly reduced within the close confines of a cement kiln compared to, for example, a water tube boiler or petrochemical heater. In recent years the use of swirl to enhance fuel/air mixing has become less fashionable and higher combustion efficiencies have been achieved using axial flow burners and paying detailed attention to the overall system aerodynamics.

## Matching the Burner to the Kiln Aerodynamics

The flow of secondary air into the kiln is considerably affected by the design of the cooler uptake and hood system, or in the case of planetary coolers, by the cooler elbows. To obtain the optimum potential performance from any kiln it is absolutely essential that the aerodynamic characteristics of the kiln are taken fully into account when designing the burner.

Unfortunately, aerodynamic theory is not sufficiently well developed to permit analytical solutions or even realistic mathematical modelling for real aerodynamic systems. Such mathematical models as do exist for kiln systems (5.6) assume a symmetrical non swirling secondary air flow, a situation far from realistic for the majority of rotary kilns. The use of mathematical models to predict combustion characteristics in kiln systems is therefore limited to very rough approximations only. In order to model the combustion and fuel/air mixing in a burner/kiln system, physical modelling must be resorted to.

The Fuels and Energy Research Group at the University of Surrey have made extensive tests of kiln aerodynamics using water/air model tests and full size investigations (7). Typical aerodynamics for a grate cooler kiln are illustrated in Figure 7, which shows air flow patterns for high and low momentum jets. It can be clearly seen that there is a significant difference between the secondary air flows in the two cases, in particular the size and strength of the recirculation zones which decrease with decreasing jet momentum and eventually disappear.

The relationship between the jet momentum and the secondary air velocity has a significant effect on the flame length and heat transfer. Kilns with very low jet momentum have poor fuel/air mixing and long flames, whilst a high jet momentum gives rapid fuel air mixing and short flames. Long flames often result in underburnt clinker. Low momentum burners therefore, have to be operated at high levels of excess air in order to shorten the flames sufficiently to make good clinker.

## Physical Modelling of Rotary Kiln Flames

To investigate fuel/air mixing in rotary kilns acid/alkali modelling is used (8,9). A physical model of the kiln and cooler is constructed to an appropriate scale in clear acrylic plastic.The actual scale to which the model is manufactured is dependent on the size and complexity of the original system but it is important that dynamic similarly is maintained otherwise misleading conclusions may result. The fuel is represented by dilute caustic soda soulution containing phenolphalein indicator, whilst the combustion air is represented by dilute hydrochloric acid. The phenolphalein becomes colourless at the boundary where the mixing is complete thus the model flame envelope is defined by the coloured region, Figure 8.

To translate these model results into predictions for the combustion conditions in the full size kiln requires considerable skill. The model is run under isothermal conditions whilst in the full size plant considerable changes in temperature occur as combustion takes place, resulting in a reduction in the gas density and an increase in volume, hence the real flame is longer than the model flame, owing to the volumetric increase. A further increase in flame length occurs with heavy oil, pulverised coal and petroleum coke flames owing to the time required to burn the particles once fuel/air mixing is complete. Except for low volatile fuels such as anthracite and petroleum coke, this effect is minimal hence the "IF ITS MIXED ITS BURNT" hypothesis holds. Therefore, for most practical purposes the model flame length has only to be corrected for the density changes. However, where flames of very low volatile fuels are being modelled it is ncessary to use the physical modelling data as an input to a mathematical model which predicts the particulate burn out to determine the actual flame length.

Thus by using acid/alkali modelling and, where necessary, mathematical modelling of particulate combustion, it is possible to assess the performance of any burner in any kiln system. Furthermore, the effect of excess air on the flame length can be predicted, Figure 9. It is now possible to assess the effect of changes such as burner design and position, primary air quantity and velocity and changes in fuel type very rapidly for any kiln system without any disruption to the operating plant.

## Application of Flame Control to Rotary Kilns

Rotary kilns are used for processing a wide variety of materials such as titantium, iron oxide, petroleum coke, etc. as well as cement and lime. In order to match the flame to the process requirements of the kiln it is therefore necessary to have a good understanding of the time/temperature characteristics which are necessary for processing the particular material concerned.

An exhaustive investigation of the combustion and heat transfer in a small cement kiln (10) showed that the optimum heat flux to the charge in the sintering zone was 110 $kW/m^2$. To ensure optimum product quality this heat flux had to be maintained within a range of $\pm$ 2%. A lower heat flux produced underburnt clinker with high free lime whilst too high a heat flux produced overburnt clinker with too much liquid phase.

Subsequent mathematical modelling, backed up by practical operating data (11) has shown that the combustion intensity required in wet and dry process cement kilns to produce the optimum product is given by the following expression:-

$$H_r = \frac{m_f C_v}{L_f \ D}$$

Where:- $H_r$ = Combustion intensity KW/m²

$m_f$ = Fuel flowrate Kg/s

$C_v$ = Nett calorific value KJ/Kg

$L_f$ = Flame length m

D = Kiln internal diameter m

Special consideration must be given to precalciner kilns and detailed mathematical modelling is required for these kilns to establish the optimum combustion characteristics. Once the combustion characteristics required for optimum kiln operation have been defined it is possible to use the physical modelling techniques described above to determine the burner characteristics (primary air flowrate, nozzle velocity, etc.) required to produce the correct flame at 0.5 - 1.5% oxygen, while maintaining the carbon monoxide level at below 600 ppm.

Kiln burners designed using these techniques are thus uniquely matched to the kiln for which they are designed and the optimum kiln fuel consumption and output is ensured by low excess air operation, combined with minimal fuel waste due to incomplete combustion.

The practical consequences of this approach to kiln burner design is that two burners designed for two kilns of similar production rates and heat consumption may require quite different primary air flow rates and velocities owing to the different aerodynamic characteristics of the two kilns.

Acid/Alkali Modelling as a Combustion System Design Tool

Acid/alkali modelling is often used to investigate operational problems with existing combustion systems. The solutions which are determined can then be applied on the full size plant. The real value of acid/alkali modelling, however, is as a process design tool. The flame characteristics required by the particular process for which the burner is to be designed are reproduced on the model. From a knowledge of the aerodynamics and mixing of the system, the fuel burn out and heat transfer is then calculated. Provided these meet the system requirements, detail design may proceed, otherwise the model system is modified until the plant requirements are satisfied.

Once the basic design has been completed using the techniques described above, the detail mechanical design is undertaken. Equipment specifications are prepared and detail drawings made.

An example of the use of acid/alkali modelling as a practical design tool is the work undertaken in connection with re-burnering a lime kiln to burn natural gas with a liquid fuel firing standby system.

Conversion of a Lime Kiln to Natural Gas Firing

FCT was asked to consider the conversion of a kiln manufacturing metallurgical lime from liquid fuel firing to natural gas firing. Lime manufacture is an energy intensive process and the quality of the product is critically dependent on the combustion characteristics of the system. From the clients point of view, therefore, both the product quality and the energy consumption are critical. Either a deterioration in product quality or even a small increase in fuel consumption renders the process uneconomic.

A diagram of the lime kiln, which is a modern dry process kiln, is shown in figure 10. Limestone enters the preheater at ambient temperature and is preheated to calcining temperature (850°C) before entering the rotary kiln. In the rotary kiln section the remaining carbon dioxide is driven off to leave lime which then falls into the cooler. The combustion air is supplied to the flame via two paths: primary air through the burner and secondary air through the bed of lime in the cooler. Thus, the secondary air is preheated to between 780°C and 900°C. The actual preheat temperature depends on the operating conditions of the kiln and cooler.

The predominant mode of heat transfer in the rotary section is by radiation. The conversion from liquid fuel firing to natural gas firing could seriously reduce the radiant heat transfer owing to the lower flame emissivity of the natural gas flame unless steps are taken to increase the peak flame temperatures. This is accomplished by increasing the combustion intensity at a reduced excess air level thus compensating for the reduced flame emissivity. Furthermore, natural gas generates a greater quantity of flue gas than liquid fuel, and therefore the stack losses are higher for a similar temperature.

A complete investigation of the gas flows and temperatures was undertaken with the kiln operating on liquid fuel. Table 1 shows the operating conditions during these tests and Table 2 the resultant heat balance. The tests showed that the existing liquid fuel burner was operating with significant levels of carbon monoxide at the kiln inlet. The net heat input, after allowing for the latent heat in the flue gas, was 7511 kcal/s.

For optimum product quality and heat consumption, combustion should be complete at the kiln inlet and no carbon monoxide should be detected. Conversion of the kiln to natural gas firing, therefore, provided the opportunity to improve the combustion performance of the system, thereby maintaining the fuel consumption at the current level, in spite of the potentially higher stack losses expected from natural gas firing.

It is not possible to deduce, with any accuracy, the heat transfer characteristics in the rotary section from the heat balance data. It was, therefore, decided to model the existing burner system, as well as the proposed natural gas burner to determine the existing flame characteristics, and hence calculate the flame temperatures and heat fluxes within the rotary kiln. From this data it is possible to determine the optimum combustion characteristics for the proposed new burner.

A model of the kiln and cooler was manufactured in clear acrylic plastic to a scale of 1:50. The rotary section, kiln hood, shaft cooler and secondary distributor were faithfully reproduced. It was not necessary to model the preheater section since this is downstream of the areas of interest.

Tests were undertaken on the model simulating the existing liquid fuel burner, the new dual fuel burner firing natural gas and the new dual fuel burner firing liquid fuel. Both the existing burner and the proposed new burner featured annular primary air nozzles and were represented on the model by a simple plain jet. The jet area, however, was not scaled linearly, as was the rest of the model, but the nozzle was scaled to maintain jet similarity using the Craya-Curtet parameter. Therefore, a different model burner was required for each of the three tests. The modelling criteria are summarised in Table 3.

Three basic factors affect the flame characteristics of a burner firing into a rotary kiln:

1) Momentum ratio between the primary jet and the secondary air.

2) The physical position of the burner relative to the kiln hood.

3) The excess air level in the kiln.

The object of modelling is to produce a burner giving both optimum heat transfer and complete combustion, without residual carbon monoxide at the minimum practical excess air level (2-5%). The main variables in this study were primary jet momentum and nozzle position. Using acid/alkali modelling as a design tool, the burner can be engineered to precisely match the process requirements. Moreover, it can be installed in the correct location for the individual kiln.

Figure 11 shows the effect of excess air on flame length, as predicted by the modelling tests for both the liquid fuel burner and the natural gas burner. It can be seen that the objective of increasing the combustion intensity, by reducing the flame length at a lower excess air, has been achieved with the natural gas burner aligned on the nose ring.

The flame temperatures and heat fluxes calculated by mathematical modelling (7) from the results of the acid/alkali modelling are given in figure 12. It can be seen that while the heat flux with natural gas firing is redistributed, compared with liquid fuel firing (owing to reduced flame emissivity), the actual quantity of heat transferred to the charge in the rotary section (area under the graph) remains similar.

The physical and mathematical modelling predicted that the kiln could be converted to natural gas firing and maintain the product quality without an increase in the net heat consumption. The dual fuel burner, shown in figure 13, was designed, constructed and installed.

Following the installation of the new burner, the kiln produced top quality product within 5 hours of feed on, and was at full production within 12 hours. After four weeks of highly satisfactory operation the guarantee trials were undertaken. The results are shown in Table 4. It can be seen that the temperature distribution throughout the kiln system is similar to that prior to conversion. The kiln heat balance is summmarised in Table 5. The net heat input of 7579 kcal/s is comparable to that in Table 2. The range of experimental error from these kiln tests was $\pm$ 3%. Thus the net heat consumption, following conversion to natural gas firing, is therefore, similar to the heat consumption for liquid fuel firing, within the limits of experimental error.

## Conclusions

When physical modelling is used in conjuction with mathematical modelling as a process design tool, it is possible to eliminate guess work from burner design and, therefore, to match the flame characteristic produced by the burner to those required by the process.

The commissioning period is also reduced compared with the conventional approach, since the optimum position for the burner is known prior to installation, and time consuming trial and error optimisation is eliminated. Therefore, the plant achieves full production within days rather than weeks and months.

The practical benefits of this approach are better product quality and reduced costs for the client. Immediate cost benefits arise from a greatly reduced commissioning period. However, the real savings are continuous and on-going because the fuel consumption of the plant is minimised through efficient combustion and optimum heat transfer.

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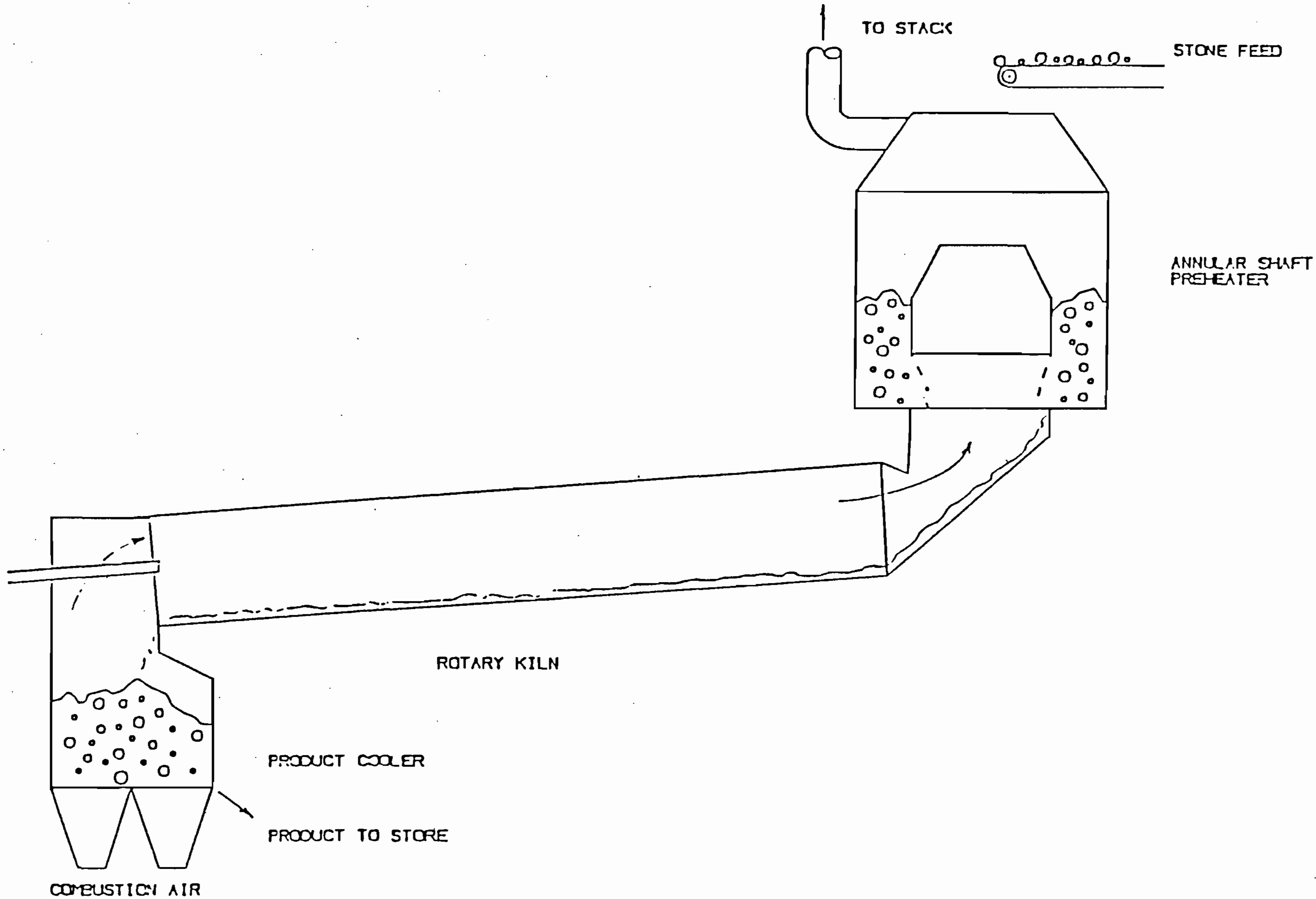



FIGURE 10 LIME KILN SYSTEM

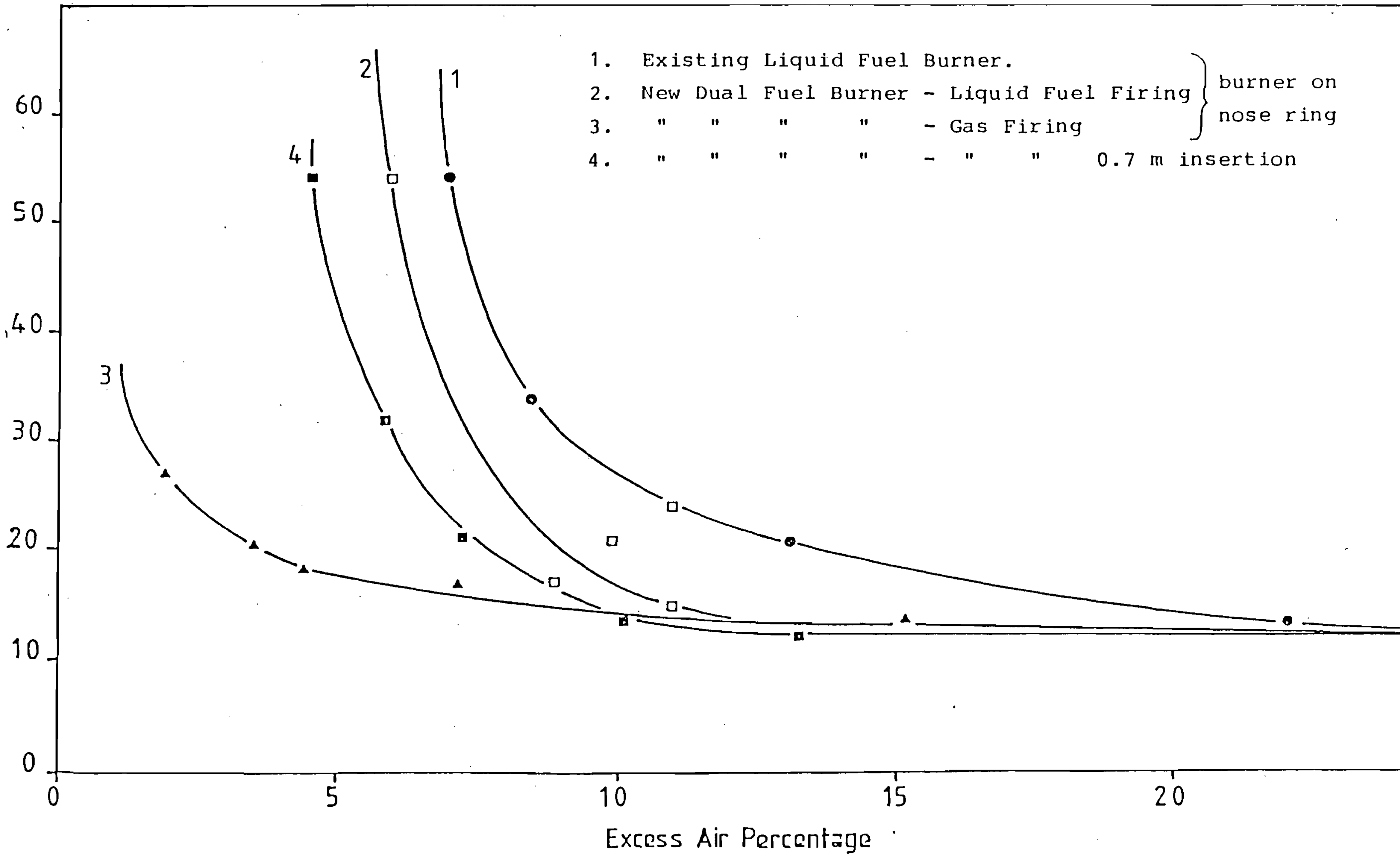
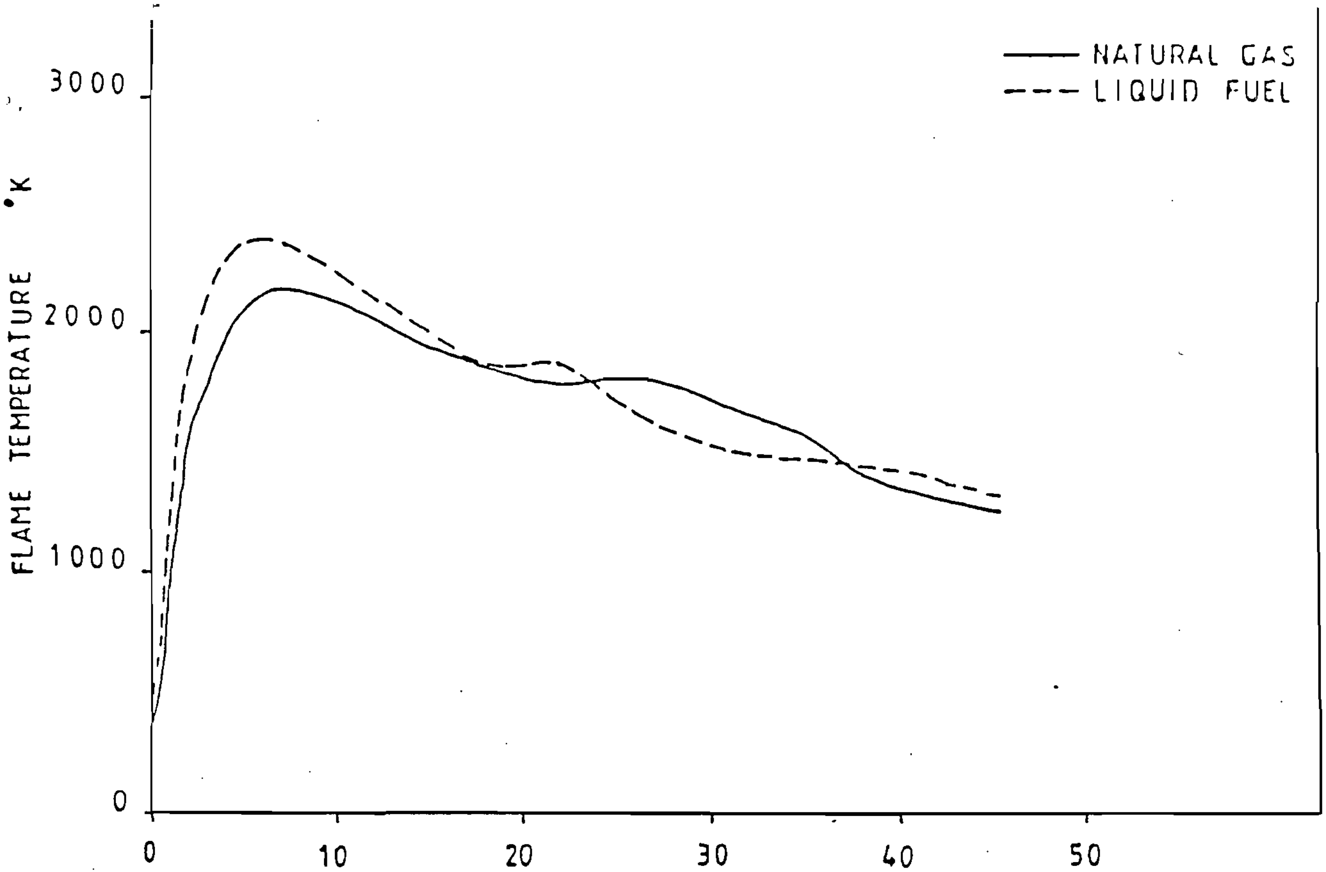



FIGURE 11 EFFECT OF EXCESS AIR ON FLAME LENGTH FOR LIQUID FUEL & NATURAL GAS BURNER



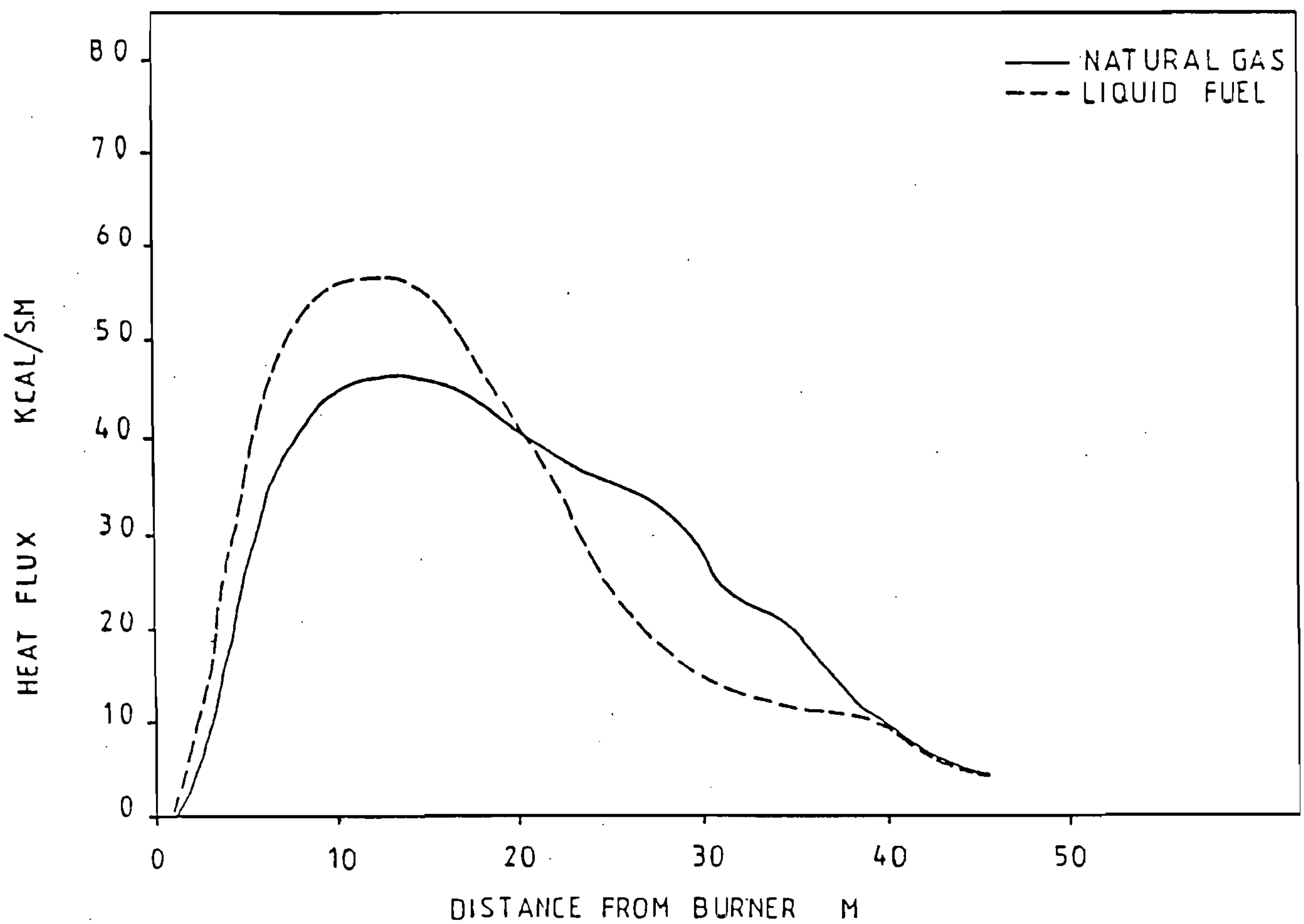




FIGURE 12 PREDICTED FLAME TEMPERATURE AND HEAT FLUXES

Ambient temperature 18$^{\circ}$C

| TIME | | 10.00 | 10.20 | 10.40 | 11.00 | Average |
|---|---|---|---|---|---|---|
| Sec Air Temp ($^{\circ}$C) | | 870+-5 | 870 | 875 | 860 | 869 |
| Gas Temp at ($^{\circ}$C) Kiln inlet | | 1348 | 1341 | 1350 | 1348 | 1346 |
| Flue gas temp ($^{\circ}$C) | South | 248 | 288 | 295 | 289 | 281.5 |
| | North | 283 | 278 | 265 | 270 | |
| Kiln inlet (%) | $CO_2$ | 21-22 | 21-22 | 22-23 | 21-22 | 21.75 |
| | CO | 2.7-3.3 | 3-3.5 | 2.5-3.5 | 2-3.5 | 3.0 |
| | $O_2$ | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Duct South No.1 (%) | $CO_2$ | 27-27.5 | 26 | 26 | probe blocked | |
| | CO | 0.02-0.09 | 0.1-0.4 | 0.2-0.3 | | |
| | $O_2$ | 5.4 | 6 | 5.9 | | 26.8 |
| Duct North No.2 (%) | | | | | | 0.11 |
| | $CO_2$ | 27 | 27-27.5 | 26 | 27.5 | |
| | CO | 0.03-0.06 | 0.03-0.06 | 0.09-0.15 | 0.02-0.05 | 5.8 |
| | $O_2$ | 5.9 | 5.8 | 6.4 | 5.3 | |
| Product Temp $^{\circ}$C | ex kiln | 1120 | 1150 | 1130 | 1150 | 1137.5 |
| | in cooler | 940 | 940 | 950 | 940 | 943 |
| | ex cooler | 130-140 | 140-165 | 130-140 | 130-140 | 140 |

TABLE 1 LIME KILN OPERATING CONDITIONS - LIQUID FUEL FIRING

| Heat In (k cal/s) | | Heat Out (k cal/s) | |
|---|---|---|---|
| Fuel (gross) | 8294 | Heat of reaction | 4513 |
| | | Heat in product | 197 |
| | | Heat in exhaust gas | 1546 |
| | | Latent heat to flue gas | 783 |
| | | Heat loss from shell | 1123 |
| Heat In | 8294 | Heat Out | 8162 |
| Heat In nett | 7511 | | |

Heat Unaccounted for 132 k cal/s

Table 2. Lime Kiln Heat Balance - Liquid Fuel Firing

**Best Available Copy**

| | Liquid Fuel Burner | Dual Fuel Burner | |
|---|---|---|---|
| | | Natural Gas Firing | Liquid Fuel Firin |
| Stoichiometric Air Fuel Ratio | 15.4 | 16.5 | 15.4 |
| Fuel Flowrate | 0.70 | 0.68 | 0.70 |
| Primary Air (% of Stoichiometric) | 16 | 12 | 16 |
| Excess Air Level % | 5 | 5 | 5 |
| Craya-Curtet Parameter | 1.4 | 1.8 | 1.8 |
| Equivalent) Full Size<br>Nozzle )<br>Diameter ) Model<br>(mm) | 129<br><br>10.2 | 115<br><br>8.8 | 115<br><br>9.4 |

TABLE 3 MODELLING CRITERIA

Ambient temperature 15$^{o}$C

| TIME | 12.00 | 13.00 | 14.00 | 15.00 | Average |
|---|---|---|---|---|---|
| Sec Air Temp ($^{o}$C) | 780 | 780 | 760 | 760 | 770 |
| Gas Temp at ($^{o}$C) Kiln inlet | 1361 | 1359 | 1357 | 1361 | 1359 |
| Flue gas temp ($^{o}$C) | 295 | 295 | 293 | 296 | 295 |
| Kiln inlet (%) CO | 0 | 0 | 0 | 0 | 0 |
| $O_2$ | 1.2 | 1.1 | 1.3 | 1.2 | 1.2 |
| Product ex kiln | 1280 | 1310 | 1300 | 1340 | 1307 |
| Temp $^{o}$C in cooler | 950 | 940 | 920 | 925 | 934 |
| ex cooler | 185±15 | 150±20 | 160±10 | 150±40 | 161 |

TABLE 4 LIME KILN OPERATING CONDITIONS - NATURAL GAS FIRING

| Heat In (k cal/s) | | Heat Out (k cal/s) | |
|---|---|---|---|
| Fuel (gross) | 8633 | Heat of reaction | 4466 |
| | | Heat in product | 197 |
| | | Heat in exhaust gas | 1665 |
| | | Latent heat to flue gas | 1054 |
| | | Heat loss from shell | 1025 |
| Heat In | 8633 | Heat Out | 8407 |
| Heat In nett | 7579 | | |

Heat Unaccounted for 226 k cal/s

Table 5. Lime Kiln Heat Balance - Natural Gas Firing

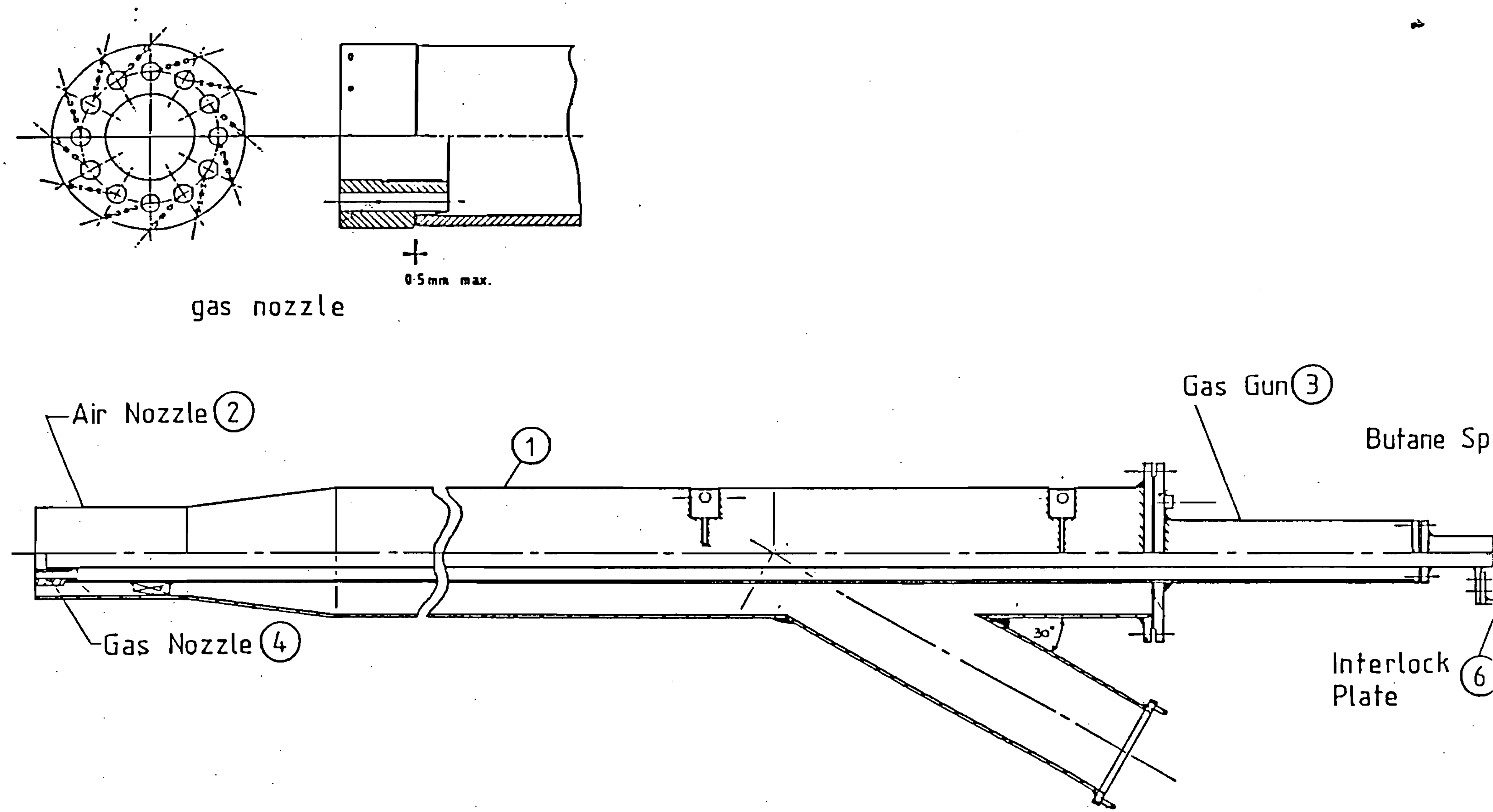



FIGURE 13 THE DUAL FUEL BURNER

Department of
Environmental Protection

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

January 8, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Joe Anderson, III
President
Suwannee American Cement Company, Inc.
PO Box 410
Branford, Florida 32008

Re: Additional Request for Additional Information
DEP File No. 1210465-001-AC (PSD-FL-259)
Proposed Portland Cement Plant

Dear Mr. Anderson:

The Department previously sent a letter dated December 29, 1998 requesting additional information required to make your application complete for an air construction permit for a Portland cement plant at US 27 at County Road 49, east of Branford. The Department has determined it has additional questions regarding this application. Please also submit the additional information requested below. Should your response to any of the below items require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

1. The segment description of the application for the in-line kiln/raw mill for natural gas usage shows the proposed maximum annual rate is equivalent to operating the pyroprocessing system continuously on natural gas. This is inconsistent with the segment comment that natural gas is to be used as a startup and supplemental fuel. Please comment. Also, please evaluate the feasibility of operating the pyroprocessing system exclusively on natural gas, or primarily on natural gas with coal and petcoke used for supplemental or backup fuels. Provide an estimate of emissions of all pollutants under these scenarios. Please provide an estimation of the number of truck trips that would be reduced by these scenarios considering the offset of coal and petcoke that must be delivered to the proposed plant site by truck.

2. Please evaluate the feasibility of using low NOx burner technologies such as precessing gas jet burners (Gyro-Therm from Fuel and Combustion Technology, Inc.) or other burner technologies. Please provide a detailed cost analysis for these technologies in terms of overall and marginal cost effectiveness (annualized dollars/ton of nitrogen oxides removed) for NOx control using these technologies, including all references and assumptions.

Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to

Department requests for additional information of an engineering nature. If there are any questions, please call me at 850/921-9519.

Sincerely,

Joseph Kahn, P.E.
New Source Review Section

/jk

cc: Mr. Frank Darabi, P.E.
Mr. Steve Cullen, P.E.
Mr. Gregg Worley, EPA
Mr. John Bunyak, NPS
Mr. Chris Kirts, NED
Mr. Jim Stevenson, DEP Ecosystem Mgmt.
Mr. Tom Workman, DEP Recreation & Parks
Ms. December McSherry
Mr. Svenn Lindskold
Mr. Tom Greenhalgh
Mr. Al Mueller
Mr. Dave Bruderly

Fold at line over top of envelope

Is your **RETURN ADDRESS** completed on the reverse side?

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "*Return Receipt Requested*" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. Joe Anderson, III, Pres.
Suwannee American Cement
PO Box 410
Branford, Fl
32008

4a. Article Number
Z333 612 588

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
1-20-99

5. Received By: *(Print Name)*

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X [signature]

PS Form **3811**, December 1994 102595-97-B-0179 Domestic Return Receipt

Thank you for using Return Receipt Service.

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## Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

| | |
|---|---|
| Sent to Joe Anderson | |
| Street & Number Suwannee American | |
| Post Office, State, & ZIP Code Branford Fl | |
| Postage | $ |
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Addressee's Address | |
| **TOTAL** Postage & Fees | $ |
| Postmark or Date 1-8-99<br>1210 465-001-AC<br>PSD-FI-259 | |

PS Form **3800**, April 1995

# INTEROFFICE MEMORANDUM

**Sensitivity:** COMPANY CONFIDENTIAL

**Date:** 08-Jan-1999 12:56pm
**From:** Joseph Kahn TAL
KAHN_J
**Dept:** Air Resources Management
**Tel No:** 850/921-9519

**To:** Alvaro Linero TAL ( LINERO_A )

**Subject:** Gyro-Therm Burner

Al,

This morning I contacted Fuel and Combustion Technology, Inc. in Malvern, PA (610-725-8840) and spoke with Rick Schnarre about the Gyro-Therm precessing gas jet burner for cement plants and other kilns. He said that FCT markets the Gyro-Therm burner, other burners, and mechanical changes to kilns and precalciner facilities to reduce emissions and improve combustion. The Gyro-Therm burner technology has been available for 5 to 6 years and is presently being used in a LaFarge facility in Vancouver, BC and is being tested at an Ash Grove facility in Oregon. The burners are available as natural gas or dual fuel (gas and coal). The Gyro-Therm burner is intended to be used for the kiln burner, not the precalciner burner. Emission of NOx is reduced as a result of reducing thermal NOx from the gas combustion through lower temperature combustion and better mixing. Combustion efficiency is improved with the dual fuel burner as a result of better mixing of the coal and gas. They have not developed a burner that will fire gas and petcoke. FCT will evidently specify a percentage emission reduction they expect to achieve in comparison to a manufacturer's burner, but it is not possible to specify a general NOx limit achievable because the burners are custom-designed for each kiln.

I have written an additional incompleteness letter to Suwannee American asking them to evaluate this type of technology. I have also asked them to provide emission information based on assuming the natural gas would be the only fuel or the primary fuel.

OFFICE OF THE COUNTY ATTORNEY
Post Office Box 2877
Gainesville, Florida 32602-2877
(352) 374-5218
Fax (352) 374-5216

Mary A. Marshall
County Attorney

ALACHUA COUNTY

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DIVISION OF AIR
RESOURCES MANAGEMENT

clair - pls comply
Alex
Howard
1/5/99

AL
IMPORTANT 1/5
Ch

December 23, 1998

Mr. Kirby Green, Secretary
3900 Commonwealth Blvd, MS 10
Tallahassee, FL 32399-3000

Dear Secretary Green:

The Alachua County Board of County Commissioners has requested that it receive all Notices of Intent to Issue Permits by the Department of Environmental Protection regarding the proposed cement plant in Suwannee County. Accordingly, please place the Board on the mailing list for all future Notices of Intent to Issue for that project. The mailing address is:

Alachua County Board of County Commissioners
Chuck Clemons, Chair
P.O. Box 2877
Gainesville, FL 32602

Thank you for your assistance in this matter.

Sincerely,

Mary A. Marshall

Mary A. Marshall
County Attorney

RL:eeh

pc: All Members, Board of County Comissioners
Richard D. Tarbox, County Manager
Department of Environmental Protection, Northeast District
7825 Baymeadows Way, Suite B-200, Jacksonville, FL 32356
Department of Environmental Protection, Air Resource Management
2600 Blair Stone Road, MS 5500, Tallahassee, FL 32399-2400