

**NOTICE OF FINAL AIR CONSTRUCTION PERMIT**

In the Matter of an  
Application for Permit:

Mr. Gary Sauer  
President of the Cement and Calcium Group  
Florida Rock Industries  
155 East 21<sup>st</sup> Street  
Jacksonville, Florida 32206

Permit Project No.: 0010087-011-AC  
Thompson S. Baker Cement Plant  
Alachua County

Enclosed is the Final Air Construction Permit (letter), No. 0010087-011-AC. The proposed project was requested to conduct the requested testing and measurements on its existing kiln and associated equipment at the Thompson S. Baker Cement Plant in Alachua County. The facility is off of County Road 235 approximately 2.5 northeast of Newberry, Florida. The map coordinates are: UTM Zone 17, 346.8 km East and 3287.0 km North. The purpose of this testing is to help the company and the Department assess the viability of SNCR as a NOx control measure in the cement industry. This permit (letter) is issued pursuant to Chapter 403, Florida Statutes (F.S.). There were no comments received during the Public Notice period (14-days).

Any party to this order (permit) has the right to seek judicial review of the permit revision pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Legal Office; and, by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 (thirty) days from the date this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

Trina L. Vielhauer, Chief  
Bureau of Air Regulation

**CERTIFICATE OF SERVICE**

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF FINAL AIR CONSTRUCTION PERMIT (including the Final permit (authorization letter)) was sent by certified mail (\*) and copies were mailed by U.S. Mail before the close of business on 11/8/04 to the person(s) listed or as otherwise noted:

Trina Vielhauer, DEP - BAR  
Jim Pennington, DEP - BAR  
Bobby Bull, DEP - BAR  
Chris Kirts, DEP - NED  
Richard Banks, DEP - NED

Rita Felton-Smith, DEP - NED  
Joe Kahn, DEP - BAMMS  
Dr. John B. Koogler, PhD, P.E. Koogler and Associates  
Chair, Alachua County Commission  
Chris Horne, FRI

Clerk Stamp

**FILING AND ACKNOWLEDGMENT FILED**, on this date, pursuant to §120.52(7), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

(Clerk) Sunday 11/8/04 (Date)

**Final Determination**

**Florida Rock Industries  
Thompson S. Baker Cement Plant**

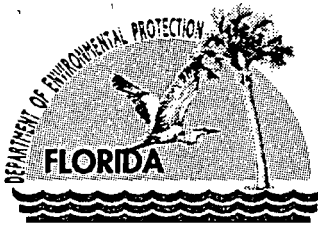
**Project No.: 0010087-011-AC**

**I. Public Notice and Comments.**

The Public Notice of the permitting project was published in the Gainesville Sun on October 16, 2004. There were no written comments received in the commenting period (14-days), which concluded at the close of business of October 30<sup>th</sup>. Therefore, it is recommended that the Final air construction permit (authorization letter) be issued.

**II. Conclusion.**

It is recommended to issue the Final air construction permit (authorization letter) as drafted and public noticed.



Jeb Bush  
Governor

# Department of Environmental Protection

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

Colleen M. Castille  
Secretary

November 3, 2004

CERTIFIED MAIL – Return Receipt Requested

Mr. Gary Sauer  
President of the Cement and Calcium Group  
Florida Rock Industries  
155 East 21<sup>st</sup> Street  
Jacksonville, Florida 32206

RE: Authorization to Conduct Pollutant Testing and Parameter Measurements for the  
Implementation of Selective Non Catalytic Reduction (SNCR) for the Control of Oxides of  
Nitrogen (NOx) 0010087-011-AC

Dear Mr. Sauer:

The Department has reviewed the request that you provided on July 23, 2004 and that was supplemented by a letter from Dr. John Koogler on October 12, 2004. We have considered the Department's legal authority to allow Florida Rock to conduct the requested testing and measurements on its existing kiln and associated equipment at the Thompson S. Baker Cement Plant in Alachua County. The facility is off of County Road 235 approximately 2.5 northeast of Newberry, Florida. The map coordinates are: UTM Zone 17, 346.8 km East and 3287.0 km North. The purpose of this testing is to help the company and the Department assess the viability of SNCR as a NOx control measure in the cement industry. Paragraph 403.061(16), Florida Statutes (F.S.), authorizes the Department to encourage voluntary cooperation by persons in order to achieve the purposes of the state environmental control act. Paragraph 403.061(18), F.S., authorizes the Department to encourage and conduct studies, investigations, and research relating to the causes and control of pollution. Rule 62-210.700(5), Florida Administrative Code (F.A.C.), authorizes the Department to consider variation in industrial equipment and make allowances for excess emissions that provide reasonable and practical regulatory controls consistent with public interest.

In accordance with the provisions of Paragraphs 403.061(16) and (18), F.S., and Rule 62-210.700(5), F.A.C., you are hereby authorized to conduct pollutant testing and parameter measurements for the evaluation of emission ranges and the effectiveness of SNCR for NOx control under a variety of operating scenarios for the kiln and associated equipment at the Thompson S. Baker Cement Plant. This evaluation will require Florida Rock to vary the collection efficiency of the existing NOx controls to establish performance curves between NOx

*"More Protection, Less Process"*

*Printed on recycled paper.*

Mr. Gary Sauer  
Florida Rock Industries  
Thomas S. Baker Cement Plant  
Page Two

emissions and ammonia injection, thus creating an operational condition near or in excess of the Florida NOx emissions and opacity standards. The data gathered will allow the calibration of the SNCR system to evaluate the various NOx control scenarios outlined in Attachment A. The pollutants and or parameters to be measured or monitored will include sulfur dioxide, nitrogen oxides, total hydrocarbons particulate matter, visible emissions, carbon monoxide, unit operational parameters including load, fuel flow, excess air and flue gas temperature, and other unit specific parameters that are needed for the evaluation.

The performance tests and parameter measurements or monitoring shall be subject to the following conditions:

1. Unless waived, the permittee shall notify the Department's Northeast District and Bureau of Air Regulation offices at least 15 days prior to commencement of the performance tests and parameter measurements or monitoring. A written test protocol shall be submitted to these offices at least 15 days prior to beginning the tests. The written protocol shall as a minimum address the testing principles in Attachment A (Attached). A written report shall be submitted to these offices within 45 days upon completion of the last test run and parameter measurements and monitoring.
2. The authorized testing and measurement and monitoring schedule is from November 4 thru December 31, 2004, for a total of 60 operating days. If additional time is needed, the permittee shall provide the Department with documentation of the progress accomplished to date and shall identify what is left to be done to complete the testing and measurements or monitoring.
3. The parameters to be measured or monitored are sulfur dioxide by use of a continuous emission monitoring system (CEM), nitrogen oxides by the use of a CEM, opacity by the use of a continuous opacity monitor and/or EPA Method 9, Total Hydrocarbons (THC) by the use of a CEM, carbon monoxide using EPA Method 10, ammonia slip using EPA Method CTM 027, load, fuel flow, excess air, flue gas temperature, and other unit specific parameters that are needed for the SNCR evaluation.
4. In addition to the parameter monitoring in (3.) above, a one time emissions test shall be conducted at the optimum SNCR operating conditions for particulate matter. Additionally, visible emissions testing shall be conducted at each molar ratio of NH<sub>3</sub>/NO<sub>x</sub> investigated during the SNCR tests. The tests shall be conducted using the following test methods:
  - a. Particulate matter                      EPA Test Method 5 (including EPA Test Methods 1 thru 4)
  - b. Visible emissions                        EPA Test Method 9
5. The release of objectionable odors pursuant to Rule 62-296.320(2), F.A.C., is not authorized for this activity.
6. Testing shall immediately cease upon the occurrence of a Department determined valid environmental complaint by a citizen or other party, or a Department determined nuisance or

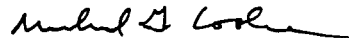
Mr. Gary Sauer  
Florida Rock Industries  
Thomas S. Baker Cement Plant  
Page Three

danger to the public health or welfare. Performance testing shall not resume until appropriate measures to correct the problem have been implemented.

7. The performance tests and parameter measurements and monitoring shall be under the direct supervision and responsible charge of a professional engineer registered in Florida.
8. This Department action is just to authorize the performance testing and parameter measurements and monitoring for the Thomas S. Baker Cement Plant for the purpose of evaluating the effectiveness of the use of SNCR on controlling and reducing NOx emissions in the cement industry.
9. Complete documentation of the activity shall be kept on file for at least 5 (five) years.
10. The Department shall be notified in writing on the date of the last test run and parameter measurement and monitoring completion. If after work hours, notification shall occur on the next work day.
11. Attachment Section.
  - a. Dr. John B. Koogler, P.E. letter received July 23, 2004.
  - b. Final Determination.
  - c. Testing Principles

The Department has relied on the information referenced in the Attachment Section and conversations with representatives of Florida Rock Industries in authorizing this activity.

Sincerely,



Michael G. Cooke, Director  
Division of Air Resource Management

MGC/tlv/jp

Enclosures

cc: Trina Vielhauer, DEP - BAR  
Jim Pennington, DEP - BAR  
Bobby Bull, DEP - BAR  
Chris Kirts, DEP - NED  
Richard Banks, DEP - NED  
Rita Felton-Smith, DEP - NED  
Joe Kahn, DEP - BAMMS  
Dr. John B. Koogler, PhD, P.E. Koogler and Associates  
Chair, Alachua County Commission  
Chris Horne, FRI

### Testing Principles and Protocol

The following points are the basis for the protocol that needs to be developed by Florida Rock Industries (FRI) and its consultants. FRI shall try to find the combination of SNCR, tire use, and degree of reducing conditions in the calciner that yields best operation and a target of around 150 ppm (corrected) NO<sub>x</sub> emissions. All NO<sub>x</sub> levels stated herein are for targeting purposes and are not meant to be emission limits. The various objectives stated below can be adjusted as operational problems occur or are aggravated. If the establishment of a baseline prior to initiation of SNCR or renewed operation in MSC modes is desired, the NO<sub>x</sub> emissions shall not be more than 400 ppm (corrected). This is approximately equal to 4 lb/ton of clinker. This data will be excluded from the 30 day rolling average limit of 2.45 lb of NO<sub>x</sub>/ton of clinker for those hours (or days) when the baseline is established. Additionally, data showing CO and opacity excursions as a result of these tests will be excluded. All other emission limits shall be met. The Company shall document all excursions and take appropriate steps to minimize them during testing.

1. During all SNCR testing, the stack gas discharged from the kiln/raw mill system will be continuously monitored with CEMS for sulfur dioxide, nitrogen dioxides, total hydrocarbons, opacity, and flow. Carbon monoxide will be monitored in accordance with EPA Method 10. During each phase of the SNCR tests, the opacity of emissions, as determined by EPA Method 9, will be recorded, in addition to the continuous opacity monitoring to document whether or not a detached plume forms.
2. Ammonia slip will be measured as a function of the NH<sub>3</sub>/NO<sub>x</sub> molar ratio during the tests to determine the optimum molar ratio of NH<sub>3</sub>/NO<sub>x</sub>. The ammonia concentration in the stack gas will be determined continuously by FTIR, with a chemiluminescent analyzer, or equivalent.
3. Once the optimum NH<sub>3</sub>/NO<sub>x</sub> molar ratio and plant operating conditions have been determined, a one-time particulate matter emission test will be conducted using EPA Method 5.
4. During SNCR testing, the following parameters will be monitored and recorded:
  - Preheater feed rate and clinker production rate,
  - Coal and Waste Tire Derived Fuel (WTDF) firing rates,
  - Oxygen, CO and temperatures between the kiln inlet and the top of the preheater tower, as recorded with process monitors,
  - Point of ammonia injection,
  - Type of ammonia injected and ammonia concentration,
  - Molar ratio of NH<sub>3</sub>/NO<sub>x</sub>,
  - Frequency of air cannon use and cardox charge use,
  - Pressure at various locations in the preheater tower as an indication of material buildup,
  - Fan amperage of the kiln I.D. fan,
  - Clinker characteristics,
  - Log of blockages, kiln shutdowns, and kiln startups, and
  - Other parameters as determined necessary.
5. A baseline plant operating condition will be established using MSC and the firing of WTDF; i.e., normal plant operating conditions without SNCR. It is anticipated that NO<sub>x</sub> emissions under these operating conditions will be in the range of 2.4-2.5 pounds per ton of clinker.

6. After steady state operations are established, ammonia will be introduced at various locations to determine the optimum point of ammonia injection. It is anticipated that ammonia water (<19 wt%) will be the ammonia solution of choice.
7. Once the optimum location for ammonia injection has been determined, steady state plant operations will again be established using both MSC and WTDF firing. Ammonia will then be injected starting at a molar ratio of approximately 0.4 ( $\text{NH}_3/\text{NO}_x$ ) and increasing to a maximum of 0.7-0.8. The goal will be to establish the molar ratio necessary to achieve a  $\text{NO}_x$  emission rate in the range of 2.0 pounds per ton of clinker, while using MSC and WTDF. By keeping the molar ratio below 0.8, the formation of CO and ammonia slip will both be minimized. Minimizing the molar ratio also minimizes the reagent ( $\text{NH}_3$ ) cost and the amount of water (from the ammonia solution) that must be pulled through the system. The latter minimizes the power consumption of the kiln I.D. fan.
8. The concentration of ammonia in water may be reduced (below ~19 wt%) emulating a urea solution concentration. This is a test option that may or may not be exercised.
9. Once the ammonia injection point and the  $\text{NH}_3/\text{NO}_x$  molar ratio are optimized, steady state plant operations will again be established. WTDF firing will be discontinued to evaluate the effect on  $\text{NO}_x$  emissions. This will simulate times when WTDF may not be available. Without WTDF, the molar ratio of  $\text{NH}_3/\text{NO}_x$  may have to be increased or the MSC operating conditions altered to maintain a  $\text{NO}_x$  emission rate in the target range of 2.0 pounds per ton of clinker.
10. Steady state plant operations will again be established with optimum ammonia injection, WTDF and MSC. These conditions will be adjusted to produce a  $\text{NO}_x$  emission rate in the range of 2.0 pounds per ton of clinker. The plant will be allowed to operate under these optimized conditions for a period of 2-3 days to determine the long-term effect of SNCR on plant operations. Of concern will be material build up between the kiln inlet and into the preheater tower, changes in the power consumption of the kiln I.D. fan, a coating formation on the fan impeller, product quality, and secondary emissions; specifically CO, ammonia slip, and/or the formation of a detached plume.
11. Once the long-term operating effects of SNCR have been determined, the testing will be terminated.

# INTEROFFICE MEMORANDUM

TO: Michael G. Cooke *MGC*  
THRU: Trina L. Vielhauer *TV*  
FROM: Jim Pennington *JKP*  
DATE: November 2, 2004  
SUBJECT: Authorization to Conduct Pollutant Testing and Parameter Measurements for the Implementation of Selective Non Catalytic Reduction (SNCR) for the Control of Oxides of Nitrogen (NOx)  
0010087-011-AC

The proposed project was requested to conduct pollutant testing and parameter measurements for the evaluation of SNCR technology for the control of NOx using Florida Rock's Thompson S. Baker Cement Manufacturing Facility, which is located near Newberry, Alachua County. This evaluation will require Florida Rock to vary the operational modes of the cement manufacturing facility to establish expected NOx emissions while using SNCR, thus potentially creating operational conditions with emissions near or in excess of the present permitted limits. The data gathered will allow the evaluation of SNCR technology applicability to the cement manufacturing industry. The pollutants and or parameters to be measured or monitored will include sulfur dioxide [CEM (continuous emission monitor)], nitrogen oxides (CEM), particulate matter, visible emissions, carbon monoxide (CEM), ash content of the fuel, ultimate fuel analyses, unit operational parameters including load, fuel flow, excess air, flue gas temperature, and other unit specific parameters that are needed for the evaluation. Particulate size distribution may be evaluated also. The testing is scheduled to run from November 4 through December 31, 2004.

There were no comments received during the Public Notice period (14-days), which concluded on October 30<sup>th</sup>. Therefore, it is recommended that the Final air construction permit (authorization letter) be signed as drafted and noticed.

MGC/jkp

Attachments



Is your RETURN ADDRESS completed on the reverse side?

<b>SENDER:</b> ■ 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. <input type="checkbox"/> Addressee's Address 2. <input type="checkbox"/> Restricted Delivery Consult postmaster for fee.	
3. Article Addressed to:  Mr. Gary Sauer President of the Cement and Calcium Group Florida Rock Industries 155 East 21st St. Jacksonville, FL 32206		4a. Article Number 7000 0600 0026 4129 8887	
		4b. Service Type <input type="checkbox"/> Registered <input checked="" type="checkbox"/> Certified <input type="checkbox"/> Express Mail <input type="checkbox"/> Insured <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> COD	
5. Received By: (Print Name) M. F. F. F.		7. Date of Delivery	
6. Signature: (Addressee or Agent) X <i>[Signature]</i>		8. Addressee's Address (Only if requested and fee is paid)	

Thank you for using Return Receipt Service.

PS Form 3811, December 1994

Domestic Return Receipt

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

7000 0600 0026 4129 8887

Postage	\$	Postmark Here
Certified Fee		
Return Receipt Fee <small>(Endorsement Required)</small>		
Restricted Delivery Fee <small>(Endorsement Required)</small>		
<b>Total Postage &amp; Fees</b>	<b>\$</b>	

Recipient's Name (Please Print Clearly) (to be completed by mailer)  
 Mr. Gary Sauer

Street, Apt. No., or PO Box No.  
 155 East 21st St.

City, State ZIP+4  
 Jacksonville, FL 32206

PS Form 3800, February 2000

See Reverse for Instructions



Jeb Bush  
Governor

# Department of Environmental Protection

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

Colleen M. Castille  
Secretary

January 26, 2005

## CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Gary Sauer  
President of Cement and Calcium Group  
Florida Rock Industries, Inc.  
155 East 21<sup>st</sup> Street  
P.O.Box 4667  
Jacksonville, FL 32201

Re: Extension of Submittal of Test Evaluation for Permit No. 0010087-011-AC  
Thompson S. Baker Cement Plant  
Selective Non-Catalytic Reduction (SNCR) Testing and Written Report

Dear Mr. Sauer,

On January 12, 2005, the Department received a request from Florida Rock Industries, Inc. (FRI) for additional time to submit the written report as required by Condition 1 of air construction permit number 0010087-011-AC, for its Branford Cement Plant located at 4000 NW County Road 235, Newberry, Alachua County. The date required to submit the written report summarizing the results from the SNCR testing is hereby extended to 55 days as required by Condition 1. The written report will be due February 4, 2005.

A copy of this letter shall be filed with the referenced permit and shall become part of the permit. This permitting decision is issued pursuant to Chapter 403, Florida Statutes.

A person whose substantial interests are affected by the proposed permitting decision 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 3900 Commonwealth Boulevard, Mail Station #35, 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 intent. 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 publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. 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

*"More Protection, Less Process"*

*Printed on recycled paper.*

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. Mediation is not available in this proceeding.

In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542 F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

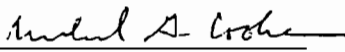
The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2) F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

This permitting decision is final and effective on the date filed with the clerk of the Department 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 pursuant to Rule 62-110.106, F.A.C., and the petition conforms to the content requirements of Rules 28-106.201 and 28-106.301, F.A.C. Upon timely filing of a petition or a request for extension of time, this order will not be effective until further order of the Department.

Any party to this permitting decision (order) has the right to seek judicial review of it under section 120.68 of the Florida Statutes, by filing a notice of appeal under Rule 9.110 of the 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 must be filed within thirty days after this order is filed with the clerk of the Department. Executed in Tallahassee, Florida.

  
Michael G. Cooke, Director  
Division of Air Resource  
Management

**CERTIFICATE OF SERVICE**

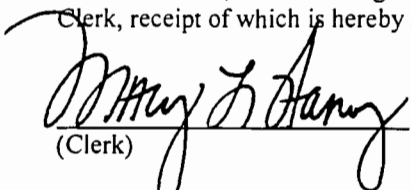
The undersigned duly designated deputy agency clerk hereby certifies that this order was sent by certified mail (\*) and copies were mailed by U.S. Mail before the close of business on 1/26/05 to the person(s) listed:

Trina Vielhauer, DEP-BAR  
Jim Pennington, DEP-BAR  
Bobby Bull, DEP-BAR  
Chris Kirts, DEP-NED  
Richard Banks, DEP-NED  
Chris Horner, FRI

Rita Felton-Smith, DEP-NED  
Joe Kahn, DEP-BAMMS  
Dr. John B. Koogler, PhD, P.E., Koogler and Associates  
Chair, Alachua County Commission  
Henry Gotsch, FRI

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.

  
(Clerk) 1/26/05  
(Date)

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> <li>Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.</li> <li>Print your name and address on the reverse so that we can return the card to you.</li> <li>Attach this card to the back of the mailpiece, or on the front if space permits.</li> </ul>	A. Signature <input checked="" type="checkbox"/> Agent <input checked="" type="checkbox"/> Addressee
1. Article Addressed to: <b>Mr. Gary Sauer</b> <b>President of Cement and Calcium Group</b> <b>Florida Rock Industries, Inc.</b> <b>155 East 21 Street</b> <b>P.O. Box 4667</b> <b>Jacksonville, FL 32201</b>	B. Received by (Printed Name) <b>L. Arcusa</b> C. Date of Delivery <b>1-28-05</b>
2. Article Number (Transfer from service label) <b>7000 1670 0013 3109 8710</b>	D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No
PS Form 3811, August 2001	3. Service Type <input checked="" type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D. 4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes

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

0000 1670 0013 3109 8710

Postage	\$	Postmark Here
Certified Fee		
Return Receipt Fee (Endorsement Required)		
Restricted Delivery Fee (Endorsement Required)		
Total Postage & Fees	\$	

Sent To **Gary Sauer**  
 Street, Apt. No. PO Box No. **F Rock Industries**  
 City, State, ZIP+4 **Jacks., FL 32201**



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

**RECEIVED**

187-04-16  
January 10, 2005

JAN 12 2005

**BUREAU OF AIR REGULATION**

Mr. Jim Pennington  
Florida Department of Environmental Protection  
Office of the Bureau Chief, Administrator  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

**Subject:** *Florida Rock Industries, Thompson S. Baker Cement Plant*  
*Permit: 0010087-011-AC*  
*Request Extension of Time to Report on SNCR Testing*

Dear Mr. Pennington:

The purpose of this letter is to request an extension of 45 days to submit a written report of SNCR testing allowed by permit No. 0010087-011-AC. The extension will allow for needed time to gather and analyze all data sources used to monitor this testing. If you have questions, please contact Henry Gotsch (352) 472-4722, John Koogler or me (352) 377-5822.

Very truly yours,

**KOOGLER & ASSOCIATES**

Max Lee, Ph.D., P.E.

Cc: Henry Gotsch, FRI  
John Koogler, KA



**KOOGLER & ASSOCIATES**  
ENVIRONMENTAL SERVICES

4014 NW THIRTEENTH STREET  
GAINESVILLE, FLORIDA 32609  
352/377-5822 ▪ FAX/377-7158

Mr. Jim Pennington  
FDEP - Tallahassee  
Twin Towers Office Bldg.  
2600 Blair Stone Road, MS 5500  
Tallahassee, FL 32399-2400

**Subject:** *Florida Rock Industries Inc.  
Thompson S. Baker Cement Plant  
Facility ID: 0010087  
SNCR Test Report*

Dear Jim:

In accordance with the authorization granted by Permit 0010087-001-AC, Florida Rock Industries, Inc. (FRI) conducted tests at their Thompson S. Baker Cement Plant in Newberry, Florida during the period December 6-11, 2004 to evaluate the Selective Non-Catalytic Reduction (SNCR) process for reducing the emission rate of NO<sub>x</sub> from that plant. In accordance with an amendment to the above referenced permit dated January 26, 2005, we are submitting three copies of the enclosed report (prior to February 4, 2005) describing the results of the tests.

In summary, ammonia was injected into the calciner of the cement plant at various rates and the NO<sub>x</sub> reduction in the stack gas from the kiln/raw mill was determined for each injection rate. The ammonia injection rates, expressed as a molar ratio of ammonia to uncontrolled NO<sub>x</sub>, ranged from approximately 0.1-1.0. NO<sub>x</sub> control efficiencies over this range of injections ranged from approximately 7-82 percent. Another phase of the SCNR test was to establish a set stack gas NO<sub>x</sub> concentration and to maintain this concentration by varying the ammonia injection rate. This part of the test demonstrated (at least for a 16-hour period) that a relatively constant stack gas NO<sub>x</sub> concentration could be maintained by varying the injection rate of ammonia.

During the SNCR tests, concentrations of unreacted ammonia (ammonia slip) and carbon monoxide were monitored in the kiln/raw mill stack. It was observed that for the 6-day test period, little of no ammonia slip occurred with the raw mill operating. However, when the raw mill was offline, ammonia concentrations in the stack gas peaked at approximately 40 ppm. With carbon monoxide, there was a trend toward higher CO emissions during periods when ammonia was injected. This is consistent with previous observations as discussed in the enclosed report.

KA 187-04-16  
February 2, 2005

RECEIVED

FEB 03 2005

BUREAU OF AIR REGULATION

Mr. Jim Pennington  
February 2, 2005

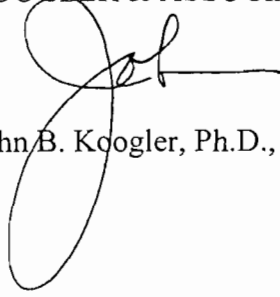
2

Finally, the report addresses the estimated cost of reducing NO<sub>x</sub> from a range of uncontrolled emission rates to a range of controlled emission rates. It should be noted that these costs apply only to the FRI Thompson S. Baker plant. The cost of control ranges from approximately 0.25-0.95 dollars per ton of clinker depending upon the initial uncontrolled NO<sub>x</sub> emission rate and the targeted controlled NO<sub>x</sub> emission rate.

We appreciate the Department's interest and cooperation in these tests. If there are questions related to the information reported herein, please contact me at 352-377-5822 or [jkoogler@kooglerassociates.com](mailto:jkoogler@kooglerassociates.com).

Very truly yours,

KOOGLER & ASSOCIATES

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

JBK/lt

Enclosure

cc: Trina Vielhauer  
Gary Sauer  
Chris Horner  
Henry Gotsch  
Mark Terry  
Segundo Fernandez





**SELECTIVE NON-CATALYTIC REDUCTION  
TEST REPORT**

**FLORIDA ROCK INDUSTRIES, INC.**  
Thompson S. Baker Cement Plant

Facility ID: 0010087  
Newberry, Florida

Test Date: December 6-11, 2004  
Report Date: February 2, 2005

187-04-16



**KOOGLER & ASSOCIATES  
ENVIRONMENTAL SERVICES**

4014 NW THIRTEENTH STREET  
GAINESVILLE, FLORIDA 32609  
352/377-5822 ■ FAX/377-7158

**SELECTIVE NON-CATALYTIC REDUCTION TEST REPORT**

FLORIDA ROCK INDUSTRIES, INC.  
Thompson S. Baker Cement Plant

Facility ID: 0010087  
Newberry, Florida

Test Date: December 6-11, 2004  
Report Date: February 2, 2005

*Koogler & Associates, Inc.*  
4014 N.W. 13th Street  
Gainesville, Florida 32609  
(352) 377-5822

**RECEIVED**

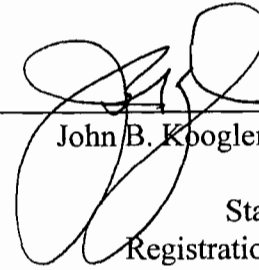
FEB 03 2005

BUREAU OF AIR REGULATION

187-04-16



To the best of my knowledge, all test data and plant operating data are true and correct and the conclusions presented herein are representative of the data reported.



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

State of Florida  
Registration No. 12925

2/2/05

Date



## TABLE OF CONTENTS

1.0	Introduction.....	1
2.0	The SNCR Process .....	3
3.0	SNCR Test Equipment .....	6
4.0	Monitoring.....	8
5.0	Description of Tests.....	10
6.0	Test Results.....	12
6.1	NOx Control Efficiency.....	12
6.2	Carbon Monoxide and Ammonia Emissions .....	17
6.2.1	Carbon Monoxide Emissions .....	17
6.2.2	Ammonia Emissions .....	18
6.3	SNCR Cost Estimate .....	19
7.0	Conclusion.....	21

Appendix

## 1.0 INTRODUCTION

Florida Rock Industries, Inc. (FRI) operates the Thompson S. Baker Portland cement plant on CR 235, approximately 3.5 miles north of the city center of Newberry, Florida. The plant is a modern preheater/precalciner Portland cement plant designed by the Polysius Corporation. The plant has a permitted clinker production rate of 2650 tons per day and currently operates under FDEP Permit 0010087-009-AV.

On November 8, 2004 the Florida Department of Environmental Protection (FDEP) issued Air Construction Permit 0010087-011-AC to FRI authorizing tests to assess the viability of Selective Non-Catalytic Reduction (SNCR) for the control of NO<sub>x</sub> emissions from the cement kiln. These tests were conducted during the period December 6-11, 2004. The Polysius Corporation designed the tests, supplied the equipment for the injection of ammonia and provided personnel to operate the equipment. Additionally, Polysius monitored and reported the ammonia injection rates and the stack gas concentrations of NO and oxygen. FRI personnel were responsible for operating the plant, reporting plant operating data and operating continuous emissions monitors for NO<sub>x</sub>, SO<sub>2</sub>, total hydrocarbons, and stack gas flow located in the kiln/raw mill stack. Koogler and Associates, Inc. was the engineer of record for the tests and monitored ammonia and carbon monoxide in the kiln/raw mill stack.

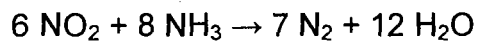
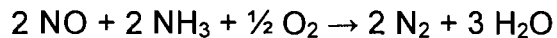
The purpose of the testing was to evaluate the effectiveness of SNCR for NOx reduction. The ammonia used for the tests was a 10 percent (by weight) ammonia/water solution. This solution was injected into the calciner just before the Stage I cyclone (the bottom cyclone) of the preheater. This injection point was selected by Polysius based on experience at other plants. Ammonia was injected at various rates defined by the molar ratio of ammonia to uncontrolled NOx (NO + NO<sub>2</sub>) measured in the kiln/raw mill stack. The NOx reductions measured in the kiln/raw mill stack are reported as a function of these molar ratios. The ammonia injection tests were conducted with and without the firing of whole-tire derived fuel at the kiln inlet. The tests demonstrated NOx reduction efficiencies in the range of 6-82 percent with molar ratios in the range of 0.1-1.0.

Additionally, ammonia was injected at varying rates for approximately a 16-hour period to maintain a set stack gas NOx concentration of about 130 ppm (v/v); equivalent to about 1.8 pounds of NOx per ton of clinker. This test demonstrated that a relatively constant NOx stack gas concentration can be maintained with an SNCR system by varying the injection rate of ammonia.

Finally, this report includes a cost estimate for the operation of an SNCR system at the FRI Thompson S. Baker Cement Plant based on the results of this test program.

## 2.0 THE SNCR PROCESS

The bases of the SNCR process are reactions between ammonia (NH<sub>3</sub>) and NO and ammonia and NO<sub>2</sub>. In these reactions, the NO and NO<sub>2</sub> are chemically reduced to elemental nitrogen. The governing reactions are as follows:



These reactions take place without the aid of a catalyst and are highly temperature dependent. With the injection of aqua ammonia (an ammonia/water solution), the optimum reaction temperature is approximately 950°C (1750°F). For urea injection, the optimum temperature is in the range of 1000°C (1830°F). For temperatures significantly below these optimum temperatures, some of the ammonia is unreacted and ends up in the raw materials or as ammonia in the stack gas. At temperatures significantly above the temperatures, the ammonia will react with oxygen, increasing the concentrations of NO and NO<sub>2</sub> (referred to as collectively herein as NO<sub>x</sub>).

The actual reaction between ammonia and NO<sub>x</sub> first involves the reaction of ammonia with OH<sup>\*</sup> radicals to produce the NH<sub>2</sub><sup>\*</sup> radical and water. The NH<sub>2</sub><sup>\*</sup>

then reacts with NO<sub>x</sub> to produce the elemental nitrogen and water as shown in the above equations.

Because of this intermediate reaction, another factor to take into consideration is the presence of carbon monoxide (CO) in the gas stream into which the ammonia is injected. The oxidation of CO to CO<sub>2</sub> involves the same OH<sup>\*</sup> radicals that react with ammonia to produce the NH<sub>2</sub><sup>\*</sup> radical. Thus, if CO is present, there are competing reactions between the CO and NH<sub>3</sub> for the OH<sup>\*</sup> radicals and both the oxidation of CO and the creation of NH<sub>2</sub><sup>\*</sup> radicals suffer.

For SNCR to be effective, therefore, there must be enough residence time in the precalciner between the injection of tertiary combustion air and the injection of ammonia for the CO to be substantially oxidized. Considering these factors, Polysius has found that the most favorable point of ammonia injection at this Multi-Stage Combustion (MSC) plant is just prior to the Stage I cyclone of the preheater.

Polysius has found that because of the aforementioned competing reactions between CO and NH<sub>3</sub> for OH<sup>\*</sup> radicals, the presence of unoxidized carbon monoxide at the point of ammonia injection will result in an increase in carbon monoxide emissions. Polysius has reported (*Latest Developments in NO<sub>x</sub> Reduction Technology in the Cement Industry*, R. M. Erpelding, Polysius A.G.-



Germany, Cement Plant Environmental Handbook, 2003) that at a molar ratio of ammonia to NO<sub>x</sub> of 0.8, CO emissions will increase in the range of 0.3-1.0 pounds per ton of clinker. At a molar ratio of 1.0, the CO increase will be in the range of 0.5-1.5 pounds per ton of clinker.

### 3.0 SNCR TEST EQUIPMENT

Polysius supplied the equipment necessary for injecting the aqua ammonia. For the test at FRI, a 10 percent (by weight) ammonia in water solution was delivered by tank truck. The specific gravity of the solution was 0.9582.

The Polysius equipment consisted of three components; a control panel, the pump station and the injectors. The aqua ammonia was delivered from the tank truck through a 20 stage centrifugal pump and a series of controllers to the injectors at a pressure in the range of 150-220 psig (10-15 bars). Four injector nozzles were placed at 90 degrees to one another in the wall of a circular cross section of the precalciner just upstream of the Stage I cyclone of the preheater. Each injector nozzle created a flat fan-shaped distribution with an aperture angle of 60 degrees. The flat, thin spray of aqua ammonia maximized the interface between the reagent and the gas stream, optimizing the reaction between ammonia and NO<sub>x</sub>. One to four nozzles were used during the test period depending upon the ammonia injection rate.

The entire system was controlled with a control panel designed to maintain a constant ammonia injection rate or to vary the ammonia injection rate in order to maintain a constant stack gas NO<sub>x</sub> concentration.

The Polysius controller recorded NO in the stack gas (ppm, dry), stack gas oxygen (volume percent, dry), kiln feed (tons per hour provided by FRI), stack gas flow (from the FRI continuous monitoring system), and the ammonia injection rate, and other operating variables.

#### 4.0 MONITORING

Ammonia injection at varying set molar ratios and ammonia injection at a variable rate to maintain a set stack gas NO<sub>x</sub> concentration was conducted during the period 0800 hours on December 9, 2004 and 2400 hours on December 10, 2004. During this period of time, there were two periods of disruption in kiln feed (See Figure 1). Ammonia injection tests were not conducted during these periods.

During the periods of testing, the kiln feed rate ranged from 165-175 tons per hour and averaged approximately 170 tons per hour (approximately 102 tph of clinker). During this period of time, the kiln and calciner were both fired with coal. Testing was conducted for about a one hour period between 0800-0900 hours on December 9 while whole-tire derived fuel was fired at the kiln inlet and again between 1400-2400 hours on December 10, 2004 with the firing of tire derived fuel. The tire firing rate typically averages about one ton per hour and provides about seven percent of the total heat input to the pyroprocessing system.

FRI was responsible for monitoring the kiln feed rate, the fuel firing rates, clinker production rate, and stack gas parameters including NO<sub>x</sub>, SO<sub>2</sub>, total hydrocarbons, flow rate and temperature. The stack gas monitoring was conducted with continuous monitors permanently installed in the FRI kiln/raw mill stack. These monitors have been previously certified in accordance with the

requirements of 40 CFR 60, Appendices B and F. The FRI NOx data were used for the analyses presented herein.

Polysius was responsible for the ammonia injection and the monitoring of parameters associated with this injection. These parameters included the ammonia injection rate and stack gas concentration of NO, O<sub>2</sub>, and CO. The NO, O<sub>2</sub>, and CO were measured on a dry basis in a bypass stream from the Koogler and Associates monitors.

Koogler and Associates was responsible as the engineer of record for the testing and monitored ammonia and CO in the stack. The ammonia was monitored continually in accordance with the general procedures of EPA Method 320 (the FTIR method) and CO was measured in accordance with the general procedures of EPA Method 10. Both methods are described in 40 CFR 60, Appendix A. The CO monitored in accordance with Method 10 was used for the analyses reported herein.

The extractive stack gas monitoring (NH<sub>3</sub> and CO) and the continuous in-stack gas monitoring were conducted in the 112-inch diameter, 241-foot high kiln/raw mill stack. The sampling ports are located 15.7 diameters downstream from the point where gases enter the stack and 5.4 diameters below the top of the stack.

## 5.0 DESCRIPTION OF TESTS

The purpose of the SNCR tests was two fold. First, the NO<sub>x</sub> (expressed as NO<sub>2</sub>) control efficiency was determined as a function of the molar ratio of ammonia to uncontrolled NO<sub>x</sub> and secondly, a test was conducted with variable ammonia/NO<sub>x</sub> molar ratios to see if a set stack gas NO<sub>x</sub> concentration could be maintained.

In both cases, the ammonia was injected into the calciner just prior to the Stage I cyclone of the preheater. At this point, the average temperature during the test period was 862°C (1580°F) and the average pressure was -15 millibars (approximately -6 in. H<sub>2</sub>O).

For the NO<sub>x</sub> reduction tests, ammonia was introduced for discrete periods of time ranging from approximately 30-60 minutes. During each injection period, the ammonia injection rate was held constant at a predetermined NH<sub>3</sub>/NO<sub>x</sub> molar ratio. The molar ratios ranged from approximately 0.1-1.0. Tests were conducted with whole-tire derived fuel fired at the inlet of the kiln and again with no whole-tire derived fuel being used.

Before and after each ammonia injection period, the uncontrolled NO<sub>x</sub> (expressed as NO<sub>2</sub>) concentrations were measured in the stack gas. The

uncontrolled NO<sub>x</sub> emission rate for each NH<sub>3</sub> injection period (expressed as pound per ton of clinker) was calculated as the average of the uncontrolled NO<sub>x</sub> emission rates before and after each injection period. From these data, the NO<sub>x</sub> reduction for each test period was calculated as:

$$\text{NO}_x \text{ Reduction (\%)} = (\text{NO}_{x\text{uncontrolled}} - \text{NO}_{x\text{controlled}}) \times 100 / \text{NO}_{x\text{uncontrolled}}$$

The molar ratio of ammonia to NO<sub>x</sub> was calculated as the molar injection rate of ammonia (moles per hour) divided by the uncontrolled NO<sub>x</sub> emission rate (moles per hour). The molar injection rate of ammonia was based on a 10 percent (by weight) solution of ammonia in water. The specific gravity of this solution was 0.9582. The molar injection rate of ammonia is expressed as moles of NH<sub>3</sub> per hour.

## 6.0 TEST RESULTS

The results derived from the SNCR testing at FRI are divided into three sections; NOx control as a function of ammonia injection rate, factors associated with carbon monoxide and ammonia emissions and the estimated cost of operating an SNCR system at FRI.

### 6.1 NOx Control Efficiency

The control of NOx from the kiln/raw mill stack is defined as a function of the uncontrolled emissions and the controlled emissions as defined in Section 5.0. The uncontrolled emissions are based on NOx data collected immediately before and immediately following periods of ammonia injection. During the time periods used for determining uncontrolled NOx emissions, no ammonia was being injected. The controlled emissions were measured and calculated based on data collected during each period of ammonia injection.

The controlled and uncontrolled NOx emissions, expressed both as pounds per ton of clinker and pound-moles (of NO<sub>2</sub>) per hour for each period of ammonia injection are summarized in Table 1. One set of data was collected while tire derived fuel was fired at the kiln inlet and the second set of data was collected with no tire derived fuel being burned.



The ammonia injection rate was varied from approximately 75-600 liters per hour during the NOx control efficiency test period. Ammonia was injected at six discrete flow rates while tire derived fuel was being used and six discrete flow rates when no tire derived fuel was being used. The time periods of ammonia injection typically ranged from 30-60 minutes.

The injection rates of ammonia were calculated in terms of moles per hour based on the injection rate of the ten percent aqua ammonia solution (liters per hour), a solution specific gravity of 0.9582 and the molecular weight of ammonia (NH<sub>3</sub>; m.w. = 17).

The molar ratio of ammonia to NOx was calculated for each period based on the ammonia injection rate (moles per hour) and the uncontrolled NOx emission rate (moles per hour). The data summarized in Table 1 show that the molar ratios for the two test periods combined ranged from approximately 0.1-1.0.

The NOx control efficiencies range from about seven percent with a molar ratio of 0.09 (with no tire derived fuel) to about 82 percent with a molar ratio of 1.04 (with no tire derived fuel). The control efficiencies with tire derived fuel ranged from about 34-68 percent with molar ratios ranging from 0.12-0.64. The control efficiency data are also shown in graphical form in Figure 2.

It will be noted from the data presented in Figure 2 that the apparent NO<sub>x</sub> control efficiency is greater when tires are used as a supplemental fuel than when tires are not used. This is particularly true at the lower molar ratios; i.e., between 0.1 and 0.6. At molar ratios of 0.6 and above, the control efficiencies tend to converge.

The difference in control efficiencies with and without tire derived fuel is not readily explained. Looking at the data in Table 1, it will be noted that in general, the uncontrolled NO<sub>x</sub> emissions during tests without tire derived fuel were greater than the uncontrolled NO<sub>x</sub> emissions when tire derived fuel was being burned. This would indicate a higher oxygen level at the kiln exit (resulting in higher uncontrolled NO<sub>x</sub> emissions) when no tire derived fuel was used. This higher oxygen level and the fact that oxygen was not consumed by the combustion of tire derived fuel, would have a tendency to lower CO levels in the calciner and result in a more efficient reaction between ammonia and NO<sub>x</sub> (See Section 2.0). The control efficiency data are contrary to this.

The data presented in Figures 3 and 4 are the time dependent NO<sub>x</sub> emission rates, carbon monoxide emission rates, and ammonia injection rates for the SNCR tests when tire derived fuel was being burned (Figure 3a-3c) and when no tire derived fuel was being burned (Figure 4). These data confirm that when the highest uncontrolled NO<sub>x</sub> emissions occurred (the lower molar ratio injections

with no tire derived fuel), the CO emissions were lowest (approximately 10 pound-moles per hour). As the uncontrolled NOx emissions decreased (again with no tire derived) the CO emissions increased to approximately 20 pound-moles per hour. This higher CO emissions rate was typical of most of the ammonia injection periods when tire derived fuel was fired (Figures 3a-3c). Again, the lower levels of CO would indicate the reaction between ammonia and NOx should be more efficient. As stated previously, the data in Figure 2 do not support this.

For purposes of evaluating the effectiveness of SNCR for NOx control under the variable conditions of this cement plant, it is probably best to use the relationship between ammonia injection and NOx control represented by the combined data set shown in Figure 2.

The molar injection of ammonia (pound-moles per hour) is compared with the reduction in NOx in the stack gas (pound-moles per hour) in Figure 5. Again, these data show an apparent greater reduction when tire derived fuel was being burned than when tire derived fuel was not being burned. Again, it is probably best to use the combined data set to represent the functioning of SNCR at this cement plant.

These data show that stack gas NO<sub>x</sub> is reduced by approximately 0.8 pound-moles with the injection of 1.0 pound-mole of ammonia. The data further show that this relationship is linear over the injection rates tested (molar ratios between 0.1 and 1.0). This indicates an ammonia utilization efficiency of about 80 percent.

The other part of the NO<sub>x</sub> control efficiency tests was to set a stack gas NO<sub>x</sub> concentration and to maintain this concentration over an extended period of time by varying the ammonia injection rate. This was done for an approximate 16-hour period between 1800 hours on December 9 and 1000 hours on December 10, 2004. The ammonia injection rate (liters per hour) and the stack gas NO<sub>x</sub> concentration (ppm) for this period of time are presented in Figure 6. These data show (for the limited period of this test) that it is possible to maintain a relatively constant NO<sub>x</sub> emission rate by varying the ammonia injection rate.

For the period, the stack gas NO<sub>x</sub> concentration averaged approximately 130 ppm (equivalent to an NO<sub>x</sub> emission rate of 1.80 pounds per ton of clinker). The ammonia injection rate for the period ranged from approximately 200-400 liters per hour (equivalent to molar ratios of NH<sub>3</sub>/NO<sub>x</sub> of 0.35-0.70).

## **6.2 Carbon Monoxide and Ammonia Emissions**

Carbon monoxide and ammonia concentrations were measured in the kiln/raw mill stack during the SNCR test period in accordance with the general procedures of EPA Methods 10 and 320, respectively.

### **6.2.1 Carbon Monoxide Emissions**

The carbon monoxide emissions (pound-mole per hour) are presented graphically in Figures 3 and 4 for periods when tire derived fuel was fired and periods when no tire derived fuel was fired. During the period when tire derived fuel was fired (Figure 3a-c) the CO emissions were generally quite variable and no trend between ammonia injection and CO emissions is discernible. During the period when no tire derived fuel was fired (Figure 4) the CO emissions were more stable; especially during the first part of the test period. From these data, a trend of increased CO emissions is observed when ammonia was injected. This is consistent with previous Polysius observations and the reactions between ammonia, CO, and NO<sub>x</sub> discussed in Section 2.0.

Until more experience is gathered defining the relationship between CO emissions and the injection of ammonia, FRI is comfortable with the CO emission limit proposed in the Air Construction Permit Application for Line No. 2 of 3.6 pounds of CO per ton of clinker.

### 6.2.2 Ammonia Emissions

The continuous monitoring of ammonia in the kiln/raw mill stack demonstrated that during most periods of time when the raw mill was operating, very little to no ammonia was observed in the stack gas. When the raw mill was not operating, however, the ammonia concentration in the stack gas peaked at approximately 40 ppm (v/v) (See Figure 7a-7b).

This indicates that the unreacted ammonia is absorbed in the raw materials in the raw mill and recirculated until such time that the raw mill shuts down. With the raw mill down, some of the absorbed ammonia is purged from the system.

Due to the limited period of time over which the SNCR tests were conducted at FRI (six days), no definitive conclusion can be reached regarding long-term ammonia emissions during the operation of an SNCR system.

It appears that long term, an ammonia equilibrium would be reached in the plant and that some ammonia slip may occur even with the raw mill running. The majority of the unreacted ammonia would more than likely still be purged during periods when the raw mill is not operating. The long-term effect of ammonia emissions can only be determined with the continuous operation of an SNCR system.

### 6.3 SNCR Cost Estimate

The SNCR system is relatively easy to install and operate compared with other add-on NOx control systems. Additionally, the operational costs (reagent, variable operating cost, and capital return) are relatively low compared with other systems and the SNCR system offers considerable operating flexibility.

In general, an SNCR system would include:

- an ammonia storage tank,
- a redundant pumping system,
- a control system,
- a set of injectors, and
- the necessary piping.

The system can be installed in a relatively short period of time with minimal plant downtime.

Based on data provided by Polysius and others, the basic fixed costs associated with an SNCR system for the FRI plant are approximately 0.20 dollars per ton of clinker.

The operating cost can vary considerably depending on the source of ammonia and the ammonia injection rate. For purposes of this report, the ammonia

considered was a 10 percent aqua ammonia solution at a delivered cost of \$145 per ton of solution (\$1,450 per ton of ammonia).

The cost data developed from data collected during the SNCR test period at FRI are presented in Figure 8. These data show the costs of an SNCR system (operating cost plus capital recovery) to reduce NOx emissions from a range of uncontrolled emission rates to a range of targeted controlled emission rates. For example, to reduce NOx emissions from 3.5 pounds per ton of clinker (uncontrolled) to 2.0 pounds per ton of clinker (controlled), the cost would be about 0.60 dollars per ton of clinker.



## 7.0 CONCLUSION

The six-day SNCR test at FRI demonstrated the apparent feasibility of SNCR for controlling NO<sub>x</sub> emissions from the FRI cement plant. NO<sub>x</sub> emissions were reduced between 7 and 82 percent with ammonia injected at molar ratios between 0.1 and 1.0. Limited testing also demonstrated that a relatively constant NO<sub>x</sub> level can be maintained in the kiln/raw mill stack gas by varying the ammonia injection rate.

Factors that could not be totally evaluated because of the short duration of the tests include the long-term ammonia equilibrium in the kiln/raw mill system and the effect of this equilibrium on ammonia emissions both during periods with the raw mill operating and with the raw mill not operating. Other factors that could not be fully evaluated are the long-term effect of ammonia on overall plant operations and the product quality and the effect of operating an SNCR system while using tire derived fuel.

The tests did demonstrate that SNCR is effective for controlling NO<sub>x</sub> emissions during normal plant operations. Because of the temperature dependency of the reactions associated with SNCR, it is apparent that SNCR will not be effective during plant startups and during periods of plant upset. There will also be periods of downtime for the SNCR system. During periods of startup, plant

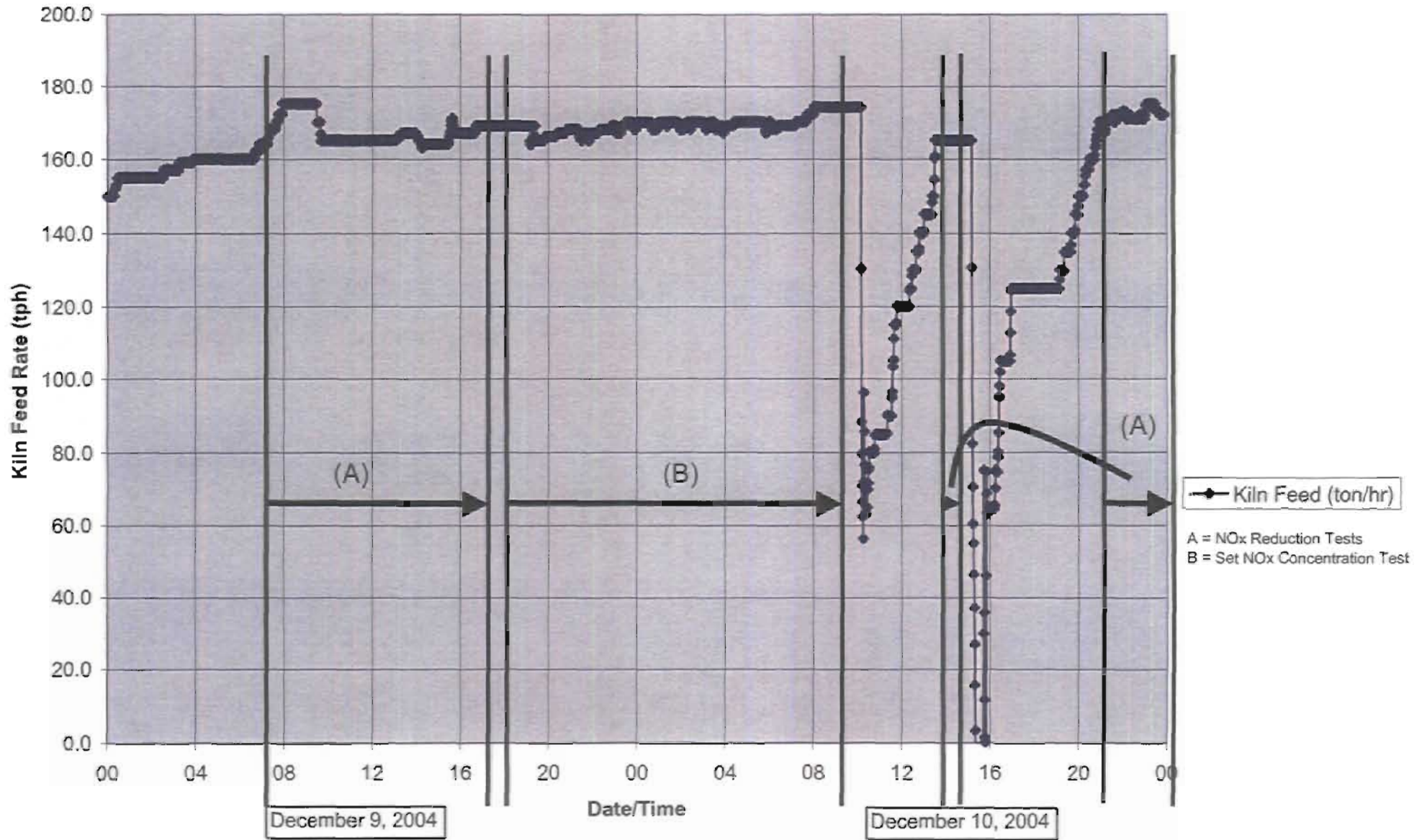
malfunction and SNCR system downtime, NOx emissions can be controlled using best operating practices and Multi-Stage Combustion.

Table 1. Summary of NOx Control Efficiency Data

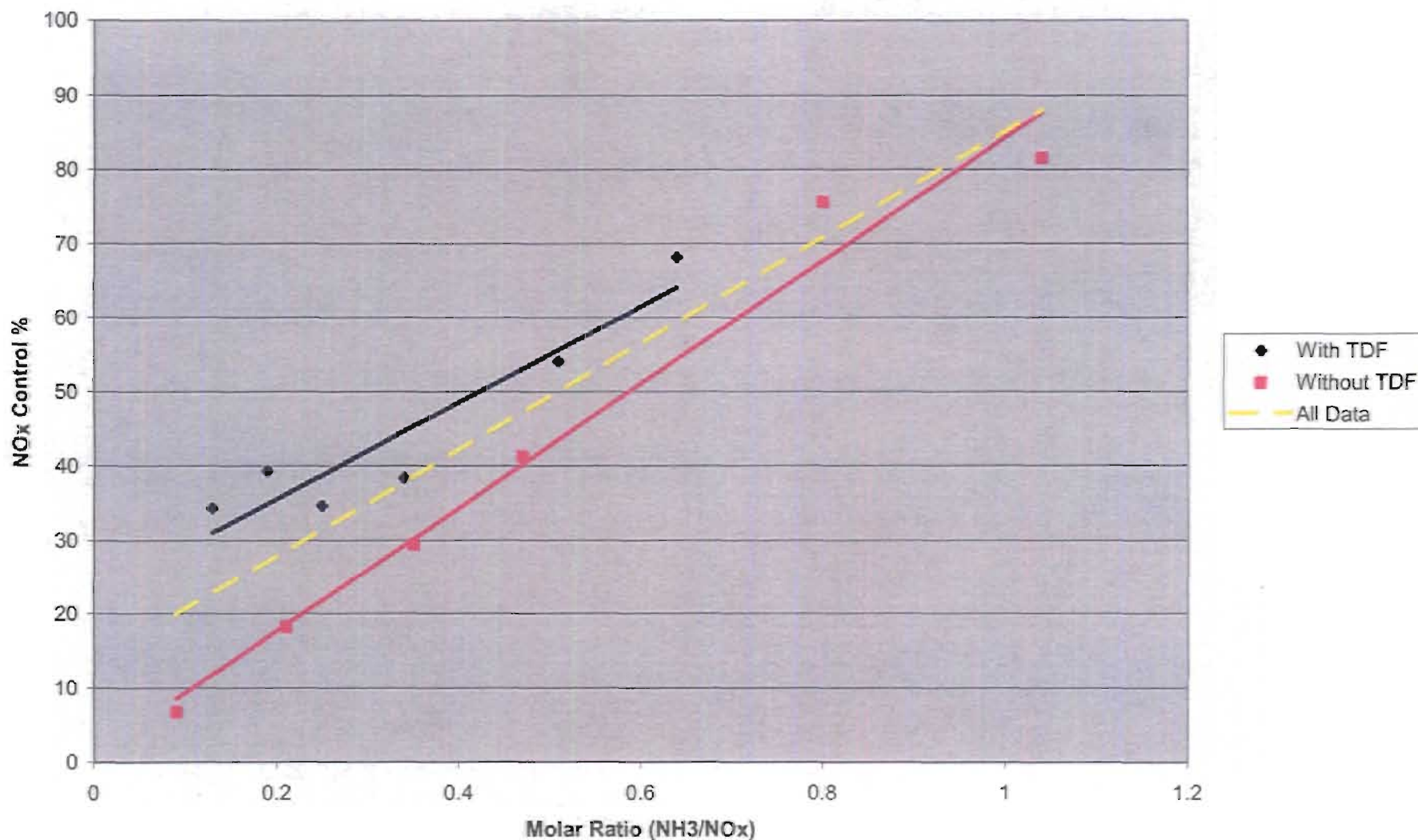
Test Condition	Uncontrolled NOx (as NO2)		Controlled NOx (as NO2)		NH3 as NH3	Molar Ratio (NH3/NOx)	NOx Reduction (%)
	(lb/ton Cl)	(lb-mol/hr)	(lb/ton cl)	(lb-mol/hr)	(lb-mol/hr)		lb/ton Cl basis
With Tires	3.10	6.83	2.05	4.63	0.84	0.12	33.9
	2.86	6.03	1.76	3.76	1.14	0.19	38.5
	3.17	7.02	2.07	4.62	1.78	0.25	34.7
	3.20	7.08	1.96	4.34	2.42	0.34	38.8
	3.28	7.34	1.52	3.43	3.73	0.51	53.7
	3.32	7.47	1.06	2.36	4.75	0.64	68.1
Without Tires	4.46	9.54	4.17	9.01	0.88	0.09	6.5
	4.21	9.00	3.46	7.88	1.85	0.21	17.8
	3.74	8.01	2.64	6.09	2.78	0.35	29.4
	3.59	7.68	1.90	4.10	3.64	0.47	47.1
	3.55	7.63	0.87	1.84	6.10	0.80	75.5
	3.17	6.91	0.58	1.26	7.19	1.04	81.7

**Figure 1**

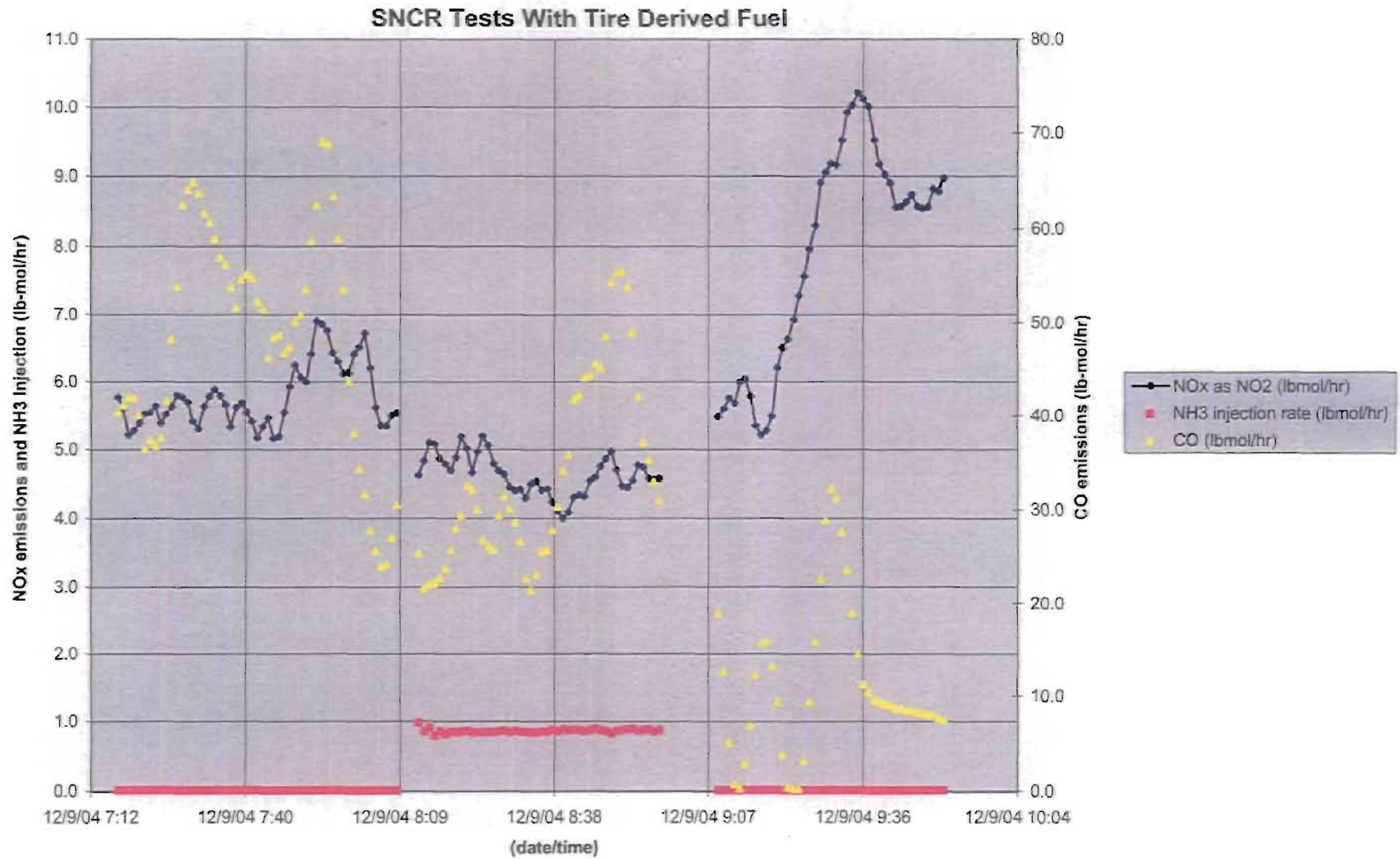
**Kiln Operating Rate During SNCR Tests**



**Figure 2**  
**NO<sub>x</sub> Control Efficiency as a Function of NH<sub>3</sub>/NO<sub>x</sub> Molar Ratio**

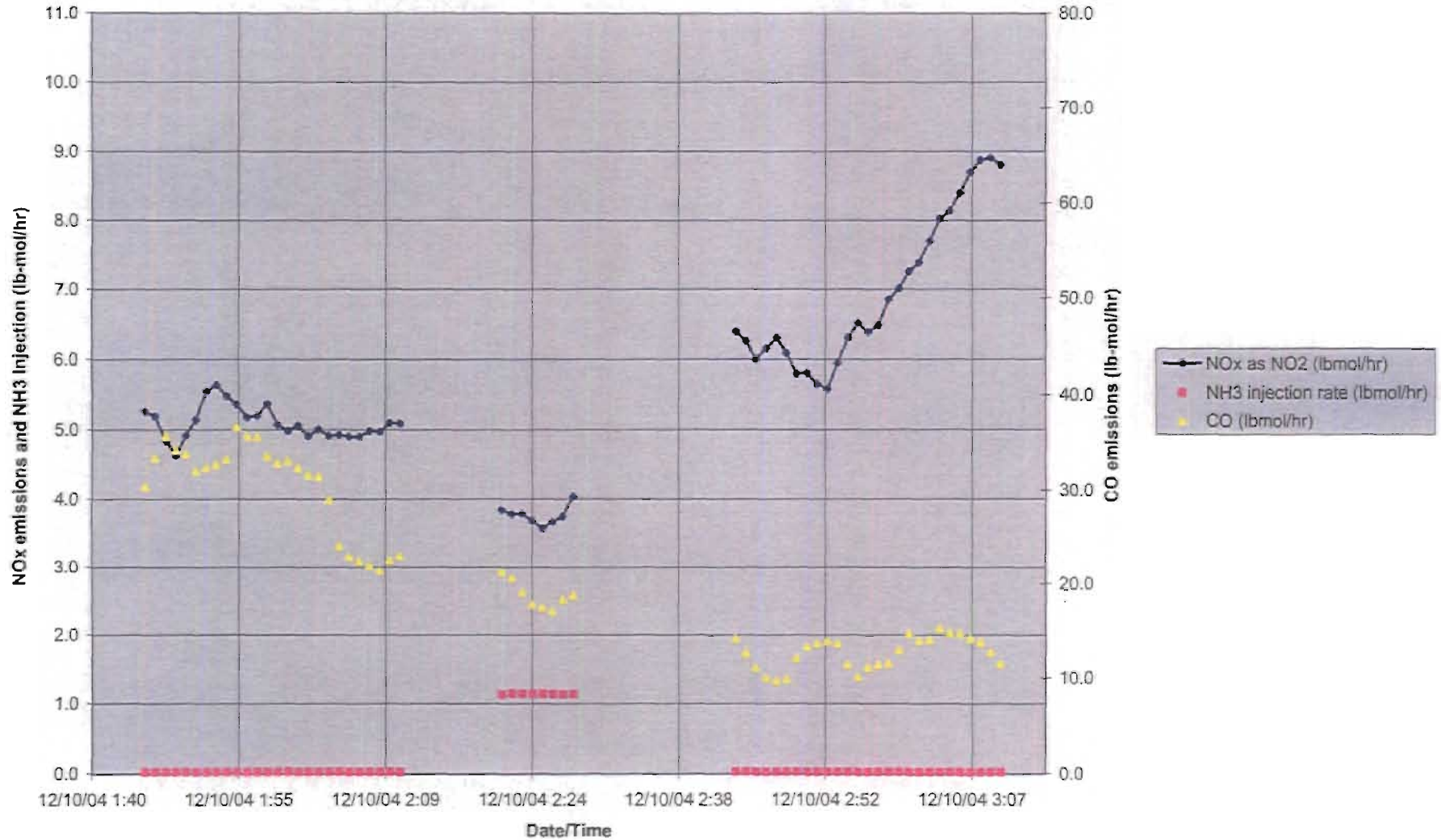


**Figure 3a**



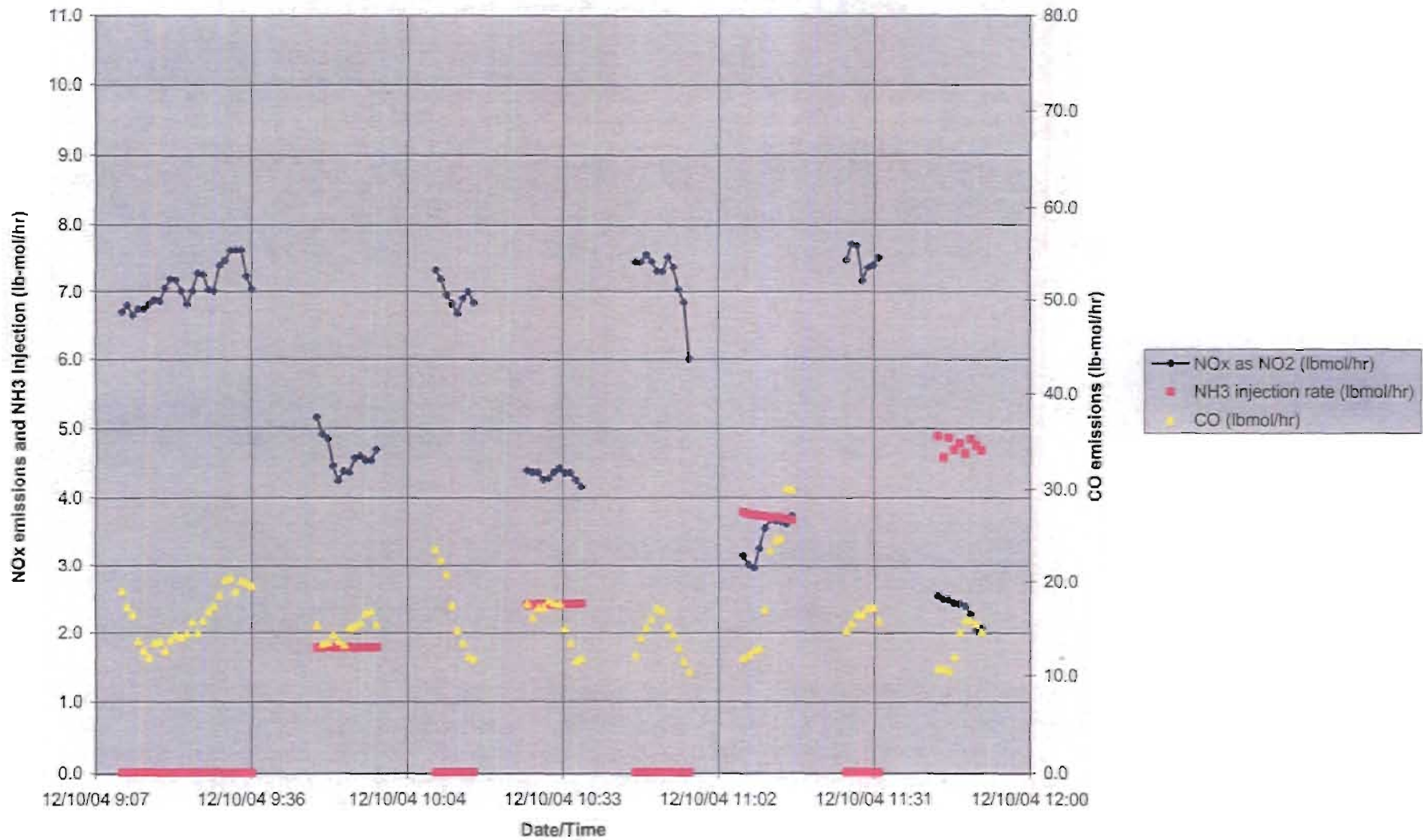
**Figure 3b**

**SNCR Test With Tire Derived Fuel**



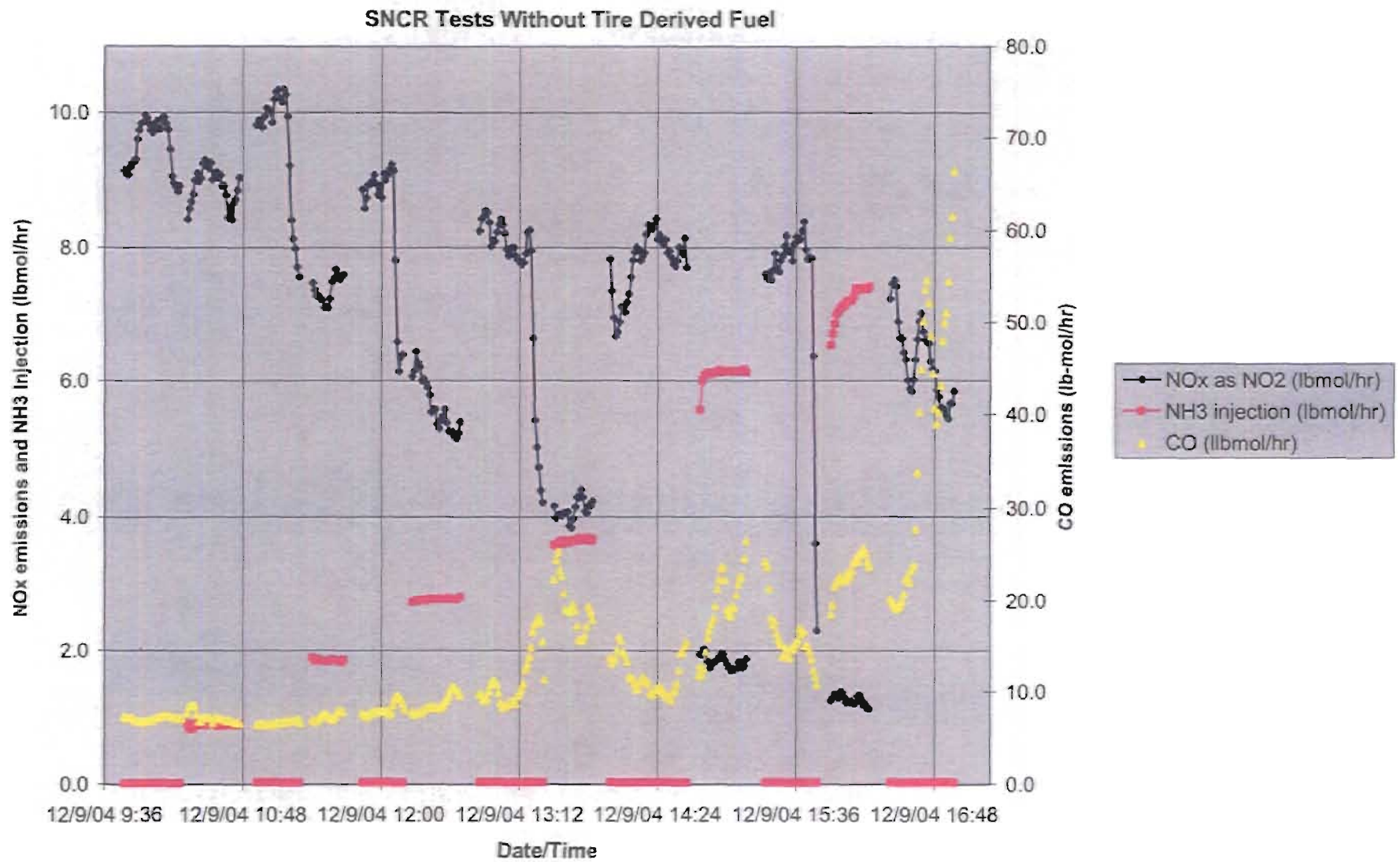
**Figure 3c**

**SNCR Test With Tire Derived Fuel**

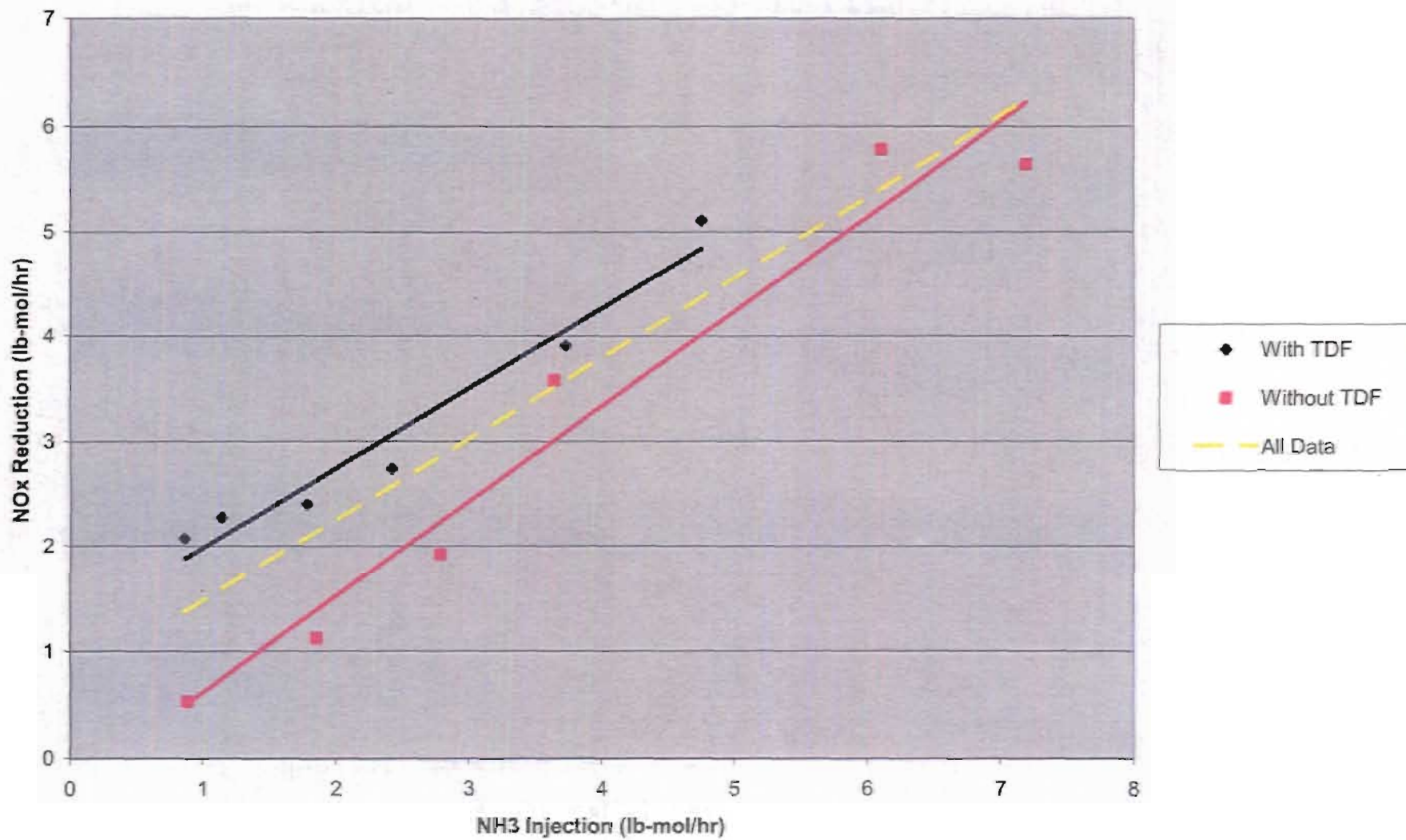




**Figure 4**



**Figure 5**  
**NOx Reduction and Ammonia Injection**



**Figure 6**

**Stack Gas NOx and NH3 Injection**

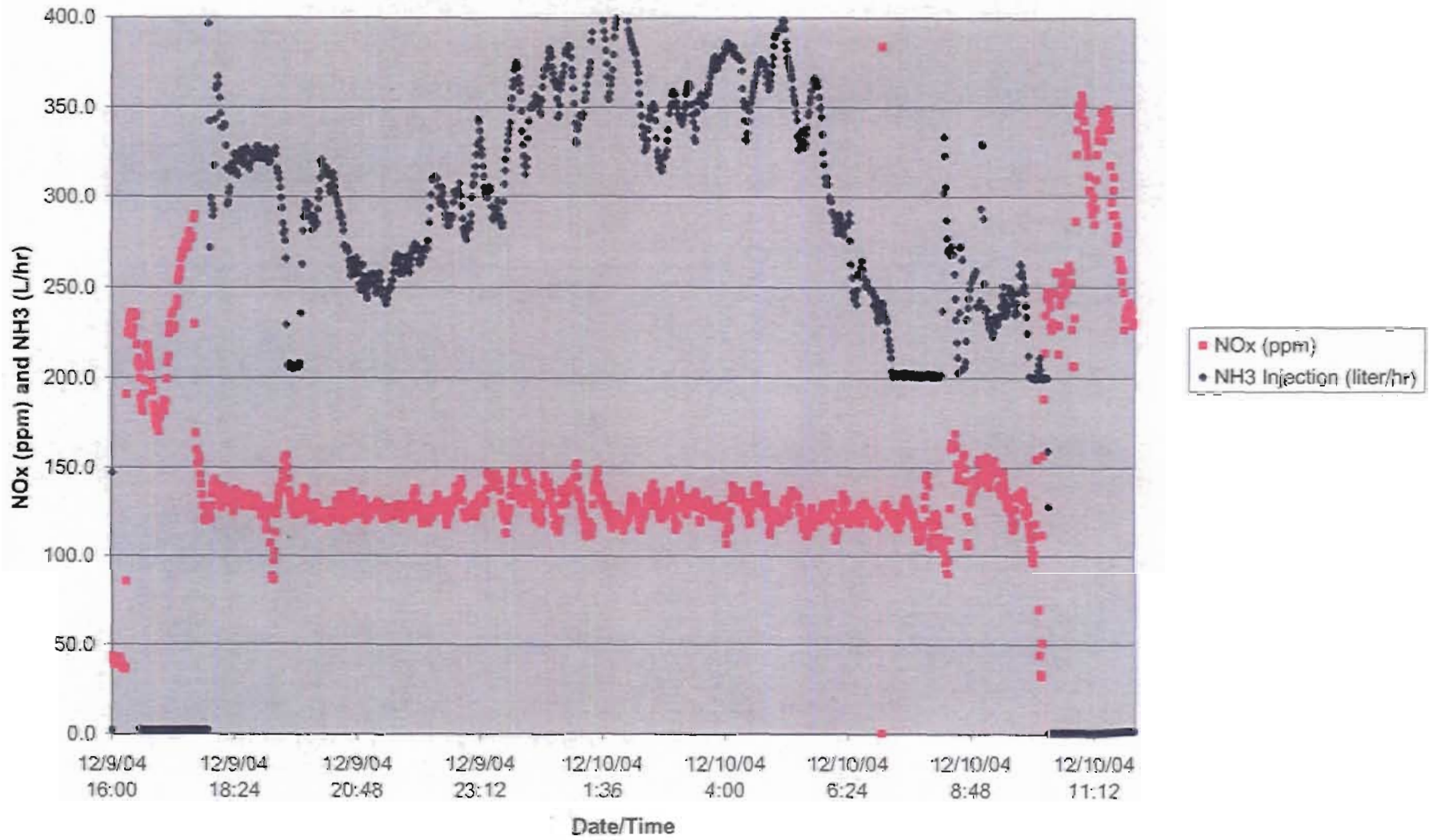


Figure 7a

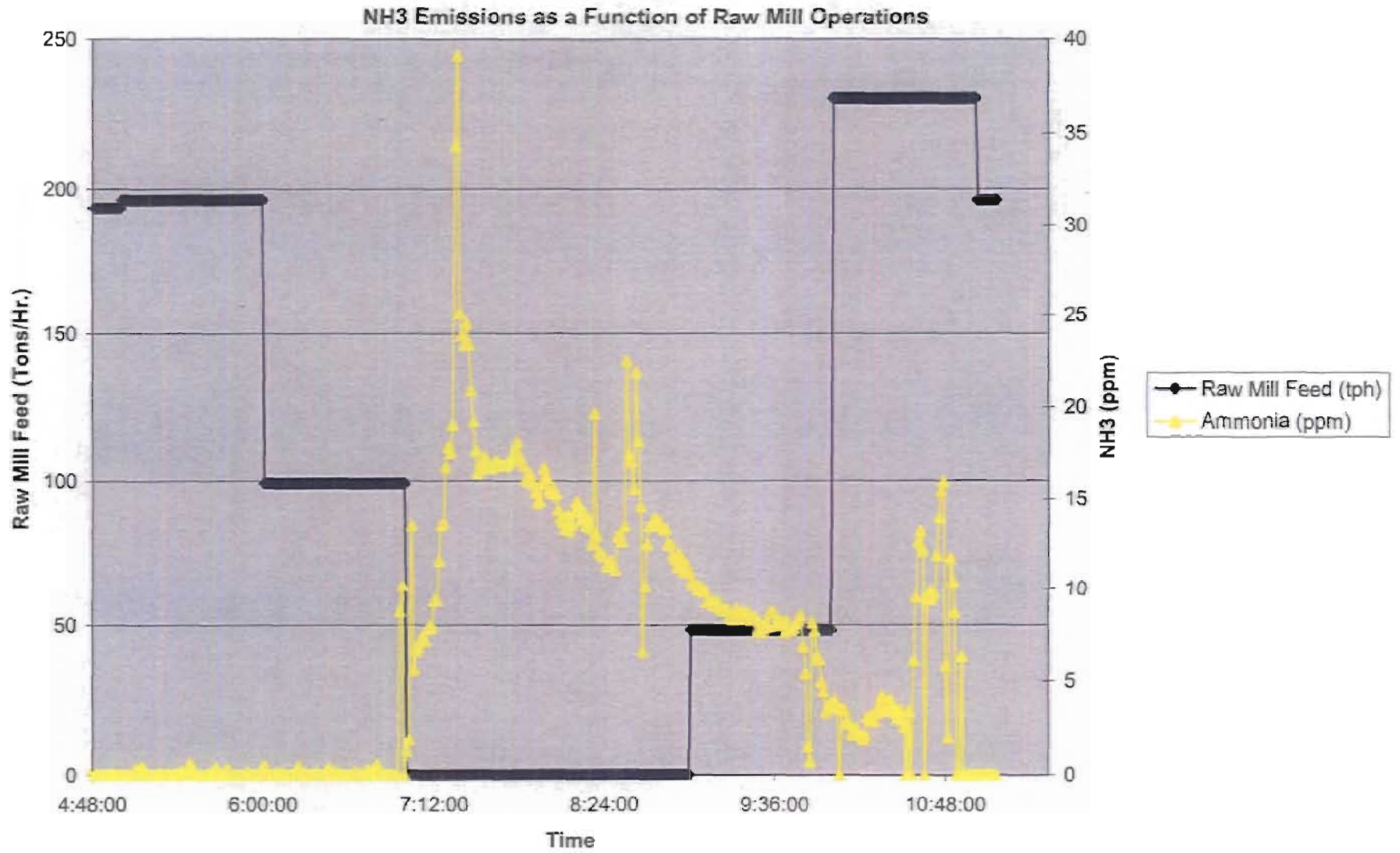
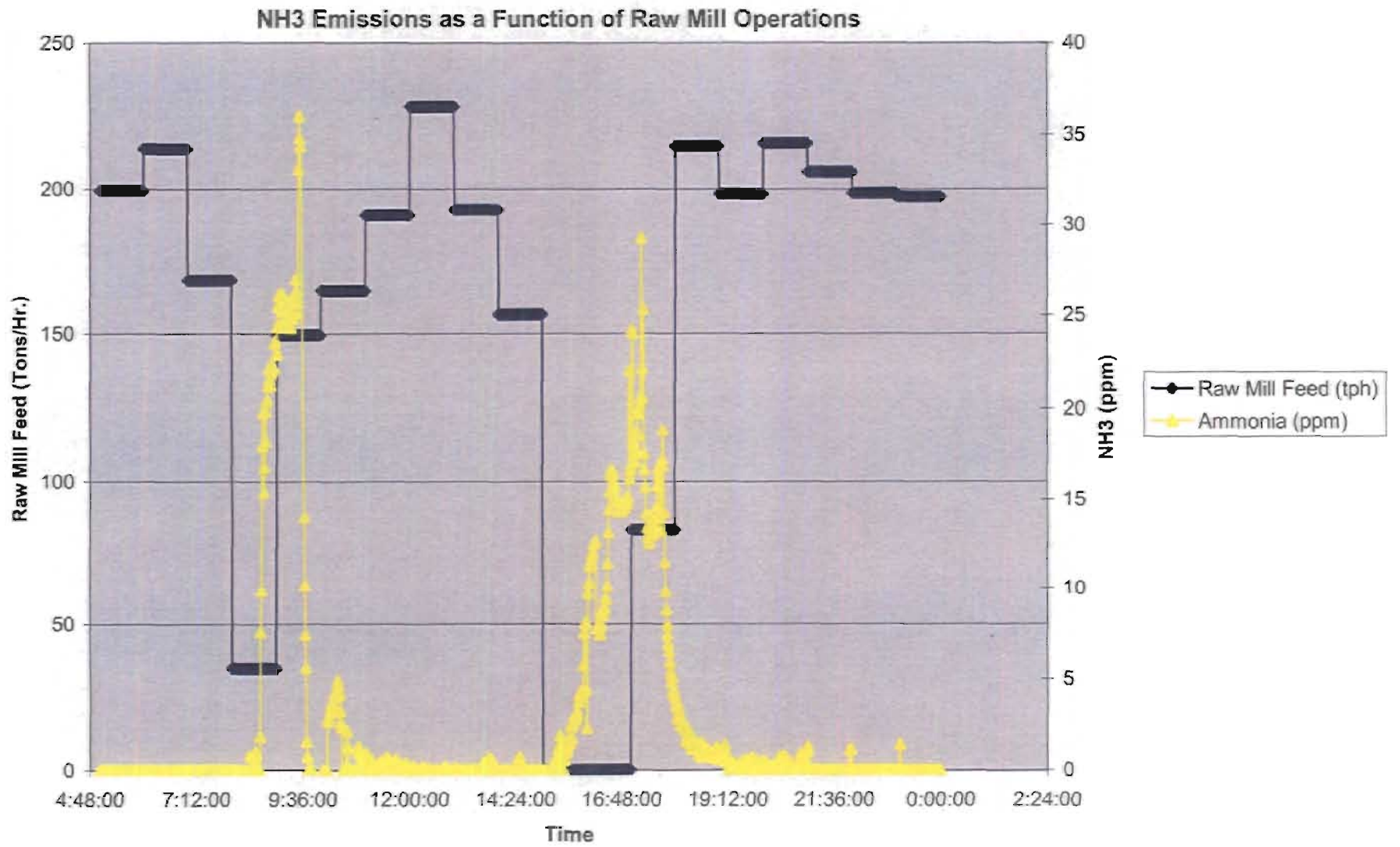
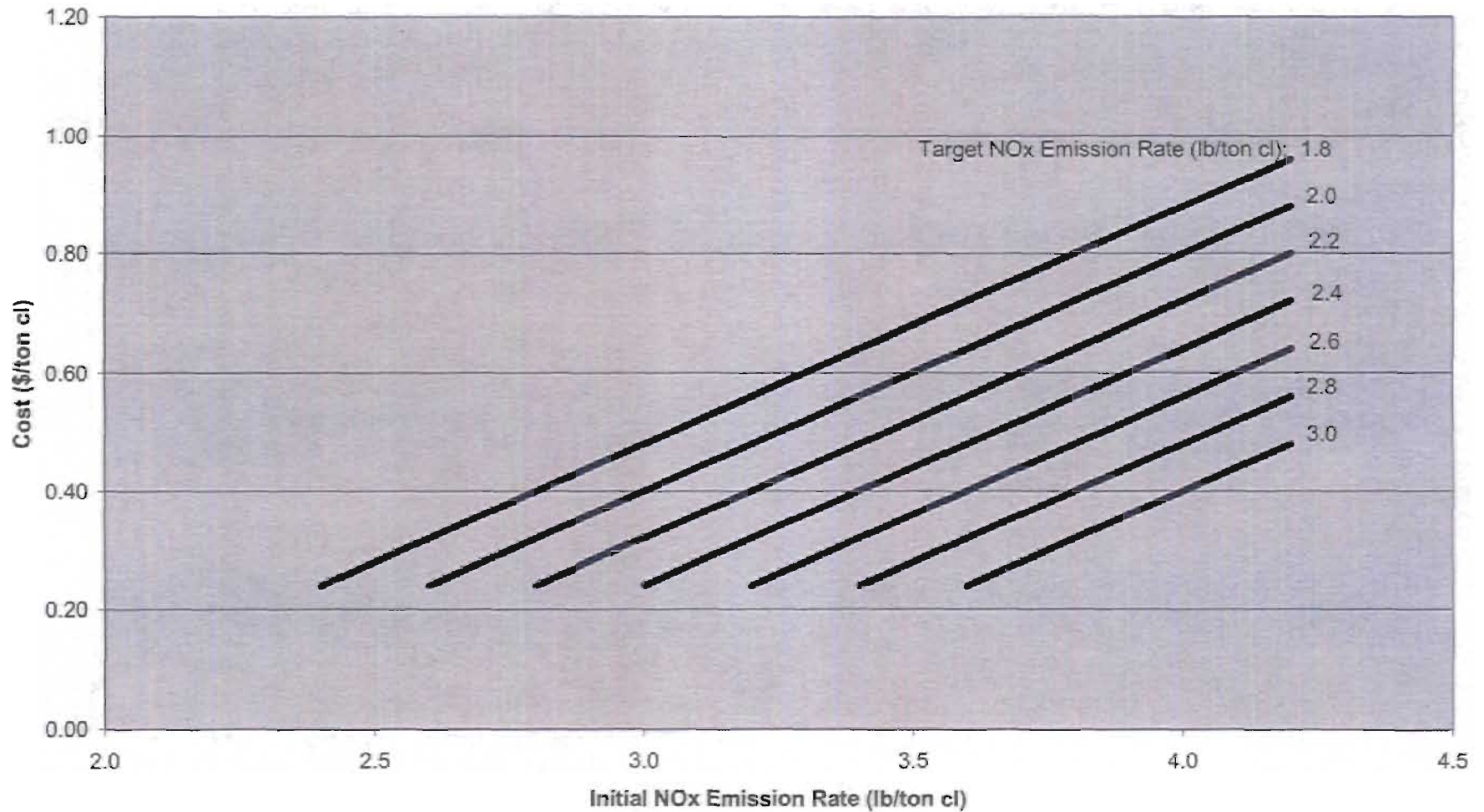


Figure 7b



**Figure 8**  
**Cost Per Ton of Clinker to Reduce NOx**  
**from an Uncontrolled Emission Rate to a Target Rate**





**KOOGLER & ASSOCIATES**  
**ENVIRONMENTAL SERVICES**

4014 NW THIRTEENTH STREET  
GAINESVILLE, FLORIDA 32609  
352/377-5822 • FAX/377-7158

KA 187-04-10  
October 20, 2004

**RECEIVED**

OCT 25 2004

**BUREAU OF AIR REGULATION**

Mr. Jim Pennington  
Florida Department of  
Environmental Protection  
Bureau of Air Regulation  
2600 Blair Stone Road  
Tallahassee, FL 32399-2400

**RE: Florida Rock Industries**  
**Thompson S. Baker Cement Plant**  
**Facility ID: 0010087**  
**Public Notice of Intent**

Dear Mr. Pennington:

Please find enclosed a copy of the Public Notice of Intent from the Gainesville Sun newspaper to issue Florida Rock Industries, Thompson S. Baker Cement Plant an Air Construction Permit.

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

Very truly yours,

KOOGLER & ASSOCIATES

Lori Toyota  
Office Manager

/lt

Enclosure

cc: C. Kinta, WED

26843

NO \_\_\_\_\_

**THE GAINESVILLE SUN  
Published Daily and Sunday  
GAINESVILLE, FLORIDA**

**STATE OF FLORIDA  
COUNTY OF ALACHUA**

NAOMI WILLIAMS-JORDAN

Before the undersigned authority appeared.....  
Classified Assistant Manager

Who on oath says that he/she is.....of THE GAINESVILLE SUN, a daily  
newspaper published at Gainesville in Alachua County, Florida, that the attached copy of advertisement, being a  
PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT

.....  
Florida Rock Industries, Inc. Thompson S. Baker Cement Plant - Newberry  
In the matter of .....

in the.....Court, was published in said newspaper in the issues of  
OCTOBER 16<sup>TH</sup>  
..... 2004

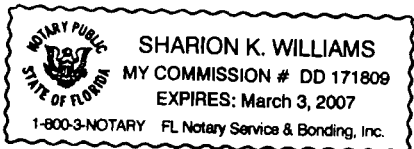
Affidavit further says that the said THE GAINESVILLE SUN is a newspaper published at Gainesville, in said Alachua County, Florida, and that the said newspaper has heretofore been continuously published in said Alachua County, each day, and has been entered as second class mail matter at the post office in Gainesville, in Said Alachua County, Florida, for a period of one year next preceding the first publication of the attached copy Of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount for publication in the said newspaper.

Sworn to and subscribed before me this

19 day of Oct A.D., 2004

*Sharion K. Williams*  
(seal) Notary Public

*Naomi Williams-Jordan*





0001

**LEGAL NOTICES****PUBLIC NOTICE  
OF INTENT  
TO ISSUE AIR  
CONSTRUCTION  
PERMIT**

Florida Department of  
Environmental Protection  
Florida Rock Industries,  
Inc.

Thompson S. Baker  
Cement Plant - Newberry  
Alachua County  
Draft Air Construction  
Permit (Letter)  
No.: 0010087-011-AC

The Florida Department of  
Environmental Protection  
(Department) gives notice  
of its intent to issue an Air  
Construction Permit (let-  
ter) to Florida Rock Indus-  
tries, Inc. (FRI) to allow  
the evaluation of selective  
non-catalytic reduction  
(SNCR) at the Thompson  
S. Baker Cement Plant  
located 2.5 miles North-  
east of Newberry on  
County Road 235 in Ala-  
chua County. A new Best  
Available Control Technol-  
ogy (BACT) determination  
was not required. The  
applicant's name and  
address are: Florida Rock  
Industries, Inc., 155 East  
21st Street, Jacksonville,  
Florida 32206.

FRI requests permission  
to use SNCR in a test pro-  
gram from October 25  
through December 31,  
2004, that will allow the  
Department and FRI to  
determine the range of  
NOx emission reductions  
possible under multiple  
operating scenarios using  
SNCR. The proposed test-  
ing evaluation will not  
result in significant net  
emissions increases and a  
new evaluation under the  
rules for the Prevention of  
Significant Deterioration  
(PSD) is not required.

The plant has continuous  
emissions monitoring  
(CEM) equipment for  
NOx, SO<sub>2</sub>, opacity and  
total hydrocarbons as well  
as annual testing require-  
ments for all of the regu-  
lated pollutants. The  
plant is subject to  
40CFR63, Subpart LLL. As  
part of these tests, addi-  
tional testing will be per-  
formed for particulate  
matter and visible emis-  
sions in conjunction with  
the CEM data.

The Department will issue  
the Final Permit (Letter)  
with the attached condi-  
tions unless a response  
received in accordance  
with the following proce-  
dures results in a different  
decision or significant  
change of terms or condi-  
tions. The Department will  
accept written comments  
concerning the proposed  
permit issuance action for  
a period of fourteen (14)  
days from the date of pub-  
lication of this Public  
Notice of Intent to Issue  
Air Construction Permit.  
Written comments should  
be provided to the Depart-  
ment's Bureau of Air Reg-  
ulation at 2600 Blair Stone  
Road, Mail Station #5505,  
Tallahassee, FL 32399-  
2400. Any written com-  
ments filed shall be made  
available for public  
inspection. If written com-  
ments received result in a  
significant change in the  
proposed agency action,  
the Department shall  
revise the proposed per-  
mit and require, if applic-  
able, another Public  
Notice.

The Department will issue  
the permit with the  
attached conditions  
unless a timely petition  
for an administrative hear-  
ing is filed pursuant to  
Sections 120.569 and  
120.57, F.S., before the  
deadline for filing a peti-  
tion. The procedures for  
petitioning for a hearing  
are set forth below. Medi-  
ation is not available in  
this proceeding.

A person whose substan-  
tial interests are affected  
by the proposed permit-  
ting decision may petition  
for an administrative pro-  
ceeding (hearing) under  
Sections 120.569 and  
120.57, F.S. The petition  
must contain the informa-  
tion set forth below and  
must be filed (received) in  
the Office of General  
Counsel of the Depart-  
ment at 3900 Common-  
wealth Boulevard, Mail  
Station #35, Tallahassee,  
Florida, 32399-3000. Peti-  
tions must be filed within  
fourteen (14) days of pub-  
lication of this Public  
Notice of Intent to Issue  
Air Construction Permit.  
Under Section 120.60(3),  
F.S., however, petitions  
submitted by person(s)  
who asked the Depart-  
ment for notice of agency  
action must be filed  
within fourteen (14) days  
of receipt of that notice or  
the date of publication of  
the public notice which-  
ever occurs first. A peti-  
tioner shall mail a copy of

the petition to the appli-  
cant at the address indi-  
cated above at the time of  
filing. The failure of any  
person to file a petition  
within the appropriate  
time period shall consti-  
tute a waiver of that per-  
son's right to request an  
administrative determina-  
tion (hearing) under Sec-  
tions 120.569 and 120.57,  
F.S., or to intervene in this  
proceeding and partici-  
pate 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,  
F.A.C.

A petition that disputes  
the material facts on  
which the Department's  
action is based must con-  
tain the following infor-  
mation: (a) The name and  
address of each agency  
affected and each agency's  
file or identification  
number, if known; (b) The  
name, address, and tele-  
phone number of the peti-  
tioner, the name, address,  
and telephone number of  
the petitioner's represen-  
tative, if any, which shall  
be the address for service  
purposes during the  
course of the proceeding;  
and an explanation of  
how the petitioner's sub-  
stantial interests will be  
affected by the agency  
determination; (c) A state-  
ment 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 peti-  
tion must so indicate; (e)  
A concise statement of  
the ultimate facts alleged,  
including the specific  
facts the petitioner con-  
tends warrant reversal or  
modification of the agency's  
proposed action; (f) A  
statement of the specific  
rules or statutes the peti-  
tioner contends require  
reversal or modification of  
the agency's proposed  
action; and (g) A state-  
ment of the relief sought  
by the petitioner, stating  
precisely the action peti-  
tioner 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 Depart-  
ment'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, F.A.C.

Because the administra-  
tive hearing process is  
designed to formulate  
final agency action, the  
filing of a petition means  
that the Department's  
final action may be differ-  
ent from the position  
taken by it in this notice.  
Persons whose substan-  
tial interests will be  
affected by any such final  
decision of the Depart-  
ment on the application  
have the right to petition  
to become a party to the  
proceeding, in accor-  
dance with the require-  
ments set forth above.

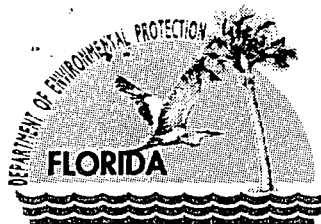
A complete project file is  
available for public  
inspection during normal  
business hours, 8:00 a.m.  
to 5:00 p.m., Monday  
through Friday, except  
legal holidays, at:

Department of  
Environmental Protection  
Bureau of Air Regulation  
111 S. Magnolia  
Drive, Suite 4  
Tallahassee, Florida  
32301  
Telephone: (850)  
488-0114  
Fax: (850) 922-6979

Department of  
Environmental Protection  
Northeast District Office  
7825 Baymeadows Way,  
Suite 200B  
Jacksonville, Florida  
32256-7590  
Telephone: (904)  
807-3233  
Fax: (904) 448-4363

The complete project file  
includes the technical  
evaluation, Draft Air Con-  
struction Permit, and the  
information submitted by  
the responsible official,  
exclusive of confidential  
records under Section  
403.111, F.S. Interested  
persons may contact the  
Administrator, North Per-  
mitting Section at 111  
South Magnolia Drive,  
Suite 4, Tallahassee, Flori-  
da 32301, or call 850/488-  
0114, for additional infor-  
mation. The technical  
evaluation and draft per-  
mit (authorization letter)  
can be viewed at  
[www.dep.state.fl.us/air/  
permitting/construct.htm](http://www.dep.state.fl.us/air/permitting/construct.htm)  
in the Florida Rock New-  
berry link.

26843, 10/16/04



# Department of Environmental Protection

Jeb Bush  
Governor

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

Colleen M. Castille  
Secretary

October 13, 2004

CERTIFIED MAIL – Return Receipt Requested

Mr. Gary Sauer  
President of the Cement and Calcium Group  
Florida Rock Industries  
155 East 21<sup>st</sup> Street  
Jacksonville, Florida 32206

RE: **Draft** Authorization to Conduct Pollutant Testing and Parameter Measurements for the Evaluation of Selective Non Catalytic Reduction (SNCR) for the Control of Oxides of Nitrogen (NOx) 0010087-011-AC

Dear Mr. Sauer:

Attached is one copy of the proposed authorization, 0010087-011-AC, to conduct pollutant testing and parameter measurements for the evaluation of SNCR technology for the control of NOx using the Florida Rock Industries' Thompson S. Baker Cement Manufacturing Facility, which is located near Newberry, Alachua County. This evaluation will require Florida Rock Industries to vary the operational modes of the cement manufacturing facility to establish expected NOx emissions while using SNCR, thus potentially creating operational conditions with emissions near or in excess of the present permitted limits. The data gathered will allow the evaluation of SNCR technology applicability to the cement manufacturing industry. The pollutants and or parameters to be measured or monitored will include sulfur dioxide [CEM (continuous emission monitor)], nitrogen oxides (CEM), particulate matter, visible emissions, carbon monoxide (CEM), ash content of the fuel, ultimate fuel analyses, unit operational parameters including load, fuel flow, excess air, flue gas temperature, and other unit specific parameters that are needed for the evaluation. Particulate size distribution may be evaluated also. The testing is scheduled to run from October 25 through December 31, 2004.

The permitting authority's "INTENT TO ISSUE AN AIR CONSTRUCTION PERMIT" and the "PUBLIC NOTICE OF INTENT TO ISSUE AN AIR CONSTRUCTION PERMIT" are also included. The "PUBLIC NOTICE OF INTENT TO ISSUE AN AIR CONSTRUCTION PERMIT" must be published as soon as possible. Proof of publication, i.e., newspaper affidavit, must be provided to the permitting authority's office within 7 (seven) days of publication pursuant to Rule 62-110.106(5), F.A.C. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit pursuant to Rule 62-110.106(11), F.A.C.

Please submit any written comments you wish to have considered concerning the permitting authority's proposed action to James K. Pennington, P.E., at the above letterhead address. If you have any other questions, please contact him at 850/921-9515.

Sincerely,

Trina L. Vielhauer  
Chief  
Bureau of Air Regulation

TLV/jkp

Enclosures

"More Protection, Less Process"

Printed on recycled paper.

In the Matter of an  
Application for Permit by:

Florida Rock Industries  
155 East 21<sup>st</sup> Street  
Jacksonville, Florida 32206

Air Construction Permit No.: 0010087-011-AC  
Thompson S. Baker Plant  
Alachua County

### **INTENT TO ISSUE AN AIR CONSTRUCTION PERMIT**

The Department of Environmental Protection (permitting authority) gives notice of its intent to issue an air construction permit [copy of the draft permit (letter) enclosed] for the facility detailed in the application specified above, to authorize Florida Rock Industries to conduct pollutant testing and parameter measurements for the evaluation of SNCR technology for the control of NOx using the Florida Rock Industries' Thompson S. Baker Cement Manufacturing Facility, which is located near Newberry, Alachua County.

The permittee, Florida Rock Industries, applied on July 23, 2004, for authorization, to conduct pollutant testing and parameter measurements for the evaluation of SNCR technology for the control of NOx using the Florida Rock Industries' Thompson S. Baker Cement Manufacturing Facility, which is located near Newberry, Alachua County. This evaluation will require Florida Rock Industries to vary the operational modes of the cement manufacturing facility to establish expected NOx emissions while using SNCR, thus potentially creating operational conditions with emissions near or in excess of the present permitted limits. The data gathered will allow the evaluation of SNCR technology applicability to the cement manufacturing industry. The pollutants and or parameters to be measured or monitored will include sulfur dioxide [CEM (continuous emission monitor)], nitrogen oxides (CEM), particulate matter, visible emissions, carbon monoxide (CEM), ash content of the fuel, ultimate fuel analyses, unit operational parameters including load, fuel flow, excess air, flue gas temperature, and other unit specific parameters that are needed for the evaluation. Particulate size distribution may be evaluated also. The testing is scheduled to run from October 25 through December 31, 2004.

The permitting authority has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Chapters 62-4 and 62-210, F.A.C. This source is not exempt from permitting procedures. The permitting authority has determined that an Air Construction Permit is required for the proposed activity.

The permitting authority intends to issue this Air Construction Permit based on the belief that reasonable assurances have been provided to indicate that operation of the source will not adversely impact air quality, and the source will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-256, 62-257, 62-281, 62-296, and 62-297, F.A.C.

Pursuant to Sections 403.815 and 403.0872, F.S., and Rules 62-110.106 and 62-210.350(3), F.A.C., you (the applicant) are required to publish at your own expense the enclosed "PUBLIC NOTICE OF INTENT TO ISSUE AN AIR CONSTRUCTION PERMIT." The notice shall be published one time only as soon as possible in the legal advertisement section of a newspaper of general circulation in the area affected. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the permitting authority at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax: 850/922-6979), within 7 (seven) days of publication pursuant to Rule 62-110.106(5), F.A.C. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit pursuant to Rule 62-110.106(11), F.A.C.

The permitting authority will issue the Final Air Construction Permit in accordance with the conditions of the enclosed Draft Air Construction Permit unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The permitting authority will accept written comments concerning the proposed permit issuance action for a period of 14 (fourteen) days from the date of publication of "PUBLIC NOTICE OF INTENT TO ISSUE AN AIR CONSTRUCTION PERMIT." Written comments should be provided to the permitting authority office. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in this Draft Air Construction Permit, the permitting authority shall issue a Revised Draft Air Construction Permit and require, if applicable, another Public Notice.

The permitting authority will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57, F.S. Mediation under Section 120.573, F.S., will not be available for this proposed action.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department of Environmental Protection, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000 (Telephone: 850/245-2241; Fax: 850/245-2303). Petitions filed by the permit applicant or any of the parties listed below must be filed within 14 (fourteen) days of receipt of this notice of intent. Petitions filed by any other person must be filed within 14 (fourteen) days of publication of the public notice or within 14 (fourteen) days of receipt of this notice of intent, whichever occurs first. A petitioner must 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 28-5.207, F.A.C.

A petition must contain the following information:

- (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the 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 permitting authority's action or proposed action;
- (c) A statement of how each petitioner's substantial interests are affected by the permitting authority's action or proposed action;
- (d) A statement of the material facts disputed by the petitioner, if any;
- (e) A statement of the facts that the petitioner contends warrant reversal or modification of the permitting authority's action or proposed action;
- (f) A statement identifying the rules or statutes that the petitioner contends require reversal or modification of the permitting authority's action or proposed action; and,
- (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wants the permitting authority to take with respect to the action or proposed action addressed in this notice of intent.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the permitting authority's final action may be different from the position taken by it in this notice of intent. Persons whose substantial interests will be affected by any such final decision of the permitting authority on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

In addition to the above, a person subject to regulation has a right to apply to the Department of Environmental Protection for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542, F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department of Environmental Protection, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information:


- (a) The name, address, and telephone number of the petitioner;
- (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any;
- (c) Each rule or portion of a rule from which a variance or waiver is requested;
- (d) The citation to the statute underlying (implemented by) the rule identified in (c) above;
- (e) The type of action requested;
- (f) The specific facts that would justify a variance or waiver for the petitioner;
- (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and,
- (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2), F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the United States Environmental Protection Agency and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

Executed in Tallahassee, Florida.

**STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION**



Trina L. Vielhauer  
Chief  
Bureau of Air Regulation

## CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this INTENT TO ISSUE AN AIR CONSTRUCTION PERMIT (including the PUBLIC NOTICE and the Draft Permit (letter)) and all copies were sent by certified mail before the close of business on 10/14/04 to the person(s) listed:

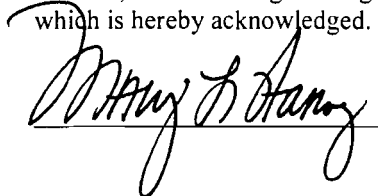
Mr. Gary Sauer, Responsible Official and President of the Cement and Calcium Group, FRI

In addition, the undersigned duly designated deputy agency clerk hereby certifies that copies of this INTENT TO ISSUE AN AIR CONSTRUCTION PERMIT (including the PUBLIC NOTICE and the Draft Permit (letter)) were sent by U.S. mail on the same date to the person(s) listed:

Mr. Henry Gotsch, FRI  
Dr. John B. Koogler, P.E., Koogler and Associates  
Mr. Chris Horne, FRI  
Mr. Chris Kirts, DEP - NED  
Mr. Al Linero, DEP - BAR  
Segundo Fernandez, Esquire  
December McSherry  
Dave Bruderly  
Chris Bird, Alachua Co. DER  
Chair, Alachua County BOCC

Clerk Stamp

**FILING AND ACKNOWLEDGMENT FILED**, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency Clerk, receipt of which is hereby acknowledged.

 10/14/04

**PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT**

Florida Department of Environmental Protection

Florida Rock Industries, Inc.  
Thompson S. Baker Cement Plant - Newberry  
Alachua County

Draft Air Construction Permit (Letter)No.: 0010087-011-AC

The Florida Department of Environmental Protection (Department) gives notice of its intent to issue an Air Construction Permit (letter) to Florida Rock Industries, Inc. (FRI) to allow the evaluation of selective non-catalytic reduction (SNCR) at the Thompson S. Baker Cement Plant located 2.5 miles Northeast of Newberry on County Road 235 in Alachua County. A new Best Available Control Technology (BACT) determination was not required. The applicant's name and address are: Florida Rock Industries, Inc., 155 East 21st Street, Jacksonville, Florida 32206.

FRI requests permission to use SNCR in a test program from October 25 through December 31, 2004, that will allow the Department and FRI to determine the range of NOx emission reductions possible under multiple operating scenarios using SNCR. The proposed testing evaluation will not result in significant net emissions increases and a new evaluation under the rules for the Prevention of Significant Deterioration (PSD) is not required.

The plant has continuous emissions monitoring (CEM) equipment for NO<sub>x</sub>, SO<sub>2</sub>, opacity and total hydrocarbons as well as annual testing requirements for all of the regulated pollutants. The plant is subject to 40CFR63, Subpart LLL. As part of these tests, additional testing will be performed for particulate matter and visible emissions in conjunction with the CEM data.

The Department will issue the Final Permit (Letter) with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions. The Department will accept written comments concerning the proposed permit issuance action for a period of fourteen (14) days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57, F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below. Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions must be filed within fourteen (14) days of publication of this Public Notice of Intent to Issue Air Construction Permit. Under Section 120.60(3), F.S., however, petitions submitted by person(s) who asked the Department for notice of agency action must be filed within fourteen (14) days of receipt of that notice or the date of publication of the public notice whichever occurs first. 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, F.A.C.

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, F.A.C.

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.

A complete project file 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:

Department of Environmental Protection  
Bureau of Air Regulation  
111 S. Magnolia Drive, Suite 4  
Tallahassee, Florida, 32301  
Telephone: (850) 488-0114  
Fax: (850) 922-6979

Department of Environmental Protection  
Northeast District Office  
7825 Baymeadows Way, Suite 200B  
Jacksonville, Florida 32256-7590  
Telephone: (904) 807-3233  
Fax: (904) 448-4363

The complete project file includes the technical evaluation, Draft Air Construction Permit, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, North Permitting Section at 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301, or call 850/488-0114, for additional information. The technical evaluation and draft permit (authorization letter) can be viewed at [www.dep.state.fl.us/air/permitting/construct.htm](http://www.dep.state.fl.us/air/permitting/construct.htm) in the Florida Rock Newberry link.





Jeb Bush  
Governor

# Department of Environmental Protection

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

Colleen M. Castille  
Secretary

October XX, 2004

CERTIFIED MAIL – Return Receipt Requested

Mr. Gary Sauer  
President of the Cement and Calcium Group  
Florida Rock Industries  
155 East 21<sup>st</sup> Street  
Jacksonville, Florida 32206

RE: **Draft** Authorization to Conduct Pollutant Testing and Parameter Measurements for the Implementation of Selective Non Catalytic Reduction (SNCR) for the Control of Oxides of Nitrogen (NOx) 0010087-011-AC

Dear Mr. Sauer:

The Department has reviewed the request that you provided on July 23, 2004 and that was supplemented by a letter from Dr. John Koogler on October 12, 2004. We have considered the Department's legal authority to allow Florida Rock to conduct the requested testing and measurements on its existing kiln and associated equipment at the Thompson S. Baker Cement Plant in Alachua County. The facility is off of County Road 235 approximately 2.5 northeast of Newberry, Florida. The map coordinates are: UTM Zone 17, 346.8 km East and 3287.0 km North. The purpose of this testing is to help the company and the Department assess the viability of SNCR as a NOx control measure in the cement industry. Paragraph 403.061(16), Florida Statutes (F.S.), authorizes the Department to encourage voluntary cooperation by persons in order to achieve the purposes of the state environmental control act. Paragraph 403.061(18), F.S., authorizes the Department to encourage and conduct studies, investigations, and research relating to the causes and control of pollution. Rule 62-210.700(5), Florida Administrative Code (F.A.C.), authorizes the Department to consider variation in industrial equipment and make allowances for excess emissions that provide reasonable and practical regulatory controls consistent with public interest.

In accordance with the provisions of Paragraphs 403.061(16) and (18), F.S., and Rule 62-210.700(5), F.A.C., you are hereby authorized to conduct pollutant testing and parameter measurements for the evaluation of emission ranges and the effectiveness of SNCR for NOx control under a variety of operating scenarios for the kiln and associated equipment at the Thompson S. Baker Cement Plant. This evaluation will require Florida Rock to vary the collection efficiency of the existing NOx controls to establish performance curves between NOx

*"More Protection, Less Process"*

*Printed on recycled paper.*

Mr. Gary Sauer  
Florida Rock Industries  
Thomas S. Baker Cement Plant  
Page Two

emissions and ammonia injection, thus creating an operational condition near or in excess of the Florida NO<sub>x</sub> emissions and opacity standards. The data gathered will allow the calibration of the SNCR system to evaluate the various NO<sub>x</sub> control scenarios outlined in Attachment A. The pollutants and or parameters to be measured or monitored will include sulfur dioxide, nitrogen oxides, total hydrocarbons particulate matter, visible emissions, carbon monoxide, unit operational parameters including load, fuel flow, excess air and flue gas temperature, and other unit specific parameters that are needed for the evaluation.

The performance tests and parameter measurements or monitoring shall be subject to the following conditions:

1. Unless waived, the permittee shall notify the Department's Northeast District and Bureau of Air Regulation offices at least 15 days prior to commencement of the performance tests and parameter measurements or monitoring. A written test protocol shall be submitted to these offices at least 15 days prior to beginning the tests. The written protocol shall as a minimum address the testing principles in Attachment A (Attached). A written report shall be submitted to these offices within 45 days upon completion of the last test run and parameter measurements and monitoring.
2. The authorized testing and measurement and monitoring schedule is from October 25 thru December 31, 2004, for a total of 60 operating days. If additional time is needed, the permittee shall provide the Department with documentation of the progress accomplished to date and shall identify what is left to be done to complete the testing and measurements or monitoring.
3. The parameters to be measured or monitored are sulfur dioxide by use of a continuous emission monitoring system (CEM), nitrogen oxides by the use of a CEM, opacity by the use of a continuous opacity monitor and/or EPA Method 9, Total Hydrocarbons (THC) by the use of a CEM, carbon monoxide using EPA Method 10, ammonia slip using EPA Method CTM 027, load, fuel flow, excess air, flue gas temperature, and other unit specific parameters that are needed for the SNCR evaluation.
4. In addition to the parameter monitoring in 3. above, a one time emissions test shall be conducted at the optimum SNCR operating conditions for particulate matter. Additionally, visible emissions testing shall be conducted at each molar ratio of NH<sub>3</sub>/NO<sub>x</sub> investigated during the SNCR tests. The tests shall be conducted using the following test methods:
  - a. Particulate matter                      EPA Test Method 5 (including EPA Test Methods 1 thru 4)
  - b. Visible emissions                      EPA Test Method 9
5. The release of objectionable odors pursuant to Rule 62-296.320(2), F.A.C., is not authorized for this activity.
6. Testing shall immediately cease upon the occurrence of a Department determined valid environmental complaint by a citizen or other party, or a Department determined nuisance or

Mr. Gary Sauer  
Florida Rock Industries  
Thomas S. Baker Cement Plant  
Page Three

danger to the public health or welfare. Performance testing shall not resume until appropriate measures to correct the problem have been implemented.

7. The performance tests and parameter measurements and monitoring shall be under the direct supervision and responsible charge of a professional engineer registered in Florida.
8. This Department action is just to authorize the performance testing and parameter measurements and monitoring for the Thomas S. Baker Cement Plant for the purpose of evaluating the effectiveness of the use of SNCR on controlling and reducing NOx emissions in the cement industry.
9. Complete documentation of the activity shall be kept on file for at least 5 (five) years.
10. The Department shall be notified in writing on the date of the last test run and parameter measurement and monitoring completion. If after work hours, notification shall occur on the next work day.
11. Attachment Section.
  - a. Dr. John B. Koogler, P.E. letter received July 23, 2004.
  - [b]. [Final Determination.]

The Department has relied on the information referenced in the Attachment Section and conversations with representatives of Florida Rock Industries in authorizing this activity.

Sincerely,

Michael G. Cooke, Director  
Division of Air Resource Management

MGC/tlv/jp

Enclosures

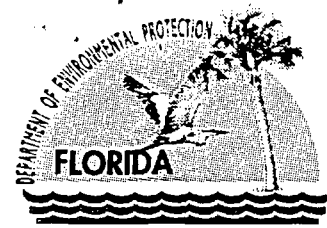
cc: Trina Vielhauer, DEP - BAR  
Jim Pennington, DEP - BAR  
Bobby Bull, DEP - BAR  
Chris Kirts, DEP - NED  
Richard Banks, DEP - NED  
Rita Felton-Smith, DEP - NED  
Joe Kahn, DEP - BAMMS  
Dr. John B. Koogler, PhD, P.E. Koogler and Associates  
Chair, Alachua County Commission  
Chris Horne, FRI

### Testing Principles and Protocol

The following points are the basis for the protocol that needs to be developed by Florida Rock Industries (FRI) and its consultants. FRI shall try to find the combination of SNCR, tire use, and degree of reducing conditions in the calciner that yields best operation and a target of around 150 ppm (corrected) NO<sub>x</sub> emissions. All NO<sub>x</sub> levels stated herein are for targeting purposes and are not meant to be emission limits. The various objectives stated below can be adjusted as operational problems occur or are aggravated. If the establishment of a baseline prior to initiation of SNCR or renewed operation in MSC modes is desired, the NO<sub>x</sub> emissions shall not be more than 400 ppm (corrected). This is approximately equal to 4 lb/ton of clinker. This data will be excluded from the 30 day rolling average limit of 2.45 lb of NO<sub>x</sub>/ton of clinker for those hours (or days) when the baseline is established. Additionally, data showing CO and opacity excursions as a result of these tests will be excluded. All other emission limits shall be met. The Company shall document all excursions and take appropriate steps to minimize them during testing.

1. During all SNCR testing, the stack gas discharged from the kiln/raw mill system will be continuously monitored with CEMS for sulfur dioxide, nitrogen dioxides, total hydrocarbons, opacity, and flow. Carbon monoxide will be monitored in accordance with EPA Method 10. During each phase of the SNCR tests, the opacity of emissions, as determined by EPA Method 9, will be recorded, in addition to the continuous opacity monitoring to document whether or not a detached plume forms.
2. Ammonia slip will be measured as a function of the NH<sub>3</sub>/NO<sub>x</sub> molar ratio during the tests to determine the optimum molar ratio of NH<sub>3</sub>/NO<sub>x</sub>. The ammonia concentration in the stack gas will be determined continuously by FTIR, with a chemiluminescent analyzer, or equivalent.
3. Once the optimum NH<sub>3</sub>/NO<sub>x</sub> molar ratio and plant operating conditions have been determined, a one-time particulate matter emission test will be conducted using EPA Method 5.
4. During SNCR testing, the following parameters will be monitored and recorded:
  - Preheater feed rate and clinker production rate,
  - Coal and Waste Tire Derived Fuel (WTDF) firing rates,
  - Oxygen, CO and temperatures between the kiln inlet and the top of the preheater tower, as recorded with process monitors,
  - Point of ammonia injection,
  - Type of ammonia injected and ammonia concentration,
  - Molar ratio of NH<sub>3</sub>/NO<sub>x</sub>,
  - Frequency of air cannon use and cardox charge use,
  - Pressure at various locations in the preheater tower as an indication of material buildup,
  - Fan amperage of the kiln I.D. fan,
  - Clinker characteristics,
  - Log of blockages, kiln shutdowns, and kiln startups, and
  - Other parameters as determined necessary.
5. A baseline plant operating condition will be established using MSC and the firing of WTDF; i.e., normal plant operating conditions without SNCR. It is anticipated that NO<sub>x</sub> emissions under these operating conditions will be in the range of 2.4-2.5 pounds per ton of clinker.

6. After steady state operations are established, ammonia will be introduced at various locations to determine the optimum point of ammonia injection. It is anticipated that ammonia water (<19 wt%) will be the ammonia solution of choice.
7. Once the optimum location for ammonia injection has been determined, steady state plant operations will again be established using both MSC and WTDF firing. Ammonia will then be injected starting at a molar ratio of approximately 0.4 ( $\text{NH}_3/\text{NO}_x$ ) and increasing to a maximum of 0.7-0.8. The goal will be to establish the molar ratio necessary to achieve a  $\text{NO}_x$  emission rate in the range of 2.0 pounds per ton of clinker, while using MSC and WTDF. By keeping the molar ratio below 0.8, the formation of CO and ammonia slip will both be minimized. Minimizing the molar ratio also minimizes the reagent ( $\text{NH}_3$ ) cost and the amount of water (from the ammonia solution) that must be pulled through the system. The latter minimizes the power consumption of the kiln I.D. fan.
8. The concentration of ammonia in water may be reduced (below ~19 wt%) emulating a urea solution concentration. This is a test option that may or may not be exercised.
9. Once the ammonia injection point and the  $\text{NH}_3/\text{NO}_x$  molar ratio are optimized, steady state plant operations will again be established. WTDF firing will be discontinued to evaluate the effect on  $\text{NO}_x$  emissions. This will simulate times when WTDF may not be available. Without WTDF, the molar ratio of  $\text{NH}_3/\text{NO}_x$  may have to be increased or the MSC operating conditions altered to maintain a  $\text{NO}_x$  emission rate in the target range of 2.0 pounds per ton of clinker.
10. Steady state plant operations will again be established with optimum ammonia injection, WTDF and MSC. These conditions will be adjusted to produce a  $\text{NO}_x$  emission rate in the range of 2.0 pounds per ton of clinker. The plant will be allowed to operate under these optimized conditions for a period of 2-3 days to determine the long-term effect of SNCR on plant operations. Of concern will be material build up between the kiln inlet and into the preheater tower, changes in the power consumption of the kiln I.D. fan, a coating formation on the fan impeller, product quality, and secondary emissions; specifically CO, ammonia slip, and/or the formation of a detached plume.
11. Once the long-term operating effects of SNCR have been determined, the testing will be terminated.



# Department of Environmental Protection

Jeb Bush  
Governor

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

Colleen M. Castille  
Secretary

## P.E. Certification Statement

**Permittee:** Florida Rock Industries  
Thompson S. Baker Cement Plant

**DRAFT Permit No.:** 0010087-011-AC

**Project:** Air Construction Permit for SNCR Testing

*I HEREBY CERTIFY that the engineering features described in the above referenced application and subject to the proposed permit conditions provide reasonable assurance of compliance with applicable provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4 and 62-204 through 62-297. However, I have not evaluated and I do not certify aspects of the proposal outside of my area of expertise (including but not limited to the electrical, mechanical, structural, hydrological, and geological features).*

*This draft permit was prepared by me with input from Bureau of Air Regulation personnel as needed.*

James K. Pennington, P.E.

Registration Number: 34536

10/13/04  
Date

Permitting Authority:  
Department of Environmental Protection  
Bureau of Air Regulation  
111 South Magnolia Drive, Suite 4  
Tallahassee, Florida 32301  
Telephone: 850/488-0144  
Fax: 850/922-6979



# Department of Environmental Protection

Jeb Bush  
Governor

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

Colleen M. Castille  
Secretary

## P.E. Certification Statement

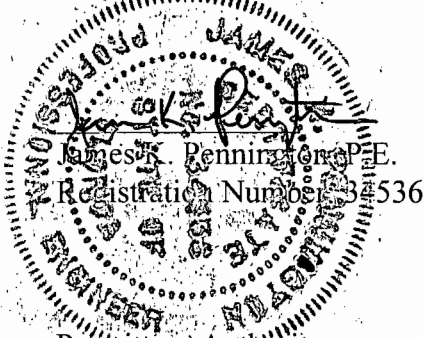
**Permittee:** Florida Rock Industries  
Thompson S. Baker Cement Plant

**DRAFT Permit No.:** 0010087-011-AC

**Project:** Air Construction Permit for SNCR Testing

*I HEREBY CERTIFY that the engineering features described in the above referenced application and subject to the proposed permit conditions provide reasonable assurance of compliance with applicable provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4 and 62-204 through 62-297. However, I have not evaluated and I do not certify aspects of the proposal outside of my area of expertise (including but not limited to the electrical, mechanical, structural, hydrological, and geological features).*

*This draft permit was prepared by me with input from Bureau of Air Regulation personnel as needed.*



10/13/04  
Date

Permitting Authority:  
Department of Environmental Protection  
Bureau of Air Regulation  
111 South Magnolia Drive, Suite 4  
Tallahassee, Florida 32301  
Telephone: 850/488-0144  
Fax: 850/922-6979

"More Protection, Less Process"

Printed on recycled paper.

**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. Gary Sauer  
 President of the Cement and  
 Calcium Group  
 Florida Rock Industries  
 155 East 21st Street  
 Jacksonville, Florida 32206

2. Article Number  
 (Transfer from service label)

7000 1670 0013 3109 9496

PS Form 3811, August 2001

102595-02-M-1540

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature *Cynthia Baker*  Agent  
 Addressee

B. Received by (Printed Name) *Cynthia Baker* C. Date of Delivery *10-18*

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

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

9646 607E E100 029T 0002

Postage	\$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
<b>Total Postage &amp; Fees</b>	<b>\$</b>

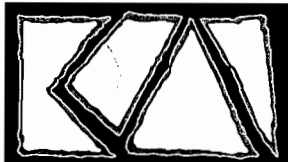
Postmark  
 Here

Received by *Mr. Gary Sauer, President of the Cement and Calcium Group*  
 Florida Rock Industries  
 155 East 21st Street  
 Jacksonville, Florida 32206

PS Form 3800, May 2000

See Reverse for Instructions





**KOOGLER & ASSOCIATES**  
**ENVIRONMENTAL SERVICES**

4014 NW THIRTEENTH STREET  
GAINESVILLE, FLORIDA 32609  
352/377-5822 ■ FAX/377-7158

187-04-10  
July 23, 2004

Via Email and USPS

**RECEIVED**

JUL 26 2004

**BUREAU OF AIR REGULATION**

Mr. Al Linero  
FDEP  
Twin Towers Office Bldg  
2600 Blair Stone Road, MS 5500  
Tallahassee, FL 32399-2400

**Subject:: Florida Rock Industries, Inc.**  
**Thompson S. Baker Cement Plant – Newberry, Florida**  
**Facility ID No. 0010087**  
**Short-term Tests to Evaluate SNCR**

Dear Al:

0010087-011-AC

This letter will confirm the request made to you by Florida Rock Industries, Inc. (FRI) during the meeting in your office on July 1, 2004, to conduct tests at the FRI Thompson S. Baker Cement Plant in Newberry, Florida to evaluate selective non-catalytic reduction (SNCR) for reducing nitrogen oxides (NOx) emissions from the Thompson S. Baker Portland Cement Plant. Currently, the plant is operating under Permit 0010087-009-AV. This permit limits the preheater feed rate to 183 tons per hour (191.4 tph peak rate) and limits the clinker production to 110.2 tons per hour (115.0 tph peak rate). The permitted heat input rate to the plant is limited to 364 mmBTU per hour. The thermal energy can be supplied by coal, TDF, propane, and No. 2 fuel oil. None of these limits will be exceeded during the SNCR tests.

By this letter, I am requesting, on behalf of FRI, Department approval to conduct the SNCR tests for a 60 operating day period beginning with approval of this request. During the test period, ammonia-based compound(s) will be introduced near the precalciner, above the point where tertiary air is introduced. The point or points of introduction will be at locations that have both sufficient oxygen and an adequate temperature for SNCR to be effective. It is

anticipated that ammonia water will be the form of ammonia used, although, FRI requests the option to use other ammonia compounds if feasible or necessary. One or more injection locations will be evaluated, as well as the injection rate of ammonia.

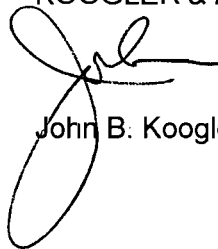
During the test period, continuous emission monitoring systems (CEMS) at the plant will continuously monitor the emissions of NO<sub>x</sub>, SO<sub>2</sub>, THC, and opacity. The SNCR tests are not expected to have any effect on particulate matter emissions or the emission rate of any other regulated compound, with the possible exception of carbon monoxide. It is requested therefore, that no emission testing other than for carbon monoxide (CO) be required during the test period. All CEM data will be available for Department review as will be the CO monitoring data. Also, visible emission observations will be conducted on the kiln stack to determine if the ammonia injection at various rates results in a detached plume.

It should be noted that no physical construction to the kiln system will be required for the requested testing.

We would appreciate your expeditious review of this request so that FRI can proceed with the testing at the earliest possible date.

Very truly yours,

KOOGLER & ASSOCIATES



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

JBK/ltt

cc: Gary Sauer, FRI Jacksonville  
Chris Horner, FRI Newberry  
Henry Gotsch, FRI Newberry  
Segundo Fernandez





0001

**LEGAL NOTICES****PUBLIC NOTICE  
OF INTENT TO  
ISSUE AIR  
CONSTRUCTION  
PERMIT**

Florida Department of  
Environmental Protection  
Florida Rock Industries,  
Inc.

Thompson S. Baker  
Cement Plant - Newberry  
Alachua County  
Draft Air Construction  
Permit (Letter)  
No.: 0010087-011-AC

The Florida Department of Environmental Protection (Department) gives notice of its intent to issue an Air Construction Permit (letter) to Florida Rock Industries, Inc. (FRI) to allow the evaluation of selective non-catalytic reduction (SNCR) at the Thompson S. Baker Cement Plant located 2.5 miles North-east of Newberry on County Road 235 in Alachua County. A new Best Available Control Technology (BACT) determination was not required. The applicant's name and address are: Florida Rock Industries, Inc., 155 East 21st Street, Jacksonville, Florida 32206.

FRI requests permission to use SNCR in a test program from October 25 through December 31, 2004, that will allow the Department and FRI to determine the range of NOx emission reductions possible under multiple operating scenarios using SNCR. The proposed testing evaluation will not result in significant net emissions increases and a new evaluation under the rules for the Prevention of Significant Deterioration (PSD) is not required.

The plant has continuous emissions monitoring (CEM) equipment for NOx, SO2, opacity and total hydrocarbons as well as annual testing requirements for all of the regulated pollutants. The plant is subject to 40CFR63, Subpart LLL. As part of these tests, additional testing will be performed for particulate matter and visible emissions in conjunction with the CEM data.

The Department will issue the Final Permit (Letter) with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions. The Department will accept written comments concerning the proposed permit issuance action for a period of fourteen (14) days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57, F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below. Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions must be filed within fourteen (14) days of publication of this Public Notice of Intent to Issue Air Construction Permit. Under Section 120.60(3), F.S., however, petitions submitted by person(s) who asked the Department for notice of agency action must be filed within fourteen (14) days of receipt of that notice or the date of publication of the public notice whichever occurs first. 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, F.A.C.

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, F.A.C.

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.

A complete project file 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:

Department of  
Environmental Protection  
Bureau of Air Regulation  
111 S. Magnolia  
Drive, Suite 4  
Tallahassee, Florida  
32301  
Telephone: (850)  
488-0114  
Fax: (850) 922-6979

Department of  
Environmental Protection  
Northeast District Office  
7825 Baymeadows Way,  
Suite 200B  
Jacksonville, Florida  
32256-7590  
Telephone: (904)  
807-3233  
Fax: (904) 448-4363

The complete project file includes the technical evaluation, Draft Air Construction Permit, and the information submitted by the responsible official, exclusive of confidential records, under Section 403.111, F.S. Interested persons may contact the Administrator, North Permitting Section at 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301, or call 850/488-0114, for additional information. The technical evaluation and draft permit (authorization letter) can be viewed at [www.dep.state.fl.us/air/permitting/construct.htm](http://www.dep.state.fl.us/air/permitting/construct.htm) in the Florida Rock Newberry link.

26843, 10/16/04

Is your RETURN ADDRESS completed on the reverse side?

<b>SENDER:</b> ■ 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. <input type="checkbox"/> Addressee's Address 2. <input type="checkbox"/> Restricted Delivery Consult postmaster for fee.	
3. Article Addressed to:  Mr. Gary Sauer President of the Cement and Calcium Group Florida Rock Industries 155 East 21st St. Jacksonville, FL 32206		4a. Article Number: 7000 0600 0026 4129 8887	
		4b. Service Type: <input type="checkbox"/> Registered <input checked="" type="checkbox"/> Certified <input type="checkbox"/> Express Mail <input type="checkbox"/> Insured <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> COD	
5. Received By: (Print Name) <i>M. E. Zell</i>		7. Date of Delivery	
6. Signature: (Addressee or Agent) <input checked="" type="checkbox"/> <i>M. E. Zell</i>		8. Addressee's Address (Only if requested and fee is paid)	

Thank you for using Return Receipt Service.

PS Form 3811, December 1994 Domestic Return Receipt

U.S. Postal Service											
CERTIFIED MAIL RECEIPT											
(Domestic Mail Only; No Insurance Coverage Provided)											
7000 0600 0026 4129 8887											
<table border="1" style="width: 100%;"> <tr> <td style="width: 80%;">Postage</td> <td style="width: 20%;">\$</td> </tr> <tr> <td>Certified Fee</td> <td></td> </tr> <tr> <td>Return Receipt Fee (Endorsement Required)</td> <td></td> </tr> <tr> <td>Restricted Delivery Fee (Endorsement Required)</td> <td></td> </tr> <tr> <td><b>Total Postage &amp; Fees</b></td> <td><b>\$</b></td> </tr> </table>	Postage	\$	Certified Fee		Return Receipt Fee (Endorsement Required)		Restricted Delivery Fee (Endorsement Required)		<b>Total Postage &amp; Fees</b>	<b>\$</b>	Postmark Here
Postage	\$										
Certified Fee											
Return Receipt Fee (Endorsement Required)											
Restricted Delivery Fee (Endorsement Required)											
<b>Total Postage &amp; Fees</b>	<b>\$</b>										
Recipient's Name (Please Print Clearly) (to be completed by mailer) <b>Mr. Gary Sauer</b> <small>Street, Apt. No., or PO Box No.</small> 155 East 21st St. <small>City, State, ZIP+4</small> Jacksonville, FL 32206											
PS Form 3800, February 2000 <span style="float: right;">See Reverse for Instructions</span>											

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> <li>Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.</li> <li>Print your name and address on the reverse so that we can return the card to you.</li> <li>Attach this card to the back of the mailpiece, or on the front if space permits.</li> </ul>	A. Signature <input checked="" type="checkbox"/> <i>L. Arcusa</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee
1. Article Addressed to: Mr. Gary Sauer President of Cement and Calcium Group, Inc. Florida Rock Industries, Inc. 155 East 21 Street P.O. Box 4667 Jacksonville, FL 32201	B. Received by (Printed Name)      C. Date of Delivery <i>L. Arcusa</i> <i>1-28-05</i>
2. Article Number (Transfer from service label)	D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No
PS Form 3811, August 2001	3. Service Type <input checked="" type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D. 4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes
7000 1670 0013 3109 8710	
Domestic Return Receipt      102595-02-M-1540	

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

OFFICIAL USE

Postage	\$	Postmark Here
Certified Fee		
Return Receipt Fee (Endorsement Required)		
Restricted Delivery Fee (Endorsement Required)		
<b>Total Postage &amp; Fees</b>	<b>\$</b>	

Sent To *Gary Sauer*

Street, Apt. No. PO Box No. *F. Rock Industries*

City, State, ZIP+4 *Jacksonville, FL 32201*

PS Form 3800, May 2000      See Reverse for Instructions

0128 BOTE E100 029T 0007