

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 21st 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) Paula J. 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 30th. 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 21st 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

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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 NH₃/NO_x 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

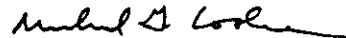
Mr. Gary Sauer
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danger to the public health or welfare. Performance testing shall not resume until appropriate measures to correct the problem have been implemented.

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 Home, 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_x emissions. All NO_x 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_x 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_x/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 NH₃/NO_x molar ratio during the tests to determine the optimum molar ratio of NH₃/NO_x. The ammonia concentration in the stack gas will be determined continuously by FTIR, with a chemiluminescent analyzer, or equivalent.
3. Once the optimum NH₃/NO_x 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 NH₃/NO_x,
 - 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_x 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 (NH_3/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 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 (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 NH_3/NO_x molar ratio are optimized, steady state plant operations will again be established. WTDF firing will be discontinued to evaluate the effect on NO_x emissions. This will simulate times when WTDF may not be available. Without WTDF, the molar ratio of NH_3/NO_x may have to be increased or the MSC operating conditions altered to maintain a 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 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 30th. 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?

SENDER:

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

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

- Addressee's Address
- 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:
 Registered Certified
 Express Mail Insured
 Return Receipt for Merchandise COD

7. Date of Delivery:

5. Received By: (Print Name)
M. E. F. U.

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

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

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

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