



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

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

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APR 06 1990

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

RE: Tarmac Florida, Inc., Kiln No. 2 Coal Conversion

Dear Mr. Fancy:

As you are probably aware, a meeting was held on January 26, 1990, between representatives of Tarmac Florida, Inc., KBN, and EPA to discuss various PSD issues associated with the above referenced project. For your information, we are enclosing copies of our previous letters to your Agency outlining our initial concerns.

KBN has sent us a letter, dated January 30, 1990, (enclosed) which basically summarizes these issues and their position on each. We believe that KBN's responses are sufficient for our purposes and we are thus withdrawing our previous concerns. Of course, this in no way would effect concerns your Agency or the Dade County Local program may have with respect to this project. Further, since the proposed project will be subject to a PSD review in the near future, EPA reserves the right to make additional comments at that time.

If you have any questions concerning this matter, please contact Mark Armentrout of my staff at (404) 347-2864.

Sincerely yours,

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

Enclosures

cc: John Reynolds, Florida DER
Al Townsend, Tarmac Florida, Inc.
David Buff, KBN



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DER-DIOM

*Flammings & Mathis
Bradsville - 1/5*

January 30, 1990

Mr. Bruce Miller, Chief
Air Programs Branch
U.S. Environmental Protection Agency
Region IV
345 Courtland Street, N.E.
Atlanta, GA 30365

RE: Tarmac Florida, Inc.
Proposed Modification--Kiln No. 2 Coal Conversion
PSD-FL-142; AC13-169901

Dear Mr. Miller:

I would like to thank Mr. Mark Armentrout and Mr. Wayne Aronson of your staff for their participation in our meeting of January 26, 1990, concerning the above referenced application. These individuals were very courteous and acted in a highly professional manner in discussing several issues related to this PSD permit application. These issues, and the resolution arrived at for each, are described below.

1. PSD Applicability Determination for PM

It was noted that the figures presented in Table 6 of Tarmac's January 15, 1990, submittal letter did not add up correctly due to a round-off error. A revised Table 6 is attached which provides figures to more decimal places, which should resolve the round-off error problem.

In regard to the PSD source applicability analysis, it was stated by Tarmac that the calculation of future annual emissions is based on the emission factor for each pollutant in lb/ton clinker produced, multiplied by the annual clinker production of 197,100 tons per year. Since this calculation does not specifically involve operating hours for the kiln, and the actual kiln production rate will vary somewhat (depending on raw feed characteristics and operating parameters), it was requested by Tarmac that no limitation on operating hours be placed on Kiln 2. Instead, limiting the maximum annual clinker production rate for the kiln will ensure the annual emission maximum will not be exceeded.

"Requested vs. Agreed to"



2. Permit Requirement for Fugitive Dust Control

It was stated that specific permit conditions would be required related to a watering frequency of the active coal pile area in order to ensure that the stated 75 percent control efficiency for fugitive dust emissions is being obtained. Unfortunately, control efficiency is a function of many variables, including activity level, material characteristics, and meteorological conditions (wind, time since last rainfall, etc.). As a result, specifying a predetermined watering schedule may not achieve the desired results. Over watering may hinder operations. As a practical alternative, it is suggested that watering be required any time there are visible emissions occurring in the coal pile area due to the Kiln 2 coal-handling operation. The frequency of watering should be specified as "no more frequent than every 0.5 hour." Under these requirements, watering would be conducted on an as-needed basis up to twice an hour, as conditions warrant. This frequency is based on practical considerations, but also represents the greatest frequency evaluated during efficiency tests on haul roads. ←

*Suggested?
no agreement*

? what tests

Watering will be accomplished with a watering truck operating in the active coal pile area, and in areas in which the front end loader will travel. Visible emissions will be minimized to the extent possible. Watering should not be required when rain or wet conditions exist, such that no visible emissions are occurring without watering.

3. Proposed Maximum SO₂ Limit of 400 lb/hr

EPA is willing to accept the proposed maximum hourly SO₂ limit of 400 lb/hr, with the condition that a test plan be implemented on Kiln 2 to determine an appropriate limit for the kiln. The rationale for the 400 lb/hour limit was stated as follows:

- a. The current SO₂ emission limit for Kiln 3 (K3) is 4.57 lb/ton clinker. However, K2 is less energy efficient than K3, being a smaller kiln. This situation will exist even though Tarmac is making energy efficient improvements to K2 as part of the coal conversion. This includes replacing the brick in K2 and installing a new chain system. Nevertheless, K2 will operate at approximately 6.5 MM Btu/ton clinker compared to approximately 5.0 MM Btu/ton clinker for K3. This translates into 30 percent more coal consumption, and 30 percent more potential SO₂ emissions, than K3.
- b. An additional major unknown is the SO₂ removal efficiency within K2. Testing of K3 has shown an average SO₂ removal efficiency of about 75 percent. However, K2 is a shorter kiln, which results in less retention time of the gases in the kiln, and thus less time for absorption into the clinker. In addition, because K2 is a shorter kiln, operating conditions in K2 (i.e., temperature, excess air, etc.) may be different than K3. As a result, SO₂ absorption



efficiency for K2 is expected to be less than that achieved in K3. The proposed 400 lb/hr limit is based upon an assumed 36 percent minimum removal efficiency, which is at the lower end of the range of efficiencies stated by EPA to exist for cement kilns (EPA NSPS review of cement kilns, 1985).

Actual stack testing by Tarmac will be used to determine the appropriate SO₂ emissions limit for K2 (not to exceed 400 lb/hr), and to quantify the actual SO₂ removal efficiency of the kiln. The test plan Tarmac proposes is as follows:

1. Conduct a series of six compliance tests for SO₂ and NO_x (total of 18 tests). A compliance test would be conducted every two months over a year's period, to allow representative sampling during different times of the year. This testing is needed to assess changes in coal quality and raw feed characteristics over time. Also, the greater number of tests will allow the effect of operating parameters in the kiln to be evaluated in regard to emissions.
2. At the completion of the one-year test period, the data will be evaluated and a report prepared by Tarmac which presents and interprets the data. Statistical analysis will be performed, and an SO₂ emission limit based on statistical parameters (i.e., SO₂ emission level which would not be exceeded with 95 percent confidence level) will be identified. The report will be submitted to FDER/EPA for review. The SO₂ limit for K2 will then be revised as appropriate.

4. BACT for SO₂

The additional information presented in Tarmac's January 15, 1990 letter to C.H. Fancy, FDER, supported Tarmac's case for using high sulfur coal in Kiln 2. Besides that information, EPA Region IV had information that two other cement plants located in Region IV had BACT determinations resulting in 1.0 percent sulfur coal (Florida Mining and Materials in Brooksville, Florida, and Dixie Cement Company in Richard City, Tennessee). It was requested that Tarmac demonstrate how these kilns were different than Kiln 2 at Tarmac. After investigation using information in EPA's permit files, it was determined that both of these kilns were dry process kilns, with energy requirements of 2.9 MM Btu/ton clinker. This is less than half the energy requirement of Kiln 2 of 6.5 MM Btu/ton clinker, Kiln 2 being a wet process kiln.

The energy efficiency of these dry process kilns would result in less than half the coal consumption of Tarmac's wet process kiln, allowing these kilns to economically burn lower sulfur coal. This difference makes Tarmac significantly different than these two kilns.

*EPA wanted 9 tests
3 weeks.
Tarmac
will do more*

*EPA
agrees*



6.14
Based upon this information, higher sulfur coal was accepted by EPA Region IV as BACT for Kiln 2. Tarmac agreed to limit the Kiln 2 sulfur content to 1.75 percent on a monthly average, with a maximum sulfur content of 2.0 percent. This would make Kiln 2 consistent with the existing requirements for Kiln 3 at Tarmac. (Note: Subsequent discussion with the State of Tennessee's Air Pollution Bureau has revealed that the PSD permitted kiln at Dixie Cement was never constructed. The permit was for an additional kiln at the existing cement plant. In fact, not only was this kiln not constructed, the rest of the plant has been shut down, except for cement storage and loading facilities. This is further evidence of the severe turndown in U.S. cement production due to foreign imports.)

5. BACT for NO_x

It was EPA's position that BACT for NO_x would be good operating and maintenance procedures to minimize NO_x emissions. This would probably require the installation and operation of an oxygen monitor on the kiln.

6. Additional Issues

The only additional issue raised by EPA was that of potential arsenic and radionuclide emissions from Kiln 2 due to the coal conversion. It is Tarmac's position that, although these trace elements may be present in coal, there is absolutely no information on what happens to these species in a cement kiln, and what is actually emitted out of the stack. Estimates of these emissions could be derived by assuming an emission factor for coal combustion in a dry bottom utility or industrial boiler controlled with an ESP. Factors presented in EPA's "Toxic Air Pollutant Emission Factors: A Compilation for Selected Air Toxic Compounds and Sources" (1988) are as follows:

Arsenic - 40.1 lb/10¹² Btu (industrial boiler)

Radionuclides - 170 pCi/10⁶ Btu (utility boiler)

Based on the maximum heat input to Kiln 2 of 6.5 MM Btu/ton clinker and 197,100 tons per year clinker, maximum annual emissions are calculated as follows:

Arsenic - 51 lb/yr (0.026 tons/yr)

Radionuclides - 0.00022 Ci/yr

These emission levels are low and the same as any coal fired boiler of equivalent size. These emissions will be controlled to the best extent possible in Kiln 2 by the existing ESP particulate control device.

Table 6. Revised PSD/Nonattainment Source Applicability Analysis

Pollutant	Baseline Emissions (TPY)	Future Maximum Emissions			Net Increase (TPY)	PSD Significant Emission (TPY)
		(lb/hr)	(lb/ton)	(TPY) ^a		
PM(TSP):						
Kiln 2	42.48	14.40	0.5760	56.76		
Fugitive	<u>0</u>	--		<u>4.30</u>		
Total	42.48			61.06	18.58	25
PM10:						
Kiln 2	36.1	12.24	0.4896	48.25		
Fugitive	<u>0</u>	--		<u>2.64</u>		
Total	36.1			50.89	14.79	15
SO ₂	14.1	400.0	16.00	1,576.8	1,562.7	40
NO _x	396.9	169.3	6.77	667.4	270.5	40
CO	1,281.6	350.0	14.00	1,379.7	98.1	100
VOC	73.7	28.8	1.15	113.5	39.8	40 ^b
Pb	8.39	2.5	0.10	9.9	1.46	0.6
H ₂ SO ₄ Mist	0.42	12.0	0.48	47.30	46.88	7
Be	0.168	0.050	0.002	0.197	0.029	0.0004

^aBased on maximum of 197,100 tons clinker per year.
^bSignificant emission rate for nonattainment review.

Note: These figures based on
7,884 hrs/yr for 197,100 TPY

1752
- 1576.8

175.2

8760
- 7884

876