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Mr. C.H. Fancy, P.E.  
Bureau of Air Regulation  
Florida Department of Environmental Regulation  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Re: Proposed Modification - Kiln No. 2 Coal Conversion  
PSD-FL-142 - AC13-169901

Dear Mr. Fancy:

The purpose of this correspondence is to provide the department with additional information concerning the above-referenced permit application. Two major areas are addressed herein: the first being responses to EPA's comments contained in their letter to the department dated December 13, 1989; the second being Tarmac's position on the subject of applicability of federal New Source Performance Standards (NSPS) to the Kiln 2 modification.

EPA COMMENTS

1. APPLICABILITY DETERMINATION

EPA's main concern with the PSD applicability determination was that actual operating hours/production rates were not used in determining the starting point for PSD applicability. Although KBN does not believe a source should be penalized merely because it did not operate at its permitted capacity, as stated in the preamble to the 1980 PSD regulations, this is a subject that will be debated with EPA outside of this permit application. In order to facilitate review of this application and to resolve EPA's concerns, we have recalculated the actual emissions for Kiln 2 based on actual production rates.

Presented in Tables 1 through 5 attached are calculated actual emissions from Kiln 2 for the years 1980 and 1981 (the two most recent full years of kiln operation). Actual emissions from Kiln 2 for particulate matter [PM(TSP) and PM10] are shown in Table 1. The emissions are based on actual PM(TSP) stack test results from which an emission factor (lb/ton clinker produced) was derived. This emission factor was then applied to the actual production for the kiln for 1980 and 1981. The baseline emissions were calculated as the 2-year average emission rate. PM10 emissions were calculated as 85 percent of PM(TSP) emissions, as described in Tarmac's previous submittals.

Actual NOx emissions from Kiln 2 are shown in Table 2. These are based on the NOx source tests conducted on Kiln 2 in 1980, from which a lb/ton clinker produced factor was calculated for both gas and oil firing. These emission factors were used in conjunction with actual clinker production for the kiln to calculate actual emissions. Only gas was burned in Kiln 2 during 1980 and 1981.

**KBN ENGINEERING AND APPLIED SCIENCES, INC.**

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Actual SO<sub>2</sub> emissions were calculated in a similar fashion, based upon SO<sub>2</sub> source tests conducted on Kiln 1 in 1979 (see Table 3). No SO<sub>2</sub> tests were conducted on Kiln 2, but the kilns are identical and should display similar emission factors. Emission factors in lb/MM Btu heat input for both gas and oil were calculated and applied to the fuel consumption in the kiln (gas only in 1980 and 1981).

Actual emissions of CO are shown in Table 4. No CO tests have been conducted on the kilns at Tarmac, and there are no known CO emission factors for cement plants. However, ESP operation requires the CO level in the kiln to be maintained below 1,000 ppm to prevent potential explosion in the ESP. Therefore, for purposes of calculating actual emissions, a flue gas content of 1,000 ppm was assumed. Actual air flow rates from the yearly stack tests were used to calculate emissions and an emission factor in terms of lb/ton clinker produced. This factor was then applied to the actual clinker production from the kiln.

Actual emissions of VOC, presented in Table 5, are based on the only VOC stack test conducted at Tarmac, on Kiln 3 in 1988. The average VOC emissions from the stack tests were utilized. From this stack test, an emission factor of 0.87 lb/ton clinker produced, due to organics in the raw feed, was derived (see previous Tarmac submittals). Emission factors for gas and oil combustion were based on AP-42 emission factors. These factors were applied to the clinker production and fuel usages for Kiln 2. It is noted that the VOC data are very limited, may not be strictly applicable to Kiln 2, and therefore may not be representative of Kiln 2 operation. Kiln 2 is less energy efficient and is shorter in length than Kiln 3, and therefore VOC destruction within Kiln 2 may not be as good as in Kiln 3. However, there are no data for Kilns 1 or 2, since they are shutdown. The only VOC data available for the Tarmac kilns are from Kiln 3 and, therefore, were used in this analysis.

The revised PSD source applicability analysis for Kiln 2, using the above described actual emissions as a baseline, is presented in Table 6. In determining future maximum emissions for Kiln 2, 90 percent capacity factor [equivalent to 197,100 tons per year (TPY) clinker production] was assumed. Tarmac is willing to limit their maximum operation to this level, since the kiln is not expected to exceed this rate due to kiln downtime.

For PM, the fugitive emission increases associated with Kiln 2 coal burning are included in the applicability determination. Tarmac is willing to limit Kiln 2 PM(TSP) emissions to 14.4 lb/hr and 56.76 TPY, and PM<sub>10</sub> emissions to 12.2 lb/hr and 48.25 TPY. This results in PM increases of 14.8 TPY for PM<sub>10</sub> and 18.6 TPY for PM(TSP), both of which are below the PSD significant emission rate. It is emphasized that Tarmac expects no increase in hourly PM emissions from the kiln due to the coal conversion. Non-volatiles in the coal (i.e., ash) will replace raw feed to the kiln on a one-for-one basis, such that the total solids in the kiln will not increase, and particulate reaching the ESP should not increase. Therefore, emissions from ESP should not increase. The calculated increase in PM emissions due to the coal conversion is solely due to the EPA mandated method of determining PSD applicability.



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The future requested SO<sub>2</sub>, NO<sub>x</sub>, and sulfuric acid mist emissions result in emission increases above the PSD rates, as acknowledged in previous submittals by Tarmac. The requested tons per year for these pollutants are slightly lower than previous due to the reduced annual operating rate for the kiln (197,100 TPY clinker). Both baseline and future sulfuric acid mist emissions are based on the estimated 3 percent of SO<sub>2</sub> emissions (see previous submittals).

For CO, Pb, and Be, increases in tons per year are shown for these pollutants, with the increase in CO being below the PSD trigger level. Baseline emissions for Pb and Be are based upon the clinker production for Kiln 2 in 1980 and 1981 and the emission factors presented previously: 0.1 lb/ton for Pb and 0.002 lb/ton for Be. However, it is emphasized that Tarmac expects no increase in hourly emissions of these pollutants due to the coal conversion. The calculated increases are solely due to EPA's mandated method of determining PSD applicability. In the case of Pb and Be, the increases are of such magnitude that PSD review is triggered.

There is expected to be no increase, or minimal increase, in VOC emissions due to the coal conversion. Converting from gas/oil firing to coal itself would result in only insignificant changes in VOC emissions due to the changes in the fuel itself. Emissions due to organics in the raw feed would not change. However, since the only test data for VOC are from Kiln 3 and VOC emissions from Kiln 3 may be substantially different than from Kiln 2 due to differences in the kilns, Tarmac is selecting the highest emission rate (28.8 lb/hr, 113.5 TPY) which would not trigger nonattainment new source review.

Since under this revised PSD applicability determination PSD review is now required for Pb and Be, a BACT analysis and air monitoring analysis are needed for these pollutants. These analysis are presented below.

BACT for Pb and Be control is the existing ESP for Kiln 2, which controls solid particulate emissions, including metals, with a high efficiency. There is no other control device that can control these emissions with a higher degree of removal than the ESP. As a result, the ESP meets the "top-down" criteria, and no other control technologies need to be analyzed. The emission rates for both Pb and Be are minimal.

The maximum air quality impact of the Pb emissions can be ascertained from the revised SO<sub>2</sub> impact analysis contained in Tarmac's November 1989 submittal. The maximum impact of Kiln 2 emitting at only 400 lb/hr (1,752 TPY) was predicted to be 4.1  $\mu\text{g}/\text{m}^3$  annual average, and 61  $\mu\text{g}/\text{m}^3$  24-hour average. Therefore, for a Pb emission increase of 1.46 TPY from Kiln 2 (see Table 6), the maximum annual impact of the Pb increase would be 0.0034  $\mu\text{g}/\text{m}^3$ . The maximum calendar quarter average Pb impact would therefore have to be less than four times the annual average, or less than 0.014  $\mu\text{g}/\text{m}^3$ . This impact would be less than the PSD de minimis monitoring concentration of 0.1  $\mu\text{g}/\text{m}^3$ , calendar quarter average.



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In the case of Be, there will be no measurable increase in hourly emissions of Be. Therefore, maximum 24-hour impacts of Be due to the coal conversion will not increase.

## 2. BACT DETERMINATION FOR SO<sub>2</sub>

The first concern EPA expresses in regards to the BACT for SO<sub>2</sub> is that the requested emission rate for Kiln 2 is too high in relation to the emission limit for Kiln 3. They reason that the SO<sub>2</sub> removal should be similar for the two kilns when burning coal, since they are similar when burning oil/gas. In fact, the information shown in the permit application demonstrates that the removal efficiencies for the two kilns are very different: 98.7 percent for Kiln 3 and 91.3 percent for Kiln 2. This translates to an emission rate for Kiln 2 which is 750 percent higher than that for Kiln 3 (on a lb/ton basis). Factors which can affect SO<sub>2</sub> removal in the kiln are the length of the kiln (affects retention time), temperature, and oxygen content. Kiln 2 is less energy efficient than Kiln 3, and therefore sulfur input due to coal will be higher on a lb/ton basis for Kiln 2. Kiln 2 is a smaller (shorter) kiln than Kiln 3, and therefore residence times of the gases in Kiln 2 are less. These aspects of Kiln 2 translate into potentially higher SO<sub>2</sub> emissions compared to Kiln 3.

EPA conducted a review of the NSPS for Portland<sup>®</sup> cement plants in 1985. The review document states that data and mass balance calculations indicate that 35 to 75 percent of the SO<sub>2</sub> emissions are removed in the production process (i.e., kiln plus control device). Tarmac's stated minimum SO<sub>2</sub> removal of 36 percent is therefore consistent with this past industry experience.

Tarmac does not believe that SO<sub>2</sub> emissions from Kiln 2 will be as high as requested. The problem is, without adequate test data on the kiln, what should the emission limit be? No one knows the answer to this until the kiln can be converted and tested. This is precisely why Tarmac is proposing, and is willing to accept as a permit condition, a testing plan which will define the appropriate emission limit for the kiln. This will avoid the past mistake on Kiln 3 of trying to guess an emission limit that can be met, and guessing wrong.

There seems to be no argument that the control technology for SO<sub>2</sub> removal is the cement kiln itself (i.e., no add-on control equipment). As such, the cement kiln will without a doubt remove SO<sub>2</sub> and act as an SO<sub>2</sub> removal device whenever it is operating. The amount will be dependent on how the kiln is operated, which will in turn depend on product quality as well as the information obtained from the emission testing. So the only question here is what the appropriate emission limit is. The proposed testing plan will answer this, but this cannot happen until the kiln is operated on coal.

The second EPA concern is the use of 2 percent sulfur coal instead of lower sulfur coal (1 percent). Tarmac's concern with the use of low sulfur coal is the cost impact upon clinker production costs. Information presented in Tarmac's November submittal showed that use of low sulfur coal would increase production costs by \$3.00 or more per ton of clinker produced, representing more than an 8 percent increase above current production costs. The effect such an increase would have on Tarmac operations are enumerated in the



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attached "Antidumping Petition On Behalf Of The Ad Hoc Committee Of Az-Nm-Tx-Fl Producers Of Gray Portland Cement". This petition shows that the effects of foreign cement dumping in these four states has been devastating. Subsidized, under-priced Mexican imports have resulted in domestic producers such as Tarmac artificially lowering prices, in many cases below actual production costs, in order to maintain their market share. Despite such drastic measures, two cement plants in Florida and seven plants in the other three states have closed since 1983. During this same period, three new import terminals have opened in Florida (two in Tampa and one in Port Manatee) and one existing terminal has doubled in capacity. Cement sales in Florida have followed the following pattern during the period 1979 through 1989:

<u>YEAR</u>	<u>CEMENT (1000 tons)</u>		<u>IMPORTS</u>
	<u>Total</u>	<u>Imports</u>	<u>(% of total)</u>
1979	4,602	1,390	30%
1980	5,412	1,278	24%
1981	5,335	1,030	19%
1982	4,081	709	17%
1983	4,866	905	19%
1984	6,253	2,267	36%
1985	6,140	3,203	52%
1986	6,360	3,742	59%
1987	6,819	3,636	53%
1988	7,277	3,780	52%
1989	7,330	3,650	50%

As shown, foreign imports continue to represent roughly one-half of the total cement sold in Florida.

Focusing on the Florida situation, there are currently six cement plants located in the state. Two of these (General Portland plants in Miami and Tampa) are shut down due to economic conditions, and a third (the Tarmac plant in Miami) is operating at only half capacity with two kilns shut down. The General Portland plants are shut down even though one is permitted to burn 2.0 percent sulfur coal, and the other is permitted to burn 5.0 percent sulfur oil. Rinker cement, located in Miami, is currently operating and burning 1.8 percent sulfur coal. Rinker has no emission limits on SO<sub>2</sub> or on coal sulfur content. The two other plants in Florida, Florida Crushed Stone (FCS) and Florida Mining and Materials (FMM), are both located in Hernando County, north of Tampa. The FCS plant is a new integrated power plant/cement plant which can economically burn 0.8 percent sulfur coal. FMM has no sulfur limits in their current operating permits and, therefore, can burn the most economical coal available.

The added cost of low sulfur coal for Kiln 2 would make conversion to coal economically prohibitive. Production cost of the clinker produced by the kiln would be higher than the market price. The imposition of low sulfur coal would not be fair to Tarmac when its closest competitor, Rinker, is allowed to burn 1.8 percent sulfur coal. Thus, Tarmac could not justify restarting the



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kiln. This would result in a loss of jobs and tax revenue for Dade County and the state of Florida.

The situation in Florida, Arizona, New Mexico, and Texas cannot be compared to other states in the U.S. Cement is a captive market which is tied to local consumption. Thus, producers outside of these four states do not have to compete with the Mexican imports, either on price or on market share. With prices being higher and more stable in other states, it is more likely that a cement plant could burn lower sulfur coal and be competitive. It is also easier for a less energy intensive new, dry process kiln to burn low sulfur coal as compared to Tarmac's older, more energy intensive wet process kiln. In addition, Tarmac is at a further disadvantage in that they are located a long distance from the coal mines. Coal delivered to Tarmac is, therefore, more costly due to freight charges.

A review of the BACT Clearinghouse documents reveals that no new or modified cement kilns have been permitted under PSD in the entire United States since 1986. Since 1983, only four PSD permits have been filed in the United States. This undoubtedly reflects the penetration of foreign imports on the entire United States market. One of the four permits was for coal conversion of the three kilns at the Tarmac plant (then called Lonestar). The BACT determination required 2.0 percent sulfur coal maximum (1.75 percent on a monthly average). Only one kiln was actually converted, with the other two kilns shutdown due to economic reasons.

Two of the four PSD permits were for dry process kilns in California and Nevada. One of these was for a Lonestar plant, which was converting to a dry process. The second was for a new dry process kiln, at an existing plant. This new kiln was never built, and the permit has expired.

The last of the four permits was for the Florida Crushed Stone plant in Brooksville, Florida. This was a special case of an integrated power plant/cement plant which utilized a dry process kiln, and common coal for the power plant and cement plant. This plant has a unique integrated design which is extremely energy efficient. Low sulfur coal (0.8 percent) was permitted primarily to protect the Chassahowitzka Class I area and allow for future industrial growth, but was also feasible because of the large quantity of coal used by the shared facilities and the overall energy efficiency of the shared facilities.

#### APPLICABILITY OF FEDERAL NEW SOURCE PERFORMANCE STANDARDS

Regarding the applicability of federal NSPS to the Kiln 2 coal conversion, Kiln 2 was initially constructed and began operating in 1969, before the NSPS for Portland cement plants were promulgated. The NSPS regulate PM emissions only. It is Tarmac's position that the conversion of Kiln 2 to coal will not increase PM emissions on a lb/hr basis. As a result, the conversion would not be a modification under 40 CFR Part 60.



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If you have any questions concerning this submittal, please call me at 904-331-9000. I appreciate your cooperation in reviewing this important information.

Sincerely,

A handwritten signature in cursive that reads "David A. Buff".

David A. Buff, M.E., P.E.  
Principal Engineer

cc: Scott Quass  
Al Townsend  
Bruce Miller, EPA

DAB/mla

copied: J. Reynolds  
B. Andrews  
M. Sinn  
J. Goldman, SE Dist  
P. Stong, DERM  
C. Shaver, NPS  
CHF/JKP/BT

Table 1. Baseline PM Emissions For PSD Source Applicability Analysis,  
Tarmac Kiln 2

Year	Clinker Production (tons)	PM(TSP) Test Data+			PM(TSP) Emissions (TPY)	PM10 Emissions** (TPY)
		Emissions (lb/hr)	Production (tons/hr)	Factor (lb/ton)		
1980	184,922	16.00	24.09	0.67	61.95	52.66
1981	150,690	8.17	26.76	0.31	23.00	19.55
				Average -	42.48	36.10

\* Gas - MM scf

Oil - M gal

+ Based on yearly stack test results

\*\* Calculated as 85% of PM(TSP) emissions.

PMBASE2  
1/11/90



Table 2. Baseline NOx Emissions For PSD Source Applicability Analysis, Tarmac Kiln 2

Year	Clinker Production (tons)	Fuel	Fuel Usage*	Heat Input (MM Btu)	NOx Emissions	
					lb/ton+	tons/yr
1980	184,922	gas	1209	1,269,450	4.73	437.3
1981	150,690	gas	944	991,200	4.73	356.4
					Average -	396.9

\* Gas - MM scf

Oil - M gal

+ Based on only NOx stack test, conducted in 1980.

NOXBASE2  
1/11/90

Table 3. Baseline SO2 Emissions For PSD Source Applicability Analysis,  
Tarmac Kiln 2

Year	Clinker Production (tons)	Fuel	Fuel Usage*	Heat Input (MM Btu)	SO2 Emissions	
					lb/MM Btu+	tons/yr
1980	184,922	gas	1209	1,269,450	0.025	15.9
1981	150,690	gas	944	991,200	0.025	12.4
					Average -	14.1

\* Gas - MM scf

Oil - M gal

+ Based on SO2 stack tests conducted on Kiln 1 in 1979.

SO2BASE2  
1/11/90

Table 4. Baseline CO Emissions For PSD Source Applicability Analysis,  
Tarmac Kiln 2

Year	Clinker Production (tons)	Stack Test Data*							CO Emissions tons/yr
		Prod. Rate (tons/hr)	ACFM	%H <sub>2</sub> O	Temp. (Deg.F)	CO+ (ppm)	CO (lb/hr)	lb/ton	
1980	184,922	24.09	131,483	26.0	340	1000	378.3	15.7	1452.0
1981	150,690	26.76	138,023	27.0	345	1000	394.7	14.7	1111.2
								Average =	1281.6

\* Based upon yearly stack test data.

+ Assumed based on maximum tolerable CO level in kiln.

COBASE2  
1/11/90

Table 5. Baseline Non-Methane VOC Emissions For Nonattainment New Source Review Applicability, Tarmac Kiln 2

Year	Clinker Production (tons)	Fuel	Fuel Usage*	Heat Input (MM Btu)	Non-Methane VOC Emissions		
					lb/ton+	lb/MM Btu**	tons/yr
1980	184,922	gas	1209	1,269,450	0.87	0.0013	81.3
1981	150,690	gas	944	991,200	0.87	0.0013	66.2
Average =							73.7

\* Gas = MM scf

Oil = M gal

+ VOC emissions due to organics in feed, based on only VOC stack test, conducted on Kiln 3 in 1988.

\*\* VOC emissions due to fuel combustion, based on AP-42 emission factors.

VOCBASE2  
1/11/90

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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)*		
PM(TSP):						
Kiln 2	42.48	14.4	0.58	56.76		
Fugitive	0	-		4.30		
Total	42.48			61.06	18.58	25
PM10:						
Kiln 2	36.1	12.2	0.49	48.25		
Fugitive	0	-		2.64		
Total	36.1			50.89	14.79	15
SO2	14.1	400.0	16.00	1576.8	1562.7	40
NOx	396.9	169.3	6.77	667.4	270.5	40
CO	1281.6	350.0	14.00	1379.7	98.1	100
VOC	73.7	28.8	1.15	113.5	39.8	40 +
Pb	8.39	2.5	0.10	9.9	1.46	0.6
H2SO4 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

\* Based on maximum of 197,100 tons clinker per year.

+ Significant emission rate for nonattainment review.

PSDSUM2  
1/13/90



# Tarmac

TARMAC FLORIDA, INC.

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FACSIMILE  
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Tarmac Florida, Inc.  
Environmental Department  
P.O. Box 2998  
Hialeah, Florida 33012

Telephone: (305)823-8800  
Facsimile: (305)825-1719

\*\*\*\*\*

TO: John Reynolds -- Division of Air Resources Management

Facsimile No: (904)487-4938

DATE: January 12, 1990

FROM: Al Townsend

number of pages including cover sheet 2

Comments: Attached is a Waiver for Tarmac's Kiln 2 modification permit application. The original will be sent via regular mail. Should you have any questions please call me or Dave Buff.

*P.O. Box 14288  
Gainesville 32604*



Tarmac

TARMAC FLORIDA, INC.

P.O. Box 2998  
Hialeah, Florida 33012

WAIVER OF 90 DAY TIME LIMIT  
UNDER SECTIONS 120.60(2) AND 403.0876 FLORIDA STATUTES

License ( Permit, Certification ) Application No. AC13-169901

Applicant's Name: TARMAC FLORIDA, INC.

The undersigned has read Sections 120.60(2) and 403.0876, Florida Statutes, and fully understands the applicant's rights under that section.

With regard to the above referenced license (permit, certification) application, the applicant hereby with full knowledge and understanding of (his) (her) (its) rights under Sections 120.60(2) and 403.0876, Florida Statutes, waives the right under Sections 120.60(2) and 403.0876, Florida Statutes, to have the application approved or denied by the State of Florida Department of Environmental Regulation within the 90 day time period prescribed in Sections 120.60(2) and 403.0876, Florida Statutes. Said waiver is made freely and voluntarily by the applicant, is in (his) (her) (its) self-interest, and without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Regulation.

This waiver shall expire on the 16th day of February, 1990.

The undersigned is authorized to make this waiver on behalf of the applicant.

Signature

Scott Quaas - Environmental Specialist  
Typed Name and Title

1-12-90  
Date

(305)823-8800  
Telephone No.