July 19, 2002

Mallika Muthiah, P.E.
Chief, Air Facilities Section
Miami Dade DERM
33 SW 2nd Avenue
Miami, FL 33130-1540

Re: Tarmac AC Permit Application (Dated 6/25/02)
Relocation and Replacement of Existing Concrete Block Plant (at Tarmac Pennsuco, Medley, FL)
Permit No. 0250020-014-AC

Dear Ms. Muthiah:

As you know, Tarmac Pennsuco is a wet-process Portland cement plant located in Medley, Florida. This plant is owned by Tarmac America LLC and is an existing, major source pursuant to State Prevention of Significant Deterioration (PSD) rules. Accordingly, requests from Tarmac for air construction (AC) permits should be reviewed by the Department of Environmental Protection (DEP), New Source Review Section, for PSD applicability.

To facilitate such a review for Tarmac's recent AC permit application (for the relocation and replacement of the existing concrete block plant; Permit No. 0250020-014-AC), you forwarded a copy of the application to DEP on July 12, 2002. While DEP does not feel that this project triggers the requirements of New Source Review, we do have several comments and concerns.

PM Emission Calculations. Tarmac estimated the potential particulate matter (PM) emissions from the new concrete block plant as part of their application (reference Attachment TA-E022-L2, Emissions Calculations). The DEP has several questions about these calculations.

1. The number of cement unloadings and the time required for each unloading seem irrelevant. The AP-42 emission factor for cement unloading to elevated storage silos is provided in emissions per mass of material transferred.[1] Based on the application, the new concrete block plant would have a capacity of 5500 blocks per hour (requiring 8.53 tons of cement/5500 blocks) = 0.00155 tons cement per block. In one year of operation (limited to 6,240 hours), this equates to (0.00155)(5500)(6240) = 53,227 tons cement transferred to the storage silos. At 0.72 lb PM/ton cement transferred, uncontrolled PM emissions from the cement storage silos are thereby estimated to be 19.2 tons per year.
2. Tarmac's calculation for PM from the weigh hopper/mixer assumes a single weigh hopper/mixer that only processes cement from the cement storage silos. Looking at Attachment TA-E022-L1, Process Flow Diagram, it is clear that there are a number of weigh hoppers. Each of the three aggregate storage silos has a weigh hopper, as do each of the two cement storage silos. The aggregate weigh hoppers process a total of 81.68 tons aggregate per hour, and the cement silo

weigh hoppers process a total of 8.53 tons cement per hour. The mixer, however, would appear to process (8.53 + 81.68) = 90.21 tons of material per hour.

3. The DEP agrees with the rational for assuming aggregate storage and silo loading PM emissions are negligible. Likewise, DEP agrees with the suggested control for PM emissions from unpaved roads. Both of the paragraphs listed under "unconfined emissions" in Tarmac's emission calculation should be included as conditions in the AC permit.

The following table summarizes DEP's calculations of PM emissions from the new concrete block plant. (PM = emission factor * throughput * 6,240 hours/year * 1 ton/2000 lbs)

Emission Source	Emission Factor[1]	Throughput	Uncontrolled PM
Aggregate Silo Loading	Negligible	81.68 ton/hr	Negligible
Aggregate Weigh Hopper Loading	0.0051 lb/ton	81.68 ton/hr	1.3 tons/year
Cement Silo Loading	0.72 lb/ton	8.53 ton/hr	19 tons/year
Cement Weigh Hopper Loading	0.0051 lb/ton	8.53 ton/hr	0.14 tons/year
Mixer Loading	0.22 lb/ton	90.21 ton/hr	62 tons/year

Assuming 99 percent control efficiency for the baghouses, this results in maximum total controlled PM emissions of 0.82 tons/year. This is well below the significant emission rate for PM (25 tons/year).

"Debottlenecking" the Kiln. The new, replacement concrete block plant has a capacity 80 percent larger than the existing plant (5500 blocks per hour versus current capacity of 3000 blocks per hour). To meet the new demand for 2500 blocks per hour, the existing wet-process Portland cement plant would have to produce additional cement. Based on the numbers in Tarmac's application, 24,000 tons per year of cement would be required to make the additional concrete blocks. While this is only a three percent increase compared to current production levels (approximately 757,000 tons of cement per year), a three percent increase in kiln NO_x and SO_2 would trigger the PSD significance levels for those pollutants.

For example, current NO_x emissions are around 2300 tons per year. A three percent increase in NO_x would yield an additional 70 tons per year, which is greater than the significant emissions rate of 40 tons per year.

To avoid PSD implications, the AC permit should provide assurances that cement is only being "shifted" from other products to the concrete block plant. There must not be an increase in cement production from the existing wet-process kilns to meet the new capacity of the concrete block plant. In other words, for DEP's PSD determination to remain valid, the AC permit must maintain the current production limits for the existing wet-process kilns.

Please feel free to contact me with any additional questions or comments at (850)921-9506.

Sincerely,

Greg DeAngelo, P.E.
New Source Review Section

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[1] EPA Report. "Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume 1: Stationary Point and Area Sources." Section 11.12, Concrete Batching. October 2001.

Tarmac
A Titan America Business

455 Fairway Drive
Deerfield Beach, FL 33441
(954) 481-2800
Fax (954) 421-0296
www.titanamerica.com

Environmental Services
Direct Line (954) 425-4165
Direct Fax (954) 480-9352
Email squaas@titanamerica.com

VIA ELECTRONIC MAIL

8 August 2002

Mr. H. Patrick Wong, Chief
Air Quality Management Division
Miami-Dade County Environmental Resources Management
33 SW 2nd Avenue
Miami, Florida 33130-1540

RE: **Pennsuco Cement**
Dade County B AP
Facility ID# 0250020
Kiln #2 - Consent Agreement

Dear Mr. Wong:

Please accept this letter as a proposal for a new interim NOx emission limit and a request for consideration of changes to the Consent Agreement between Tarmac and the DERM. Tarmac met with you and other DERM staff on November 8, 2001, to discuss an extension of the Consent Agreement under which kiln No. 2 operates regarding NOx emission limits. The DERM was responsive to possible changes and felt they could support such a request dependent on a r luction of NOx emission limits.

As a matter of historical content, Tarmac had opted to pursue &23. of the Agreement, i.e., to change the manufacturing process to dry process technology. Construction of the new system was to be completed within 36 months after the required permits were issued. An air source construction permit was issued October 21, 1999. Subsequent to the permit issuance, Tarmac was sold and the project was placed on hold pending the completion of the sale. Titan Cement Company completed the sale in October 2000. Titan additionally requested revisions to the air source construction permit in November 2000 and the new permit was issued in May 2001. A letter of intent was signed with FLS/Fuller in August 2001 to supply the major equipment and related engineering for the new plant. Tarmac has expended $15.0 million to date on engineering, equipment, and site preparation. An additional $55.0 million is allocated for this year. Site development zoning and permitting along with infrastructure permitting is complete and the first phase of construction is slated for late August.

After the November 2001 meeting, Tarmac retained Environmental Quality Management, Inc. (EQM) to develop an engineering study on the feasibility of reducing NOx emission from the kiln No. 2 system. That study has looked at 57 existing wet process kilns and analyzed NOx emission factors from those kilns and has compiled options for NOx emission reductions. The Eric Hansen Group, an expert on combustion technologies in kiln systems, has also been retained to review kiln No.2 process conditions and variables. Additionally, EPA data sources and technical literature was reviewed, most notably, the September 2000 Final Report from the Office of Air Quality Planning and Standards *NOx Control Technologies for the Cement Industry*. Two (2) key NOx control approaches applicable to wet process cement kiln operations are identified in the EQM study and the EPA report:

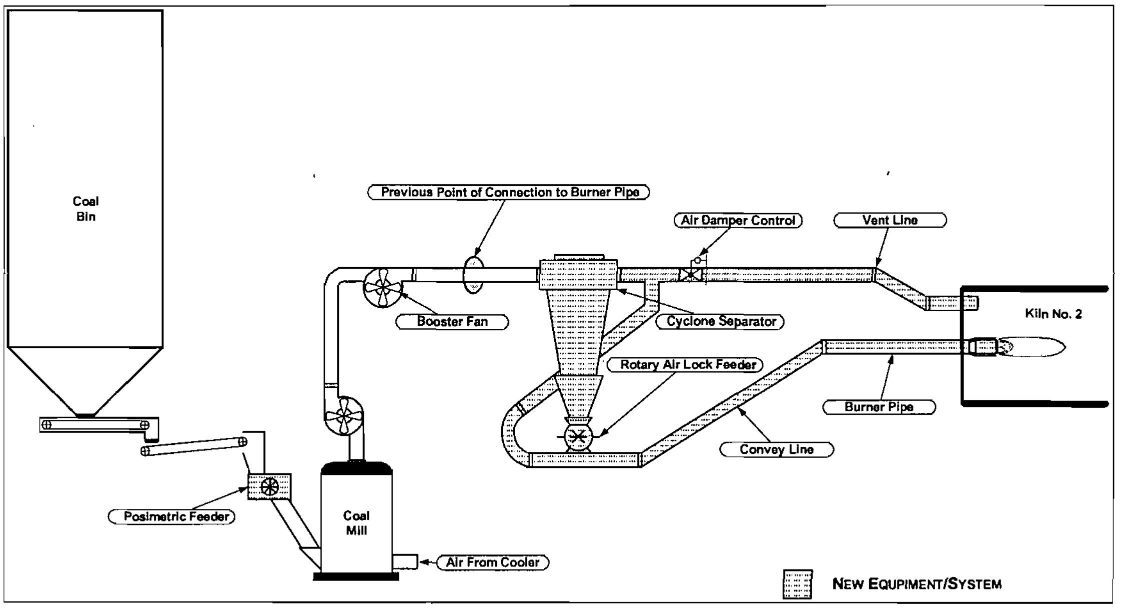
1. PROCESS CONTROL MODIFICATION
   These modifications focus on increased energy efficiency and kiln operational stability with the emphasis on reducing NOx formation. NOx formation is directly related to the amount of energy consumed in the cement making, and improving fuel efficiency, and concurrently productivity, will reduce NOx emissions. The EQM study discusses the feasibility and applicability of process modifications specific to the kiln No. 2 system.

2. COMBUSTION CONTROL
   These modifications focus on reducing NOx formation in the kiln system. The EQM study discusses the feasibility and applicability of process modifications specific to the kiln No. 2 system.

Based on these NOx control approaches, EQM and the Eric Hanson Group have formulated the following recommendations to reduce the NOx emission levels from the kiln No. 2 system:

1. PROCESS MODIFICATIONS
   - 1.1 Changes in mix burnability – a hard burning mix requires a higher thermal threshold to promote the reaction of the mix components necessary for the formation of clinker. The burnability is hard due mainly to the crystalline silica (quartz) in the major component of the mix B limestone. Tarmac has implemented a tandem grinding process to reduce the size of crystalline silica in the mix.
   - 1.2 Reduction in primary air – high concentrations of primary air to the kiln provides excess oxygen and increased thermal NOx. Kiln No. 2 is a direct-fired kiln where air is used for conveying pulverized coal from the coal mill to the kiln. The coal mill sweep volume is high primarily to prevent build-up on the mill table and control coal conveying gas temperatures to MSHA imposed limits. Tarmac has been able to decrease primary air and when coupled with item 2.2 below will further reduce NOx formation.
   - 1.3 Changes in fuel properties – low volatile coal can increase NOx production in the kiln by lengthening the flame characteristics. A review of the volatility of the current coal supply indicates it to be a low volatile coal ["20%]. Tarmac has ordered shipments of coal from a new supplier. The new coal supply is now on-site and the new coal has a volatility of "30%.

2. COMBUSTION MODIFICATIONS
   2.1 Replace the existing burner pipe – low-NOx burners are designed to change flame characteristics for initial combustion and reduce thermal NOx formation. Tarmac has replaced the previous burner with an "Annular-Nozzle Burner" designed by the Eric Hanson Group. The burner will facilitate a reduction of NOx by maintaining the primary combustion area in a reducing atmosphere.
   2.2 Mill air reduction/semi in-direct firing – as noted in item 1.2, high concentrations of primary air to the kiln provides excess oxygen and therefore increases thermal NOx. Separating the pulverized coal from the coal mill sweep air using a cyclone separator can reduce the amount of primary air. This system has similarities to both a mill air recirculation system and an in-direct fired coal system. The benefits are derived from a reduced volume of primary air from the exhaust of the cyclone being used to transport the coal from the cyclone separator to the burner pipe. The remainder of the coal mill sweep air bypasses the burner pipe and is directly vented to the kiln hood. Tarmac has installed the semi in-direct firing system as shown in the diagram.



Coupling the low-NOx burner with the semi in-direct firing, and operating the kiln with the process modifications, should reduce NOx emissions up to 50%. It is important to note that the installed system is un-demonstrated new technology with certain equivalence to the mill air recirculation systems noted in the EQM study. The installed system could represent the best available control for a wet process cement kiln. Initial CEM data for the new system has shown encouraging results, but a larger data set needs to be gathered.

Both the EPA *NOx Control Technologies for the Cement Industry* Final Report and the EQM study provide for comparison NOx emission factors for wet process cement kilns.

Cement Kiln Type	Heat Input Requirement (MM Btu/ton clinker)	Average NOx Emissions (lb/ton clinker)		Range of NOx Emissions (lb/ton clinker)	Kiln No. 2 Average NOx Emissions
		EPA Report	EQM Study		
Wet Kiln	6.0	9.7	9.1	3.6 -19.5	9.4
Long Dry Kiln	4.5	8.6	B	6.1 -10.5	
Preheater Kiln	3.8	5.9	B	2.5 -11.7	
Precalciner Kiln	3.3	3.8	B	0.9 -7.0	

I have included from the EPA Report data for other kiln types to show the correlation between NOx emission rates and heat input requirements. This is important to recognize in that the difference in NOx emission rates is attributed to the difference in the energy consumption rates of the types of kilns.

Further combining the process and combustion modifications in place, along with the understanding of potential NOx emissions correlated to the energy input of Kiln No. 2, Tarmac is proposing a new interim NOx emission limit of 150 lb/hour based on a monthly average. The new limit correlates to 6.0 lb/ton of clinker, which is significantly below the average NOx emissions of >9.0 lb/ton of clinker shown for wet process cement kilns. The new limit also represents over a 30% reduction from the current limit and achieves the desire of the DERM for a reduction of the NOx limit contained in the Consent Agreement. This new limit is requested for the duration of the operation of Kiln No. 2 through start-up of the new cement plant.

Tarmac respectfully requests the DERM review this proposal and asks for a meeting be set the week of August 19th to discuss this matter. Should you have any questions or need further information please contact me at the telephone number on the cover page.

Sincerely,

Scott Quaas
Environmental Manager
Environmental ServicesBFlorida Business

cc: A. Townsend
R. Ferguson
R. Hawks, EQM
E. Hanson, Eric Hanson Group

Attachments

1. Battye, R., EC/R Incorporated, Chapel Hill, NC. *NOx Control Technologies for the Cement Industry*. Prepared for the U.S. EPA, RTP, NC, under contract No. 68-D98-026, work assignment No. 2-28. September 19, 2000
2. Environmental Quality Management, Inc. *Engineering Study on the Feasibility of Reducing NOx Emissions from No. 2 Kiln*. Prepared by Environmental Quality Management, Inc., Durham, NC for Tarmac America, Deerfield Beach, FL. August 6, 2002.

Reynolds, John

From: Comer, Patricia
Sent: Monday, January 08, 2001 1:17 PM
To: Linero, Alvaro; 'muthim@co.miami-dade.fl.us'; 'pittec@co.miami-dade.fl.us'; 'echanf@co.miami-dade.fl.us'
Cc: Reynolds, John; Nebelsiek, Martha
Subject: RE: Tarmac

Al

I have had an opportunity to read the Tarmac letter more closely and I believe that the letter misquotes the provisions of 62-110.106(7)(a)1. That provision requires public notice for all construction permits for a laundry list that includes air pollution sources "as well as for any other project...that the Department finds is reasonably expected to result in a heightened public concern....". Tarmac seems to be including the "that the Department finds" language in the laundry list of projects that ALWAYS require public notice. I think it would be appropriate to simply point out to Tarmac that its interpretation of 62-110.106(7) is incorrect and that air construction permits, along with the other specifically listed permits, always require published notice under that rule. It might also be worth while to add an "in addition" that says that Rule 62-110.106(10), FAC states that "In issuing notices on permits or administrative orders under a federally approved or delegated program, the Department shall follow the procedures approved by the federal government for the Department's implementation of the program: rule 62-210.350 of the Florida Administrative Code for air quality programs..." Rule 62-210.350, FAC, says at
(1)(a) "A notice of proposed agency action on permit application, where the proposed agency action is to issue the permit, shall be published by any applicant for:
1. An air construction permit......".

That should answer the statement sufficiently.

Let me know if you need anything else.

Reynolds, John

From: Linero, Alvaro
Sent: Friday, January 05, 2001 5:21 PM
To: 'muthim@co.miami-dade.fl.us'; 'pittec@co.miami-dade.fl.us'; 'echanf@co.miami-dade.fl.us'
Cc: Reynolds, John; Comer, Patricia; Nebelsiek, Martha
Subject: Tarmac

Mallika. I received a copy of Tarmac's letter. John Reynolds will review the issues in that letter when he gets the copy of the application that I left there. If you plan to act sooner than we can get a full review done, let me give you my quick comments.

We discussed the need for a public notice. The conclusion is that Tarmac is referring to the process described in Rule 62-110 that applies to a permit for which final action has not yet occurred.

The applicable procedures are those under Rule 62-210 for an application under review.

The emission limits per unit of production will be changed as will the production limits. There will be additional mining, truck traffic, etc. Even if the emissions will still be within the permitted values, we all know that real emissions will increase for those parameters that do not have add-on controls.

I will put together a precise explanation with the help of our OGC.

By the way, I still think they should install a VOC monitor. Let's discuss why on the phone.

Thanks and have a nice weekend. Al Linero.

Reynolds, John

From: Reynolds, John
Sent: Wednesday, January 03, 2001 3:14 PM
To: 'in'
Cc: Linero, Alvaro
Subject: Tarmac Modification

Mallika,
Happy New Year!

Al asked me to review Tarmac's latest response regarding their request to revise their construction permit to increase clinker production from 1.4 to 1.6 million tons per year. He told me a little of the background but I can't do a proper review unless I know more of the details. Can you send me a copy of the Tarmac request, correspondence and anything else you think might be pertinent? As soon as I receive it, I'll review it promptly. Thanks.
JR.

RECEIVED

JAN 02 2001

BUREAU OF AIR REGULATION

COPY

Tarmac

Tarmac America, Inc.
455 Fairway Drive
Deerfield Beach, FL 33441
(954) 481-2800
Fax (954) 480-9352
www.tarmacamerica.com
Environmental Services
Direct line (954) 425-4165
Direct fax (954) 480-9352

CERTIFIED MAIL
0002 7981 4053

29 December 2000

Ms. Mallika Muthiah, P.E., Chief
Air Facilities Section
Miami-Dade County Environmental Resources Management
33 SW 2nd Avenue
Miami, Florida 33130-1540

RE: **Pennsuco Cement**
Dade County – AP
Facility ID# 0250020

Dear Ms. Muthiah:

I have been directed to respond to your request for additional information [RAI] letter dated 13 December to H. Johnson regarding the construction permit revision for the above facility. I appreciated the time Courtney Pitters and Ray Gordon of your staff spent discussing the application. Following are responses to the issues raised in your RAI.

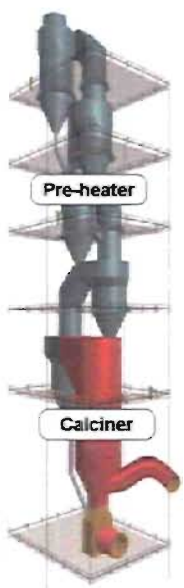
1. Please provide an explanation of how annual sulfur dioxide emissions will be maintained at an annual level equal to or less than given in the present permit without any additional controls. Sulfur dioxide emissions are directly related to annual clinker production, which will be over 1.6 million instead of 1.4 million as presently allowed.

Sulfur dioxide [SO_2] is generated from volatilization and subsequent oxidation of sulfur compounds in the raw materials within the preheater and precalciner, and by oxidation of sulfur compounds in the fuel during combustion. Therefore, SO_2 emissions are not directly related to the annual clinker production but are related to the sulfur content of the raw materials and the fuel. The raw materials used in the Pennsuco cement plant have typically been low in sulfur content, so the majority of the sulfur will be from the fuel. Control of SO_2 emissions in multi-stage combustion calciner systems depends on the system process rather than pollution control equipment. The important factor in reducing SO_2 is the presence of alkaline compounds or specifically calcium oxide [i.e., kiln feed] which reacts with the sulfur compounds. The SO_2 coming from the kiln fuel – the main source of sulfur – is thus almost totally absorbed. A significant proportion of the SO_2 from raw materials will be removed through contact with the incoming alkaline raw materials [i.e., kiln feed] which flow counter to the gas flow. Additionally, further contact is achieved in the raw mill where the flue gases are used to dry incoming kiln feed.

The SO_2 limit requested in the construction permit revision is achievable through the process control described in the application. The existing construction permit SO_2 limit was predicated on the net changes from the baseline emissions necessary to net out of PSD. The limit requested in the permit revision is a factor below the existing limit, but will maintain the existing annual SO_2 emissions. The equipment manufacturers have guaranteed the requested emission factor, and additionally, the use of the CEM system conditioned in the existing permit will ensure that the described process control will be effective.

2. Please provide the particulars of the Fuller Low NOx In-Line Calciner and the Polysius Multi-stage Calciner that are being considered for the project, specifically addressing how these units will meet the revised long-term nitrogen oxides emissions limit of 2.38 pounds per ton of clinker.

Oxides of nitrogen [NOx] emissions are generated from fuel combustion in the pyroprocessing system. NOx is generated during fuel combustion from the chemically bound nitrogen in the fuel and by elemental nitrogen in the combustion air. Both proposed pyroprocessing systems effectually control nitrogen oxides in a comparable manner. NOx emissions generated in the rotary kiln [kiln exit gases] are reduced to elemental nitrogen by multi-staged combustion in the calciner. The calciner fuel is also burned under reducing conditions to prevent new NOx from being generated in the calciner. This is achieved by a staggered introduction of raw feed and combustion air in the calciner to control temperature in the reducing zone of the calciner and to ensure complete combustion of the calciner fuel.



Through these process mechanisms both fuel NOx and thermal NOx will be controlled to meet the revised NOx emission limits requested in the construction permit revision. Again, both equipment manufacturers have guaranteed the requested emission factor, and the use of the CEM system conditioned in the existing permit will ensure that the described process control will be effective.

3. Provide similar information from both companies regarding the main kiln burner and the calciner burners.

The kiln and calciner burners do not provide any control technology related to SO_2 or NOx emissions. The control technology is effectuated in the calciner through combustion process controls for NOx and the inherent "scrubbing" in an alkaline environment to control SO_2.

process controls for NOx and the inherent "scrubbing" in an alkaline environment to control SO_2.

4. We agree that the MACT rules for greenfield plants do not apply to the Tarmac project. Rather the MACT for new kilns at brownfield sites applies. Therefore, a VOC (THC) emission limit of 50 ppm does not apply to this project.

   Understood, no response necessary.

5. The department finds that the THC (VOC) monitor is necessary to demonstrate compliance with the emissions limit of 0.19 pounds per ton of clinker. We believe the need to monitor continuous compliance with the lower value is constituted by the fact that the emissions limit is substantially less than the limit for a greenfield plant, which also requires THC (VOC) monitoring. Additionally, the Florida DEP has advised us that several plants are having difficulty meeting VOC limits and they are requiring THC (VOC) monitors at all new kilns, whether or not they are at greenfield sites.

Emissions of VOC are controlled by utilization of proper combustion practices to maximize the complete combustion of fuels. The control of process temperatures, excess air and process fuels typically result in simultaneous optimization for control of VOC plus CO and NOx. Tarmac does not believe there is a demonstrated need for continuous emission monitoring for VOC emissions. The requested emission limit of 0.19 pounds per ton of clinker is not substantially less than the limit for a greenfield plant. On the contrary, the requested limit is 1½ times the limit of a recent greenfield plant in central Florida and almost 2 times the limit of the new brownfield plant in Miami-Dade County. The difficulties experienced by other plants is Florida have been related to oils in mill scale used as raw material. Tarmac is aware of these problems and does not intend to incorporate such material in the mix design. As a cost effective measure, Tarmac would request that VOC emissions be tested initially to comply with the revised emission limit as conditioned in the existing permit. Continued compliance would be assumed by annual CO emission testing. In the event that initial testing demonstrates the need for continuous VOC emission monitoring, Tarmac would install the monitors.

6. The Florida DEP has advised us that the permit modification should be public-noticed. Significant modification including changes in production rates, emissions, and operating hours constitute this as a separate permitting action from the previous one and because all construction permit Intents to Issue must be noticed per Florida DEP, we will require you to notice our Intent.

The application under review is to revise the existing construction permit to increase the plant production rate. The emission limits and certain operating hours are also revised so that the proposed increased production rate will not result in an increase in facility-wide emissions; as such, the application does not constitute a "modification" as defined in the Florida Administrative Code [FAC]. The requested changes in production rates, emissions, and operating hours [i.e., physical or operational changes] *do not result in an increase in actual emissions*. Therefore, the review is not a separate permitting action from the previous one but a revision to the existing construction permit.

Tarmac does not believe the permit revision warrants a public notice based on the provisions in Rule 62-110, FAC. Before a public notice of a revision is required, the DERM or the State DEP is required to make a finding that the proposed revision would cause *"heightened public concern or a likelihood of a request for administrative proceedings"* because of factors related directly to the revision – primarily the *"potential effect on the environment or natural resources"*. Where a proposed revision is inconsistent with an existing permit condition, but would not constitute a *"modification"*, [i.e., *"reasonably expected to cause new or significant greater adverse environmental impacts"*], then the existing construction permit need only be revised, and no public notice would be necessary or appropriate.

I trust the above provides the necessary information to complete the review of the permit revision. Tarmac would like to be afforded the opportunity to review a "draft" of the permit revision prior to a final agency action. Should you have any questions regarding the above information or need further information please contact me at (954)425-4165.

Sincerely,

Scott Quaas
Corporate Environmental Manager
Environmental Services–Florida Business

cc: H. Johnson
A. Townsend
R. Hawks – EQM
S. Brooks – Brooks Associates
A. Linero – Florida DEP

AC FOR DRY PROCESS KILNS

() October 21, 1999

certified mail p 343 639 730
return receipt requested

Permittee:

Tarmac America, Inc.	Permit No.	0250020-008-AC	(32)
455 Fairway Drive	Issue Date	October 21, 1999	(32)
Deerfield Beach, Fl 33441	Expiration Date:	October 20, 2002	(32)
			(32)
Authorized Representative:			(32)
Scott Quaas			(32)
Environmental Manager			

Project and Location:

Project: The construction of a dry process portland cement plant with preheater/calciner/kiln, cooler, coal mill and raw mill to replace existing kilns and coolers system. A new finish mill will be constructed in addition to the existing mills.
Facility Description: Portland Cement Plant (SIC # 3241)
Location: 11000 N.W. 121 Way, Miami-Dade County, Florida 33178
Lat./Long.: 25 52' 30" N / 80 22' 30" W
UTM: Zone 17; 562.8 Km. E; 2861.7 Km. N

Dear Mr. Quaas:

This is Permit Number 0250020-008-AC to construct an air pollution source issued by the **Miami-Dade County Department of Environmental Resources Management (DERM) pursuant to Chapter 24, Code of Miami-Dade County and Chapter 403.087, Florida Statutes (F.S.).** This is a new construction permit to authorize construction of the emissions units described in this permit.

The Florida Department of Environmental Protection (FDEP) has permitting jurisdiction under Section 403.087, Florida Statutes (F.S.). However, in accordance with Section 403.182, F.S., the FDEP recognizes the DERM as the approved local air pollution control program of Miami-Dade County. Through a Specific Operating Agreement, the FDEP delegated to the DERM the authority to issue or deny permits for this type of air pollution source located in

INTEROFFICE MEMORANDUM

Date: 08-Aug-2000 04:36pm
From: Echanique, Frank
DERM) (EchanF@co.miami-
dade.fl.us

Dept:
Tel No:

To: 'alvaro.linero@dep.state.fl.us' (alvaro.linero@dep.state.fl.us)

Subject: FW: Tarmac Construction Permit 0250014-008-AC 10/21/99

> -----Original Message-----
> From: Kunath, Eva (DERM)
> Sent: Wednesday, August 02, 2000 11:51 AM
> To: Gordon, Ray (DERM)
> Cc: Echanique, Frank (DERM)
> Subject: Tarmac Construction Permit 0250014-008-AC 10/21/99
>
> As per Mr. Al Linero, I am providing you with a copy of Tarmac
> Construction permit issued on 10/21/00.
> Thanks
> Eva Kunath
> <<permitrevoct21.doc>>

NOTICE OF RIGHTS:

Any party to this Order (permit) has the right to seek judicial review of the permit 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 Miami-Dade County Department of Environmental Resources Management, Air Facilities Section, at 33 SW 2nd Avenue, Suite 900, Miami, Florida 33130-1540 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 days from the date this Order is filed with the Clerk of the DERM.

STATEMENT OF BASIS:

This permit is issued under the provisions of **Chapter 24, Code of Miami-Dade County, Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Rules 62-4, and 62-204 through 62-297**, and in conformance with all existing regulations of the FDEP and the DERM rules. The above named owner or operator is hereby authorized to perform the work or construct the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the DERM and made a part hereof and specifically described in this permit.

Attached appendices and Tables made a part of this permit:

Table 1-1	Allowable Opacity Limits	**(32)**
Table 1-2	Air Pollutants Standards and Terms	
Table 2-1	Compliance Requirements	**(32)**
Appendix A	General Conditions	**(32)**
Appendix B	National Emission Standards for Hazardous Air Pollutants for the Portland Cement Plant	**(32)**

Miami-Dade County.

SECTION I. FACILITY INFORMATION

Subsection A. Facility Description

The currently permitted Tarmac facility consists of: cement distribution rail truck loadouts and packhouse with two baggers, coal handling system, twelve cement storage silos serving mills 1 through 4, slag dryer, insuflation system, cement plant, ready mix plant, three kilns, three coolers, four finish mills with airslides, conveyors and dust collectors, clinker handling and storage system. This permit is for the construction of a dry process portland cement plant with preheater/calciner/kiln, cooler, coal mill and raw mill to replace existing kilns and coolers system, capable of producing up to 160 tons per hour, and approximately 1,240,000 tons per year (TPY) of clinker. A new finish mill will be constructed in addition to the existing mills.

Emission Units

This permit addresses the following emission units:

Emissions Unit No.	System	Emissions Units Description
ARMS No. 003	Coal Handling	Coal Mill, Pet Coke Feed Bin, Coal Feed Bin Coal Handling and Storage (Fugitive)
ARMS No. 021	Raw Mill/Pyroprocessing Unit	Pyroprocessing consist of the Preheater/Calciner, Kiln, and Raw Mill
ARMS No. 010, 011, 012, 013 and 022	Finish Mill #1 - #5	Finish Mill # 1- #5 and associated conveyors, separator, coolers.
ARMS No. 008 & 009	Clinker Handling and Storage	Clinker Silos 1,2,4,5,11,12, 18-28 and Slag Dryer
ARMS No. 014, 015 and 016	Cement Storage, Packhouse & Loadout	Cement Silos 1-12, Bulk Loadout Unit #1,#2 and #3 Packhouse

Subsection B. Regulatory Classification

The Tarmac America Pensuco Cement Plant directly emits more than 100 tons per year (TPY) of several regulated air pollutants and emits over 10 TPY of at least one hazardous air pollutant. Therefore it is classified as a "Major Source of Air Pollution or Title V Source," per the definitions in **Rule 62-204.200, F.A.C.**

This industry is listed in Table 62-212.400-1 of Chapter 62-212, F.A.C., "Major Facility Categories." Therefore, stack and fugitive emissions of over 100 TPY of carbon monoxide, volatile organic compounds, sulfur dioxide, nitrogen oxides, or particulate matter characterize the installation as a major facility per the definitions in **Rule 62-210.200, F.A.C.**

The facility is also subject to 40 CFR Subpart F, New Source Performance Standards (NSPS) for Portland Cement Plants, incorporated by reference in **Rule 62-204.800, F.A.C.** and 40 CFR 63, Subpart LLL, Portland Cement Manufacturing Plant

SIGNIFICANT DATES:

Public Notice of Intent Published: April 14, 1999
Additional Information Received: December 1, 1998
Application Received: June 30, 1998

SECTION II. FACILTY-WIDE CONDITIONS

Subsection A. Administrative

A.1 Regulating Agencies: All documents related to applications for permits to operate, reports, tests, minor modifications and notifications shall be submitted to the Air Division of the Dade County Department of Environmental Resources Management (DERM), Suite 900, 33 Southwest Second Avenue, Miami, Florida 33130-1540.

A..2 Specific and General Conditions: The owner or operator shall be subject to the specific and general conditions of this permit and the owner or operator shall be aware of, and operate under, the attached General Conditions, attached as Appendix A of this permit. General Conditions are binding and enforceable pursuant to **Chapter 403, F.S. [F.A.C. Rule 62-4.160]**

A.3 Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.

A.4 Forms and Application Procedures: The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. **[Rule 62-210.900, F.A.C.]**

A.5 Expiration: This air construction permit shall expire on October 20, 2002 **[Rule 62-210.300(1), F.A.C.].** The permittee may, for good cause, request that this construction permit be extended. Such a request shall be submitted to the Miami-Dade County Department of Environmental Resources Management, Air Facilities Section, prior to 60 days before the expiration of the permit. However, the permittee shall promptly notify the DERM of any delays in completion of the project which would affect the startup day by more than 90 days. **[Rule 62-4.090, F.A.C]**

A.6 Other Permits: This air pollution permit does not preclude the owner or operator from obtaining any other types of required permits, licenses or certifications from the DERM or other departments or agencies.

A.7 Title V Permit is Required: This permit authorizes construction and/or installation of the permitted emission units and initial operation to determine compliance with the FDEP and the DERM rules. An application for a Title V operation permit must be submitted to the Miami-Dade County Department of Environmental Resources Management, Air Facilities Section, **90 days before the expiration date of this permit, but no later than 180 days after commencing operation.** To apply for a Title V operation permit, the applicant shall submit the appropriate application form, and such additional information as the DERM may by law require. **[F.A.C. Rule 62-4.030, 62-4.050, and 62-213.420(1)(a)2.]**

A.8 Applicable Regulations: Unless otherwise indicated, the construction of a dry process Portland Cement Plant and associated equipment shall be in accordance with the capacities and specifications stated in the application. This facility is subject to all applicable provisions of Chapter 403, F.S and Florida Administrative Code Chapters 62-4; 62-103; 62-204, 62-210, 62-212, 62-213, 62-296, 62-297; and the Code of Federal Regulations Section 40, Part 60. Specifically, this facility is subject to the New Source Performance Standards (NSPS) for Portland Cement Manufacturing Plant identified by the Code of Federal Regulations Section 40 Part 60, Subpart F and National Emission Standards for Hazardous Air Pollutants for Portland Cement Plant, 40 CFR 63, Subpart LLL Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting requirements or regulations. **[Rule 62-210.300, F.A.C.]**

A.9 Chapter 24-Code of Metropolitan Dade County. This facility is subject to all applicable requirements
of this Chapter.

Subsection B. Emission Limiting Standards

B.1 General Visible Emissions Standard: **[Rule 62-296.320 (4)(b)1 & 4. F.A.C.]** Unless otherwise specified by rule or permit, no person shall cause, let, permit, suffer or allow to be discharged into the atmosphere any air pollutants from new or existing emissions units, the opacity of which is equal to:

(1) Visible emissions from PM sources shall not exceed 20% opacity.

B2 Unconfined Emissions of Particulate Matter **[Rule 62-296.320(4)(c)2, F.A.C.]**

(1) The owner or operators shall not cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any source whatsoever, including, but not limited to, vehicular movement, transportation of materials, construction, alteration, demolition or wrecking, or industrially related activities such as loading, unloading, storing or handling, without taking reasonable precautions to prevent such emission.

(1) Any permit issued to a facility with emissions of unconfined particulate matter shall specify the reasonable precautions to be taken by that facility to control the emissions of unconfined particulate matter.

(1) Reasonable precautions may include the following:

1. Paving and maintenance of roads, parking areas and yards.
2. Application of water or chemicals to control emissions from suc as demolition of buildings, grading roads, construction, and land clearing.
3. Application of asphalt, water, oil, chemicals or other dust suppre unpaved roads, yards, open stock piles and similar activities.
4. Removal of particulate matter from roads and other paved areas control of the owner or operator of the facility to prevent reentrainment, and from buildings or work areas to prevent particulate from becoming airborne.
5. Landscaping or planting of vegetation.
6. Use of hoods, fans, filters, and similar equipment to contain, capt vent particulate matter.
7. Confining abrasive blasting where possible.

(1) Enclosure or covering of conveyor systems.

In determining what constitutes reasonable precautions for a particular facility, the Department shall consider the cost of the control technique or work practice, the environmental impacts of the technique or practice, and the degree of reduction of emissions expected from a particular technique or practice.

NOTE: Facilities that cause frequent, valid complaints may be required by the DERM, Air Facilities Section to take these or other reasonable precautions. In determining what constitutes reasonable precautions for a particular source, the Department shall consider the cost of the control technique or work practice, the environmental impacts of the technique or practice, and the degree of reduction of emissions expected from a particular technique or practice.

B.3 General Pollutant Emission Limiting Standards:

(1) No person shall store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emissions control devices or systems deemed necessary and ordered by the Department. **[Rule 62-296.320 (1)(a), F.A.C.]**

(b) No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor.

NOTE: An objectionable odor is defined as any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance. **[Rule 62-296.320 (2), F.A.C.]**

Subsection C. Operation and Maintenance

C.1 Changes/Modifications: The owner or operator shall submit to the DERM, Air Facilities Section, for review and obtain approval for any changes in, or modifications to: the method of operation; process or pollution control equipment; increase in hours of operation; equipment capacities; or any change which would result in an increase in potential/actual emissions. Depending on the size and scope of the modification, it may be necessary to submit an application for, and obtain an air construction permit prior to making the desired change. **[Rule 62-4.030, 62-210.300 and 62-4.070(3), F.A.C.]**

C.2 Plant Operation - Problems: If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by hazard of fire, wind or by other cause, the owner or operator shall notify the DERM, Air Facilities Section as soon as possible, but at least within (1) working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; the steps being taken to correct the problem and prevent future recurrence; and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with the conditions of this permit and the regulations. **[Rule 62-4.130, F.A.C.]**

C.3 Circumvention: The owner or operator shall not circumvent any air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. **[Rules 62-210.650, F.A.C.]**

C.4 Excess Emissions Requirements **[Rule 62-210.700, F.A.C.]**

(a) Excess emissions resulting from start-up, shutdown or malfunction of these emissions units shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized, but in no case exceed two hours in any 24 hour period unless specifically authorized by the DERM, Air Facilities Section for longer duration. **[Rule 62-210.700(1), F.A.C.]**

(b) Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during start-up, shutdown, or malfunction shall be prohibited. **[Rule 62-210.700(4), F.A.C.]**

(1) In case of excess emissions resulting from malfunctions, the owner or operator shall notify the Air Facilities Section of the DERM within one (1) working day of: the nature, extent, and duration of the excess emissions; the cause of the problem; and the corrective actions being taken to prevent recurrence. **[Rule 62-210.700(6), F.A.C.]**

Subsection D. Monitoring of Operations

D.1 Determination of Process Variables:

(a) The permittee shall install, operate, and maintain equipment and/or instruments necessary to determine process variables, such as process weight input or heat input, when such data is needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards. **[Rule 62-297.310 (5), F.A.C.]**

(b) Equipment and/or instruments used to directly or indirectly determine such process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value. **[Rule 62-297.310(5), F.A.C]**

Subsection E. Test Requirements

E.1 Test Performance Within 60 days after achieving the maximum production rate at which this facility will be operated, but not later than 180 days after initial startup up and annually thereafter, (except for VOC), the owner or operator shall simultaneously conduct performance test(s) for PM/PM_{10}, NO_x, SO_2 , CO, VE and VOC (initial) pursuant to 40 CFR 60.8, Performance Tests, Rule 62-296.310 F.A.C., 40 CFR 60, Appendix A and 40 CFR 51,Appendix M. No other test method shall be used unless approval from the Department has been received in writing. Unless otherwise stated in the applicable emission limiting standard rule, testing of emissions shall be conducted with the emission unit(s) operating at permitted capacity pursuant to Rule 62-297.310(2). F.A.C. **[Rules 62-204.800, 62-297.310, 62-297.400, 62-297.401, F.A.C.]**

E.2 Test Procedures and Test Reports shall meet all applicable requirements of the Florida Administrative Code Chapter 62-297. **[Rule 62-297.310 (4), F.A.C.]**

E.3 Test Notification: The owner or operator shall notify the DERM, Air Facilities Section in writing at least (30) days (initial) and (15) days (annual) prior to conducting each scheduled compliance test. The notification shall include the test date, the expected test time, the facility contact person for the test, and the person or company conducting the test. **[Rule 62-297.310 and 40 CFR 60.8, F.A.C.]**

E.4 Special Compliance Tests: When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in Rule 62-204 through 62-297, F.A.C. or in a permit issued pursuant to those rules is being violated, it shall require the owner or operator of the facility to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions units and to provide a report on the results of said tests to the DERM., Air Facilities Section. **[Rule 62-297.310(7)(b), F.A.C.]**

E.5 Stack Testing Facilities: The owner or operator shall install stack testing facilities in accordance with **Rule 62-297.310(6), F.A.C.**

E.6 Exceptions and Approval of Alternate Procedures and Requirements: An Alternate Sampling Procedure (ASP) may be requested from the Bureau of Monitoring and Mobile Sources of the Florida Department of Environmental Protection in accordance with the procedures specified in **Rule 62-297.620, F.A.C.**

Subsection F. Reports and Records

F.1 Duration: All reports and records required by this permit shall be kept for at least (5) years from the date the information was recorded. **[62-4.160(14)(b), F.A.C.]**

F.2 Emission Compliance Stack Test Reports:

(a) A *test report* indicating the results of the required compliance tests shall be filed with the DERM, Air Facilities Section as soon as practical, but no later than 45 days after the last sampling run is completed. **[Rule 62-297.310, F.A.C.]**

(1) The *test report* shall provide sufficient detail on the tested emission unit and the procedures used to allow the Department to determine if the test was properly conducted and if the test results were properly computed. At a minimum, the test report shall provide the applicable information listed in **Rule 62-297.310 (8), F.A.C.**

F.3 Excess Emissions Report: If excess emissions occur, the owner or operator shall notify the Air Facilities Section of the DERM, within (1) working day of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Department may request a written summary report of the incident. Pursuant to the New Source Performance Standards, excess emissions shall also be reported in accordance with 40 CFR 60.7. **[Rules 62-4.130 and 62-210.700(6), F.A.C.]**

F.4 Annual Operating Report for Air Pollutant Emitting Facility: Before March 1st of each year, the owner or operator shall submit to the Department this required report [DEP Form No. 62-210.900(5)], which summarizes operations for the previous calendar year. **[Rule 62-210.370(3), F.A.C.]**

F.5 This facility shall maintain a central file containing all measurements, records, and other data that are required to be collected pursuant to the various specific conditions of this permit. Operators shall keep a daily Operation and Maintenance (O&M) log to include, at a minimum, the following information:

(1) Calibration logs for all emission measuring instruments.

(2) Maintenance/repair logs for any work performed on equipment or emission measuring instrument which is subject to this permit.

(1) All measurements, records, and any other data required to be maintained by Tarmac shall be retained for at least five (5) years following the data on which such measurements, records, or data are recorded. These data shall be made available to the DERM or the FDEP staff upon request.

Subsection G. Other Requirements

G.1 Used Oil and Grease: Used oil and grease burned at this facility shall not be a hazardous waste as defined by 40 CFR Part 261.3 or Rule 62-730.030, F.A.C. It shall not include fuels or blended fuels consisting in whole or in part of hazardous waste or which include mixture of any solid waste generated from the treatment, storage, or disposal of hazardous waste. These fuels shall be burned in compliance with Section 403.769(3), Florida Statutes.

G.2 Other Regulations: The owner or operator shall comply with applicable provisions of Rule 62-710, Used oil Management and 40 CFR Parts 279, Standards for the Management of Used Oil.

G.3 **No Hazardous wastes or hazardous materials shall be stored, collected, handled or burned in the new pyroprocessing system.**

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SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

Subsection A. Common Conditions: 40 CFR 60 New Source performance standards

Emission Units

This section addresses the following emission units.

Emissions Unit No.	System	Emissions Units Description	
ARMS No. 003	Coal Handling	Coal Mill, Pet Coke Feed Bin, Coal Feed Bin	(3
ARMS No. 021	Raw Mill/Pyroprocessing Unit	Pyroprocessing consist of the Preheater/Calciner, Kiln, and Raw Mill	(3
ARMS No. 010, 011,012, 013 and 022	Finish Mill #1 - #5	Finish Mill # 1- #5 and associated conveyors, separators coolers.	(3
ARMS No. 008 & 009	Clinker Handling and Storage	Clinker Silos 1,2,4,5,11,12, 18-28 and Slag Dryer	(3
ARMS No. 014, 015 and 016	Cement Storage, Packhouse & Loadout	Cement Silos 1-12, Bulk Loadout Unit #1,#2 and #3 Packhouse	(3

These emission units shall comply with all applicable requirements of 40 CFR 60, General Provisions, Subpart A, adopted by reference in Rule 62-204.800(7), F.A.C..

A.1 [40 CFR 60.7, Notification and record keeping]
A.2 [40 CFR 60.8, Performance tests]
A.3 [40 CFR 60.11, Compliance with standards and maintenance requirements]
A.4 [40 CFR 60.12, Circumvention]
A.5 [40 CFR 60.13, Monitoring requirements]
A.6 [40 CFR 60.19, General notification and reporting requirements]

This cement plant shall comply with all applicable provisions of the 40 CFR 60 Subpart F, Standards of Performance for Portland Cement Plants, 40 CFR 60, Subpart Y, Standards of Performance for Coal Preparation Plants and 40 CFR 63, Subpart LLL, Portland Cement Manufacturing Plant.

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

Subsection B. Specific Conditions:

The following Specific Conditions apply to the following emission units:

Emission Unit No.	System	Emission Unit Description	
			(32)
ARMS No. 003	Coal Handling	Coal Mill, Pet Coke Feed Bin, Coal Feed Bin Coal Handling System and Storage	(32)

The existing rail delivery system for coal, consisting of a rail dump operation, temporary and active coal storage piles, and coal hopper, will be used for the new plant. Petroleum coke will be utilized as fuel, and will handled in the same matter as coal. The proposed coal mill system will consist of a Fuller coal mill, which will grind up to 23 TPH of coal, a conveyor, two feed bins, and two storage bins, one for the kiln fuel and one for the calciner fuel. The raw lump coal/petcoke is fed to the coal mill where the coal/petcoke is ground and dried by hot preheater gas. The exhaust gases from the mill exits to a baghouse dust collector. The entrained coal/petcoke dust is removed in the dust collector and the cleaned gas is vented to the atmosphere via the plant common stack. The coal/petcoke is then transferred to storage bins. From the storage bins, the fuel is pneumatically conveyed to the kiln and calciner burners.

This emission unit shall comply with all applicable provisions of the 40 CFR 60 Subpart Y New Source Performance Standards for Portland Cement Plants, Subpart F. **[Rule 62-204.800(7)(b)8., F.A.C]**

EMISSION LIMITATIONS

B.1 The maximum allowable emission rates for the coal handling system shall not exceed the limits listed in Table 1-1, Air Pollutant Standards and Terms (attached). **[Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]**

B.2 In order to minimize excess emissions during startup/shutdown/malfunction this emission units shall adhere to best operational practices. **[Rule 62-210.700, F.A.C. and 40 CFR 60.7]**

OPERATIONAL LIMITATIONS

B.3 This emission unit is allowed to operate continuously (8760 hours/year) **[Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]**

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B.4 The coal handling maximum production rate reflects coal/petroleum coke throughput and shall not exceed 176,080 TPY. **[Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]**

B.5 The coal handling maximum hourly rate reflects coal/petroleum coke shall not exceed 23 TPH average rate. **[Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]**

TEST METHODS AND COMPLIANCE PROCEDURES

B.6 Particulate and fugitive emissions from coal handling facilities shall be minimized by following the procedures listed below: **[Rule 62-296.320(4)(c), F.A.C.]**

(1) All conveyers and transfer points shall be enclosed or covered to preclude particulate emissions (except those directly associated with coal stacking/reclaiming).

(2) Coal storage piles shall be shaped, compacted and oriented to minimize wind erosion.

(1) Water sprays or chemical wetting agents and stabilizers shall be applied to storage piles, handling equipment, etc., during dry periods as necessary to all facilities to maintain an opacity of less than 20 percent at the property line for fugitive emission sources.

Subsection C. Specific Conditions:

The following Specific Conditions apply to the following emission units:

Emission Unit No.	System	Emission Unit Description
ARMS No. 021	Raw Mill/Pyroprocessing Unit	Pyroprocessing consist of the Preheater/Calciner, Kiln Cooler and Raw Mill.

(32)

The proposed raw material mill system consist of a vertical roller mill capable of grinding up to 315.6 TPH of raw feed (limestone and fly ash). The raw mill will use hot preheater and cooler gases to dry the material from a feed moisture of 12% to a moisture of less than 1%. An auxiliary air heater is provided at the raw mill to provide additional heat for drying. The maximum heat input to the heater is 88 MMBtu/hr. The raw mill is vented to cyclones and then to the main plant dust collector (baghouse) to remove entrained product. The product from the cyclones and dust collector is combined and conveyed to the storage and blending silo., while the cleaned gas is vented to the atmosphere through the plant common stack.

The proposed pyroprocessing system will be capable of producing up to 160 TPH, and 1,240,000 TPY of clinker. The raw feed is introduced to the five-stage preheater/calciner from the raw mill. The feed is preheated in the first four stages using hot gases from the calciner/kiln. The fifth stage is the calciner, where the fuel is burned to achieve approximately 90% of the total material calcination. The maximum heat input to calciner is 252 MMBtu/Hr. The calcinated feed then enters the kiln, where the remaining calcination takes place. Maximum heat input to the kiln is 228 MMBtu/hr. The calciner exit gas is recycled to the raw and coal mills. The rotary kiln delivers hot clinker at approximately 1450 degrees Celsius to the cooler.

The proposed cooler utilizes fans to force ambient air through the hot clinker bed to cool the hot clinker to 65 degrees Celsius above the ambient temperature. Combustion air required in the kiln and calciner is obtained from the cooler exhaust gases, while the rest of the gas is passed through cyclones to remove entrained clinker dust before recycle of the gases to the raw mill.

Control equipment for the raw mill/preheater/calciner/kiln/cooler:

The particulate emissions will be controlled by a reverse-jet fabric filter or approved equivalent. The design gas volume is 359,000 acfm at 181 °F while the raw mill is operating and 446,200 acfm at 500 °F while raw mill is down. The filter area has not been determined, and at design gas volume, the air-to-cloth ratio will be approximately 2.0 acfm/ft^2.

This emission unit shall comply with all applicable provisions of the 40 CFR 63 New Source Performance Standards for Portland Cement Plants, Subpart LLL.

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

EMISSION LIMITATIONS

C.1 The maximum allowable emission rates for the kiln, clinker cooler, raw mill, and preheater/precalciner shall not exceed the limits listed in Table 1-2, Air Pollutant Standards and Terms (attached). **[Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]**

C.2 In order to minimize excess emissions during startup/shutdown/malfunction this emission units shall adhere to best operational practices. **[Rule 62-210.700, F.A.C. and 40 CFR 60.7]**

C.3 The emission standard for sulfur dioxide is 0.8 lb/MMBtu for liquid fuel and 1.2 lb/MMBtu for solid fuel based on a 24 hour average. **[Miami-Dade County, Chapter 24-17(2)(b)(i)]**

OPERATIONAL LIMITATIONS

C.4 This emission unit is allowed to operate continuously (8760 hours/year) **[Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]**

C.5 The kiln clinker production rate shall not exceed 160 tons per hour (TPH). **[Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]**

C.6 **Fuel Combustion**

(1) Fuels fired in the pyroprocessing system (kiln and precalciner) shall not exceed a total heat input rate of 568 MMBtu/hr and shall consist of: bituminous coal, natural gas, petroleum coke, No. 2 fuel oil, on-specification and off-specification used oil.

Use of fuels other than those listed above is prohibited.

COAL AND PETROLEUM COKE

(2) The coal usage rate shall not exceed 23 TPH based on a 24-hour average. The petroleum coke usage rate shall not exceed 20 TPH on a 24 hour basis.

USED OIL

(3) The constituents and properties of the *on-spec used oil* shall comply with the following allowable concentration levels, as stipulated and defined in 40 CFR 279.10 (July 1, 1996 version), which is adopted by reference in **Rule 62-730.181, F.A.C.**

Constituent/Property	**Allowable Concentration**	(32)
Cadmium	2 ppm maximum	(32)
Arsenic	5 ppm maximum	(32)
Chromium	10 ppm maximum	(32)
Lead	100 ppm maximum	(32)
Total Halogens	1000 ppm maximum	(32)
Flash Point	140°F minimum	(32)
Polychlorinated Byphenyls (PCBs)	Less than 2 ppm	(32)

(4) *On-specification used oil* burned at this facility shall not be a hazardous waste as defined by Rule 62-730.030, F.A.C., or 40 CFR Part 261 (July 1, 1996 version). It shall not include fuels or blended fuels consisting in whole or in part of hazardous waste or which include mixture of any solid waste generated from the treatment, storage, or disposal of hazardous waste. The on-spec used oil shall be burned in compliance with Section 403.769(3), F.S.

(5) *Off-specification used oil* burned at this facility shall not be a hazardous waste as defined by Rule 62-730.030, F.A.C., or 40 CFR Part 261 (July 1, 1996 version). It shall not include fuels or blended fuels consisting in whole or in part of hazardous waste or which include mixture of any solid waste generated from the treatment, storage, or disposal of hazardous waste. The off-spec used oil shall be burned in compliance with Section 403.769(3), F.S.

(6) Any *on and off-specification used oil samples as required by Specific Condition No. C.6(3),(4) and (5) and C.23 shall be analyzed by EPA Recommended Analytical Procedures for Used Oil for the following constituent/property, associated unit, and using the test methods indicated:*

Constituent/Property	Units	Test Methods	
Cadmium	ppm	EPA SW-846(6010)	(32)
Arsenic	ppm	EPA SW-846(6010)	(32)
Chromium	ppm	EPA SW-846(6010)	(32)
Lead	ppm	EPA SW-846(6010)	(32)
Total Halogens	ppm	EPA SW-846(9252)	(32)
Sulfur	percent	ASTM D129 or ASTM D1552	(32)
Flash Point	degree F	EPA SW-846(1010)	(32)
Heat of Combustion	Btu/gal	ASTM D240	(32)
Density	lbs/gal		(32)
Polychlorinated Byphenyls (PCB's)	ppm	EPA SW-846(0010) and EPA 680	(32)
Ash			(32)

(32)

NOTE: Other test methods may be used only after receiving written prior approval from the Department.

C.7 Any other operating parameters (including control equipment operating parameters) established during compliance testing and/or inspection that will confirm the proper operation of each emission unit shall be included in the operating permit **[Rule 62-297.310, F.A.C. and 62-4.070(3), F.A.C.]**

MONITORING OF OPERATIONS

C.8 The owner or operator shall record the daily production and the preheater-kiln system feed rate. The permittee may establish a relationship between material feed rates and production rates of clinker if material feed rates are measured more accurately than clinker production rates and the relationship is accurate within 10%. **[Rule 62-204.800(7)(b)9., F.A.C., 40 CFR 60.63(a)]**

C.9 As required by 40 CFR 60.63(b), the owner or operator shall install, calibrate, maintain, and operate in accordance with 40 CFR 60.13 a *continuous opacity monitoring system* to measure the opacity of emissions from the cement kiln and clinker cooler control device stack. **[Rule 62-204.800(7)(b)9., F.A.C.]**

CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS)

C.10 Continuous process monitors shall be installed for CO or O_2 to insure proper combustion practices and for use in determining plant operating parameters to optimize emissions of CO, NO_X, and SO_2. **[Rule 62-4.070(3) F.A.C.]**

C.11 A continuous emissions monitoring system (CEMS) shall be installed, calibrated, maintained, operated, and used to determine compliance with the emissions limits for NO_X and SO_2 in Table 1-2. CEMS shall be installed and certified, before the initial performance test, and operated in compliance with 40 CFR 60, Appendix F, Quality Assurance Procedures (1996 version) or other Department-approved QA plan; 40 CFR 60, Appendix B, Performance Specification 1, 2, and 3 (1996 version). **[Rules 62-4.070 (3) and 62-204.800, F.A.C.]**

C.12 The CEMS shall calculate and record emission rates in units of pounds of NO_X and SO_2 per hour.

Every day, the 24-hour average NO_X and SO_2 emission rate for the previous day shall be calculated. Emissions shall be calculated in units of pounds per hour and pounds per ton of clinker. Daily averages are to be calculated as the arithmetic mean of each monitored operating hour. A monitored operating hour is each hour in which fuel is fired in the unit and at least two emission measurements are recorded at least 15 minutes apart. Data taken during periods of startup, or when fuel is not fired to the unit, or when the CEMS is not calibrated shall be excluded from the daily average.

To the extent the monitoring system is available to record emissions data, the CEMS shall be operated and shall record data at all operating hours when fuel is fired in the unit, including periods of startup, shutdown, load change, continuous operation and malfunction.

Opacity monitor downtimes and excess opacity emissions, which include startup emissions, shall be reported on a quarterly basis using the SUMMARY REPORT in 40 CFR 60.7. A detailed report of the cause, duration, magnitude, and corrective action taken or preventative measures adopted for each excess emission occurrence, and a listing of monitor downtime occurrences shall accompany the SUMMARY REPORT when the total duration of excess emissions is 1% or greater or if the monitoring system downtime is 5% or greater of the total monitored operating hours.

C.13 The monitoring device shall meet the applicable requirements of Chapter 62-204, F.A.C., 40 CFR 60, Appendix F, and 40 CFR 60.13, including certification of each device in accordance with 40 CFR 60, Appendix B, Performance Specifications and 40 CFR 60.7(a)(5) Notification Requirements. Data on monitoring equipment specifications, manufacturer, type calibration and maintenance requirements, and the proposed location of each monitor shall be provided to ***DERM*** for review at least 45 days prior to replacement of a any CEMS. **[Rule 62-4.070 (3) F.A.C and Rule 62-204.800, F.A.C.]**

TEST METHODS AND PROCEDURES

C.14 For emissions other than NO_X and SO_2, compliance with the allowable emission limiting standards listed in Table 1-2 shall be determined by using the following reference methods as described in 40 CFR 60, Appendix A (1996, version) and 40 CFR 61 Appendix B 1996, version) adopted by reference in Chapter 62-204, F.A.C.

Method 5 Determination of Particulate Matter Emissions from Stationary Sources.
Method 7 or 7 e Determination of Nitrogen Oxide Emissions from Stationary Sources
Method 8 Determination of Sulfuric Acid Mist from Stationary Sources.
Method 9 Visual Determination of the Opacity of Emissions from Stationary Sources.
Method 10 Determination of Carbon Monoxide Emissions from Stationary Sources.
Method 23 Determination of Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans from Stationary Sources
Method 25 or 25A Determination of Volatile Organic Compound Emissions from Stationary Sources.
Method 29 Determination of Lead, Beryllium, and Mercury from Stationary Sources.

Note: PM10 will be tested pursuant to 40 CFR 51, Appendix M

Emission testing shall be performed at the kiln/cooler main stack during a period when the kiln precalciner, cooler, raw mill and preheater are operating simultaneously and under normal operating conditions. EPA-reference methods for sampling pollutants shall be as specified in 40 CFR 60, Appendix A.

These emission units shall comply with all applicable requirements of Rule 62-297.310, F.A.C. General Test Requirements and 40 CFR 60.8. Performance Tests. Table 2-1, Compliance Requirements (attached) also lists the EPA methods.

Testing of emissions shall be conducted with the emission unit operating at capacity. The permittee shall provide the DERM with a *protocol* that will outline the different fuel scenarios (% of total heat input) that this unit will be burning. Tarmac shall obtain the test data necessary to determine whether this kiln is capable of accommodating the burning of coal or petroleum coke and all of the other supplemental fuels specified on Specific Condition C.6. Fuel Combustion. The fuel scenarios tested shall represent the actual combustion percentage (% of total heat input) that is going to be maintained while burning supplemental fuels during normal operation. The frequency of testing shall be determined by the DERM.

Annual test are required for NOx and SO_2.

Permitted capacity is defined as 90-100% of the maximum operating rate allowed by the permit. If it is impracticable to test at permitted capacity, then the unit may be tested at less than 90% of the maximum operating rate allowed by the permit; in this case, subsequent source operation is limited to 110% of the test load until a new test is conducted. Once the unit is so limited, then operation at higher capacities is allowed for no more than fifteen consecutive days for the purpose of additional compliance testing to regain the permitted capacity in the permit. **[Rules 62-204.800, 62-297.310, 62-297.400, 62-297.401, F.A.C., and 40 CFR 60 Appendix A and 40 CFR 60.8, Subpart A].**

C.15 The visible emissions test shall be conducted by a certified observer and should be 180 minutes in duration. The test observation period shall include the period during which the highest opacity emissions can reasonably be expected to occur **[40 CFR 60.11 and Rule 62-297.310 (7), F.A.C.].**

C.16 Compliance with the particulate matter standard contained in Table 1-2 (attached) shall be determined using EPA Method 5. The emission rate (E) of particulate matter shall be computed for each run using the following equation: **[FR volume 64 # 113 63.1349, NESHAP Portland Cement Plant, Subpart LLL)**

$E = (c_s \times Q_{sd})/(P)$

where:

E = emission rate of particulate matter, kg/Mg of kiln feed.

c_s = concentration of particulate matter, kg/dscm.

Q_{sd} = volumetric flow rate of effluent gas, dscm/hr.

P = total kiln feed (dry basis) rate, Mg/hr.

C.17 The sampling time and sample volume for each run shall be at least 60 minutes and 0.85 dscm (30.0 dscf) for the kiln and at least 60 minutes and 1.15 dscm (40.6 dscf) for the clinker cooler. **[Rules 62-204.800 and 62-297.401, F.A.C. 40 CFR 60.64(b)(1) - (3)].**

C.18 Suitable methods shall be used to determine the kiln feed rate (P), for each run. Material balances over the production system shall be used to confirm the feed rate **[40 CFR 60.64(3)].**

Operating Procedures

C.19 Operating procedures shall include good combustion practices and proper training of all operators and supervisors. The good combustion practices shall meet the guidelines and procedures as established
by the equipment manufacturers. All operators (including supervisors) of air pollution control devices shall be properly trained in plant specific equipment. **[Rule 62-4.070(3), F.A.C.].**

RECORDKEEPING AND REPORTING REQUIREMENTS

C.20 The owner or operator shall submit reports of excess emissions based upon data from the continuous opacity monitoring system. Periods of excess emissions that shall be reported are defined as all 6 minute periods during which the average opacity exceeds that allowed in Table 1-2. The content of these reports must comply with the requirements in 40 CFR 60.7(d). Such reports shall be submitted quarterly pursuant to 40 CFR 60.7 (c). **[Rule 62-204.800, F.A.C.; 40 CFR 60.63(d), 60.65(a) and 40 CFR 60.7].**

C.21 In order to document compliance with Specific Condition No. C6(2) **Coal and Petroleum**

coke, a fuel usage control system shall be established to assure that the coal and petroleum coke usage rates does not exceed 23 TPH and 20 TPH based on a 24-hour average respectively.

C.22 In order to document compliance with Specific Conditions No. C.6(3) through C.6(6) **Used Oils** , the following requirements shall be adhered to as a minimum:

(1) Recordkeeping when burning used oil shall be in accordance with applicable provisions of 40 CFR Part 279, Subpart B and Subpart G (July 1, 1996 version), Standards For The Management of Used Oil and Chapter 62-710, F.A.C.

(2) The following shall be recorded on the delivery receipt:

(1) the use of tamper proof seals on the delivery receipt
(2) the volume of fuel delivery
(3) a cross reference to the analysis which establishes that the used oil meets EPA used oil fuel specifications
(1) the results of the screening analysis
(2) the name of the person performing the test
(3) the specific test kit used
(4) the amount of oil sampled
(5) the amount and name of the solution used to dilute the oil

(3) The following procedures shall be implemented:

(1) On and off spec used oil that is delivered without a delivery receipt containing all the above information, or which is not properly sealed, or for which the delivery receipt does not contain all the necessary information, is not to be accepted and the DERM is to be notified by phone immediately (with written confirmation to follow), if such a delivery is attempted.

(1) Verification by signature on the delivery receipt shall be provided by plant personnel that the delivery truck arrived on site with all seals intact. As delivered samples of all used oil fuel received shall be accumulated through each quarter for each supplier.

(1) The results of each sample analysis (on the laboratory's letterhead) shall be submitted to the DERM within 30 days after a sample is taken and analyzed.

(1) The dates and quantities of both on and off-spec purchased used oil transferred to the facility storage tank shall be reported quarterly (i.e., Jan-Mar, April-June, July-Sept, and Oct-Dec). The report is due in the month following the ending quarter.

(1) The unused portion of the used oil sample shall be retained for six months following the submittal of the analyses in case further testing is required.

C.23 All measurements, records, and other data required to be reported by the permittee shall be submitted to the DERM on a quarterly basis with the start of commercial operation in accordance with 40 CFR 60.7. All measurements, records and other data required to be maintained by the permittee shall be retained for at least 5 years following the date on which such measurements, records, or data are recorded. The data shall be available to the DERM or FDEP staff as requested. **[40 CFR 60.7]**

C.24 The owner or operator shall submit reports of the malfunction information required to be recorded by 40 CFR 60.7(b). These reports shall include the frequency, duration, and cause of any incident resulting in de-energization of any device controlling kiln emissions or in the venting of emissions directly to the atmosphere. **[Rule 62-204.800, F.A.C., 40 CFR 60.65 (c)]**

C.25 This facility shall maintain a central file containing all measurements, records, and other data that are required to be collected pursuant to the various specific conditions of this permit. Operators shall keep a daily Operation and Maintenance log to include, at a minimum, the following information:

(1) The data collected from in-stack monitoring instruments

(2) The records on daily feed rates and clinker production rate

(3) The amount and type of fuel burned

(1) Calibration logs for all instruments

(2) Maintenance/repair logs for any work performed on equipment or instrument which is subject to this permit;

(3) The following fuel records shall be maintained for a minimum of five (5) years and made available upon request:

<u>(1)</u> <u>Coal</u>

(1) The coal usage rate in tons per day;

(2) The average sulfur content and heating value (Btu/lb) of each coal shipment based upon analysis of a sample representative of the shipment (trainload).

<u>(1)</u> <u>Liquid Fuels</u>

(1) The fuel type (number) and usage rate in gal per day;

(1) Records of the sulfur content and heating value (Btu/gal) of each oil shipment based upon analysis of a sample representative of the shipment.

(1) <u>Natural Gas</u>

(1) The fuel usage rate in cubic feet per day;

(2) The average heating value (Btu/ft^3) provided by the gas supplier.

All measurements, records, and any other data required to be maintained by Tarmac shall be retained for at least five (5) years following the date on which such measurements, records, or data are recorded. These data shall be made available to the FDEP and to the DERM upon request. DERM shall be notified in writing at least 15 days prior to the testing (auditing) of any emission measurement instrument required to be operated by these specific conditions in order to allow witnessing by authorized personnel. **[Rule 62-4.070(3), F.A.C.]**

SUBSECTION D. SPECIFIC CONDITIONS

The following Specific Conditions apply to the following emission units:

Emissions Unit No.	System	Emissions Units Description
ARMS No. 010, 011, 012, 13 and 022	Finish Mill #1 - #5	Finish Mill # 1- #5 and associated conveyors, separators, coolers.
ARMS No. 008 & 009	Clinker Handling and Storage	Clinker Silos 1,2,4,5,11,12, 18-28 and Slag Dryer
ARMS No. 014, 015 and 016	Cement Storage, Packhouse & Loadout	Cement Silos 1-12, Bulk Loadout Unit #1,#2 and #3 Packhouse

EMISSION LIMITATIONS

D.1 The permittee shall not cause or allow to be discharged into the atmosphere visible emissions or particulate emissions that exceed the limits given in Table 1-1. **[Rule 62-210.200., F.A.C. (Definitions - Potential Emissions)]**

D.2 In order to minimize excess emissions during startup/shutdown/malfunction these emission units shall adhere to best operational practices. **[Rule 62-210.700., F.A.C. and 40 CFR 60.7]**

OPERATIONAL LIMITATIONS

D.3 This cement plant and associated equipment is allowed to operate continuously (8760 hours/year) **[Rule 62-210.200., F.A.C. (Definitions - Potential Emissions)].**

TEST METHODS AND COMPLIANCE PROCEDURES

D.4 The maximum permitted allowable particulate emission rate (lb/hr and gr/dscf) from these emissions units are as stated in Table 1-1. The permittee may demonstrate compliance by adhering to an opacity limit of 5% in lieu of particulate stack tests. **[Rule 62-297.620(4), F.A.C.]**

In accordance with Rule 62-297.620(4), minor particulate sources equipped with baghouses with visible emissions that are greater than or equal to 5 percent opacity may require the permittee to perform a stack test in accordance with approved methods to verify compliance with the lb/hr emission limit contained in Table 1-1.

D.5 Compliance with the allowable emission limiting standards listed in Table 1-1 shall be determined by using the following reference methods as described in 40 CFR 60, Appendix A (1996, version) adopted by reference in Rule 62-204.800(7), F.A.C.

Method 9 Visual Determination of the Opacity of Emissions from Stationary Sources (I) and (A).

Testing of emissions must be accomplished within 90 to 100% of the permitted capacity **[Rule 62-297.310(2), F.A.C]**. Failure to submit the input rates and actual operating conditions may invalidate the test **[Rule 62-297.310(2), F.A.C.]**.

These emission units shall comply with all applicable requirements of Rule 62-297.310 General Test Requirements and 40 CFR 60.8, Subpart A, Performance Tests.

D.6 The visible emissions test, EPA Method 9, shall be conducted by a certified observer and should be 60 minutes in duration. The test observation period shall include the period during which the highest opacity emissions can reasonably be expected to occur.**[Rule 62-297.310, F.A.C.]**

D.7 Should the DERM have reason to believe the particulate matter standards set forth in Table 1-1 are not being met, the DERM may require that compliance with the particulate emission standards be demonstrated by testing the subject emission unit. **[Rule 62-297.620(4) and 62-297.310, F.A.C.]**

D.8 Operating procedures shall include good operating practices and proper training of all operators and supervisors. The good operating practices shall meet the guidelines and procedures as established by the equipment manufacturers. All operators (including supervisors) of air pollution control devices shall be properly trained in plant specific equipment. **[Rule 62-4.070(3), F.A.C.]**.

Executed in Miami-Dade County, Florida.

DEPARTMENT OF ENVIRONMENTAL
RESOURCES MANAGEMENT

Mallika Muthiah, P.E. Date
Air Facilities Section
Air Quality Management Division

MM/mk

attachment

Tarmac America, Inc.
Permit Number: 0250020-008-AC

cc: David Buff, P.E., Golder Associates, Inc.
Isadore Goldman, P.E., Florida Department of Environment, West Palm Beach
Bruce Mitchell, Florida Department of Environmental Protection, Tallahassee

FILING AND ACKNOWLEDGMENT: FILED, on this date, pursuant to § 120.52(7), F.S., with the designated DERM Clerk, receipt of which is hereby acknowledged.

____________________	____________________
Clerk	Date

RFC-822-headers:
Received: from epic5.dep.state.fl.us ([172.20.17.30])
 by mail.epic1.dep.state.fl.us (PMDF V5.2-33 #37976)
 with ESMTP id <01JSQFSNCZYA000MLG@mail.epic1.dep.state.fl.us> for
 LINERO_A@a1.epic1.dep.state.fl.us (ORCPT rfc822;alvaro.linero@dep.state.fl.us)
 ; Tue, 8 Aug 2000 16:36:36 EDT
Received: from s0140097.metro-dade.com ([209.215.144.1])
 by mail.epic5.dep.state.fl.us (PMDF V5.2-33 #31508)
 with ESMTP id <01JSQFSNIXYG0008XB@mail.epic5.dep.state.fl.us> for
 LINERO_A@a1.epic1.dep.state.fl.us (ORCPT rfc822;alvaro.linero@dep.state.fl.us)
 ; Tue, 08 Aug 2000 16:36:38 -0400 (EDT)
Received: by msmail.metro-dade.com with Internet Mail Service (5.5.2650.21)
 id <Q2STG8R7>; Tue, 08 Aug 2000 16:38:56 -0400
X-Mailer: Internet Mail Service (5.5.2650.21)

PSD-FL-142

METRO-DADE DERM

(Department of Environmental Resources Management)
ENFORCEMENT SECTION

33 SOUTHWEST 2ND AVENUE
MIAMI, FL 33130-1540
(305) 372-6902

FAX COVER SHEET

DATE: 10/6/97 TIME: 3:30 AM/PM

TO: Al Linero DEP PH#:

FAX: 850 922-6979

FROM: Sharon Crabtree DERM FAX: 305-372-6542
PH#: 305-372-6902

RE:

Number of pages including cover sheet: 12

MESSAGE: Al FYI. This is what Tarmac Consent Agreement looks like. We are mailing it 10/7/97 to Tarmac Reps for Review, & Signature. Sharon Crabtree
P.S. I left off Exhibit A - you have that - it is their permit AC 13-169901.

a:\Karisa\forms\faxcover.doc

AGREEMENT

DADE COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES MANAGEMENT)
Complainant,)

VS.)

Tarmac Florida, Inc.)
Respondent)

THIS AGREEMENT, entered into by and between METROPOLITAN DADE COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES MANAGEMENT (hereinafter referred to as DERM), and Tarmac Florida, Inc. (hereinafter referred to as Respondent) pursuant to Section 24-5(15)(c) Metropolitan Dade County Environmental Protection Ordinance shall serve to redress alleged violations of Section 24-55 of the Code of Metropolitan Dade County at the site located at 11000 NW 121 Way, Medley, Dade County, Florida (Folio #30-2031-001-0030).

The DERM finds and RESPONDENT admits the following:

FINDINGS OF FACT

1. The DERM is an agency of Metropolitan Dade County, a political subdivision of the State of Florida which is empowered to control and prohibit pollution and protect the environment within Dade County pursuant to Article VIII, Section 6 of the Florida Constitution, the Dade County Home Rule Charter and Section 403.182 of the Florida Statutes.

2. On July 8, 1980 the United States Environmental Protection Agency (EPA) issued Final Determination PSD-F1-050 for proposed conversions of the Pennsuco kilns 1,2 and 3 to coal. Condition # 8 of the Final Determination limits NOx emissions from kiln # 2 to 118 lb/hr at the maximum operating rate or 4.73 lb/ton of clinker produced at lesser operating rates. These limiting emission rates were proposed by Respondent.

3. The conversion to coal for kiln # 2 was deferred for several years. On August 21, 1989 Respondent submitted an application to the Florida Department of Environmental Regulation (FDER, now known as the Florida Department of Environmental Protection, DEP) to construct/operate an air pollution source. In this application Respondent requested, a maximum allowable NOx emission rate of 169.25 lbs/hr for kiln #2.

4. On February 25, 1991 DEP issued Construction Permit No. AC 13-169901 (exhibit A, attached) to convert kiln #2 to coal firing. Specific Condition # 5 limited NOx emissions to 113.8 lbs/hr. Specific Condition # 12 permitted up to a one year compliance testing period. As stipulated in Condition # 12, during this year-long testing and evaluation period, Respondent was to make reasonable efforts to limit air emissions and DEP would not initiate enforcement proceedings.

5. On April 24, 1994 Respondent initiated the bi-monthly compliance testing for a one year period ending April 1995. NOx emissions exceeded permittable levels at every testing event through to the present. However, through NOx emission testing data, Respondent has demonstrated the ability to limit NOx emissions to below 200 lbs/hr using the existing system.

6. On May 28, 1996 Respondent's consulting firm submitted a plan for testing NOx emission levels using a modified coal burner nozzle installed on kiln # 2. Testing was to commence by early June 1996 and test data was to be submitted to DEP by early August 1996.

7. On October 16, 1996 DEP issued a letter to Respondent stating that DEP had not received NOx emissions testing data as stated in the May 28, 1996 letter. DEP requested that Tarmac provide immediate assessment of the NOx emission using the modified burner nozzle. Resolution of the NOx emission violation was to be achieved by January 1, 1997.

8. Resolution of the elevated NOx emissions was not achieved and pursuant to the FDEP/DERM air permitting delegation agreement, on April 14, 1997, DEP referred the continuing NOx emissions violation at the subject site to DERM for follow-up enforcement action.

9. On June 17, 1997 DERM issued a Notice of Violation (NOV) and

Orders for Corrective Action and Settlement for exceedances of permitted NOx emission rates. Said NOV ordered Respondent to submit a written plan detailing proposed corrective actions to ensure that the allowable limits for emissions are not exceeded.

10. The Respondent hereby consents to the terms of this Agreement without either admitting or denying the allegations made by DERM in the Notice of Violation and Orders for Corrective Action and Settlement; and

11. In an effort to insure continued protection of the health and safety of the public and the environment of Dade County and to insure compliance with Chapter 24, Metropolitan Dade County Environmental Protection Ordinance and to avoid time-consuming and costly litigation, the parties hereto stipulate and agree to the following, and it is ordered:

12. Upon execution of this Consent Agreement Respondent shall meet an interim NOx emission limit of 195 lbs/hr for kiln # 2. This NOx emission limit shall remain in effect until February 28, 1998 which is the expiration date of permit #AC 13-169901 or until kiln #2 is retrofitted for indirect firing or converted to an alternative fuel according to the timeframes set forth in paragraphs # 15 or # 16. Respondent shall then be required to meet Best Available Control Technology (BACT) NOx emission limitations for kiln #2 as stipulated in permit #AC 13-169901.

13. On or before December 31, 1997, Respondent shall declare in writing to DERM its method for meeting the BACT NOx emission limitations for kiln #2 as stipulated in permit #AC 13-169901.

14. Respondent shall submit complete applications for required air construction permits and/or permit modifications or renewals to the FDEP or Dade County DERM, as appropriate by January 31, 1998. Additional information requested by the appropriate agencies shall be provided by Respondent within fourteen (14) days of the date Respondent receives the request.

15. If Respondent relinquishes its authorization to burn coal in kiln # 2, the retrofitting of kiln # 2 to use an alternative fuel shall be completed within 90 days of receiving the construction permit to modify, referenced in paragraph #14, above and then Respondent shall adhere to NOx emissions limitations as set forth in the permit.

16. Alternatively to paragraph #15, if Kiln # 2 is converted to indirect firing, construction shall be completed within 12 months after receiving the construction permit to modify referenced in paragraph #14, above and then Respondent shall meet the same BACT NOx emission limitations as set forth in construction permit No. AC 13-169901.

17. Alternatively to paragraphs # 15 and # 16, if kiln # 2 is converted to dry process technology, construction shall be completed within 36 months after the required permits have been issued, and then Respondent shall meet the NOx emissions limitation of 113.8 lbs/hr.

18. Respondent shall pay to FDEP the Title V permitting fee for kiln #2 NOx emissions based on the interim rate of 195 lbs/hr. This fee shall be effective upon execution of this Consent Agreement and shall remain in effect until Respondent is in compliance with kiln #2 permitted NOx emissions limitations.

SAFETY PRECAUTIONS

19. The Respondent shall maintain the subject site, during the pendancy of this Agreement, in a manner which shall not pose a hazard or threat to the public at large or the environment and shall not cause a nuisance or sanitary nuisance as set forth in Chapter 24, Metropolitan Dade County Environmental Protection Ordinance.

VIOLATION OF REQUIREMENTS

20. This Agreement constitutes a lawful order of the Director of the Department of Environmental Resources Management and is enforceable in a civil or criminal court of competent jurisdiction pursuant to Chapter 24, Metropolitan Dade County Environmental Protection Ordinance. Violation of any requirement of the Agreement may result in enforcement action by DERM. Each violation of any of the terms and conditions of this Agreement by the Respondent shall constitute a separate offense.

SETTLEMENT COSTS

21. The Respondent hereby certifies that he has the financial ability to comply with the terms and conditions stipulated herein and to comply with the payments specified in this Agreement.

22. DERM has determined, that due to the costs incurred to bring the subject facility into compliance, a settlement of $196,189.00 is appropriate. The Respondent shall within thirty (30) days of the effective date of this Agreement, submit to DERM a check in the amount of $196,189.00, for full settlement payment. The Settlement shall be made payable to DERM and sent to the Department of Environmental Resources Management, c/o

Sharon Crabtree, Suite 1100, 33 SW 2nd Avenue, Miami, Florida, 33130.

23. In the event Respondent fails to submit, modify, implement, obtain, provide, operate, comply and or complete those items listed in paragraphs 12,13,14,15,16, and 17 herein, the Respondent shall pay DERM a civil penalty of one hundred dollars ($100.00) per day for each day of non-compliance and the Respondent shall be subject to enforcement action in a civil or criminal court of competent jurisdiction for such failure pursuant to the provisions set forth in Chapter 24, Metropolitan Dade County Environmental Protection Ordinance. Said payment shall be made by Respondent to DERM within ten (10) days of receipt of written notification and shall be sent to the Department of Environmental Resources Management, c/o Sharon Crabtree, at 33 S.W. 2nd Avenue, Miami, Florida 33130.

GENERAL PROVISIONS

24. Respondent shall allow authorized representatives of DERM access to the property at reasonable times for purposes of determining compliance with this Consent Agreement and the rules and regulations set forth in Chapter 24, Metropolitan Dade County Environmental Protection Ordinance

25. The DERM expressly reserves the right to initiate appropriate legal action to prevent or prohibit the future violations of applicable statutes or the rules promulgated thereunder.

26. Entry into this Consent Agreement does not relieve Respondent of the responsibility to comply with applicable federal, state or local laws, regulations and Ordinances.

27. Where timetables or conditions cannot be met by Respondent due to circumstances beyond the Respondent's control, Respondent shall provide written documentation to DERM, which shall substantiate that the cause(s) for the delay or non-compliance was not reasonably in the control of the Respondent. A determination of the reasonableness shall be made by DERM for the purpose of imposition of penalties pursuant to paragraph 22 herein.

28. This Agreement shall neither be evidence of a prior violation of this Chapter nor shall it be deemed to impose any limitation upon any investigation or action by DERM in the enforcement of Chapter 24, Metropolitan Dade County Environmental Protection Ordinance.

29. In consideration of the complete and timely performance by the Respondent of the obligations contained in the Agreement, DERM waives its rights to seek judicial imposition of damages or criminal or civil penalties for the matters alleged in this Agreement.

30. This Agreement shall become effective upon the date of execution by the Director, Environmental Resources Management or his designee.

______________________ ______________________

Date

John D. Carr, President

Tarmac Florida, Inc.

BEFORE ME, the undersigned authority, personally appeared ______________________ who after being duly sworn, deposes and says that the has read and agrees to the foregoing.

Sworn to and subscribed before me this ____________ day of ________________, 1997 by ______________________.

(name of affiant)

Personally Known ______ or Produced Identification ______.

(Check one)

Type of Identification Produced: ______________.

____

Notary Public

____

Date

____

John W. Renfrow, P.E., Director
Environmental Resources Management

____

Witness

____

Witness

DERM
Complainant
  VS.
Tarmac Florida, Inc.
Respondent

John R.

Memorandum

Florida Department of
Environmental Protection

0250020

TO: Donna Gordon, Chief, Code Enforcement
Dade County DERM

FROM: A. A. Linero, P.E. Administrator AAL 7/28

DATE: July 28, 1997

SUBJECT: Tarmac/Pennsuco Kiln No. 2

Per our teleconference of July 25, 1997 enclosed are the following references to nitrogen oxides emissions limits for Tarmac Kiln 2 from our permit files:

- EPA-issued Final Determination PSD-FL-050 dated July 8, 1980 for proposed conversions of Pennsucco Kilns 1, 2, and 3 to coal. Permit Condition 8 limits NOx from Kiln 2 to 118 lb/hr and 4.73 lb/ton clinker while burning coal. Per Table 4, this was the limit proposed by the applicant. Apparently the Kiln 2 conversion was deferred for some 10 years.

- Excerpt from application dated August 31, 1989 for Kiln 2 coal conversion project. Page 4 of the sealed application gives a maximum NOx emission rate of 169.25 lb/hr (6.77 lb/ton clinker). Value is also given on Page 2-6.

- Letter dated March 9, 1993 from KBN to DEP requesting exemption of Kilns 2 and 3 from Reasonable Available Control Technology (RACT) requirements for NOx. Table 2-1 attached to the letter acknowledges that the NOx limit is 113.8 lb/hr (4.55 lb/ton clinker). It includes the caveat that if emissions are between 113.8 to 169 lb/hr, Best Available Control Technology (BACT) may be re-evaluated by FDEP.

I was not the permitting engineer on any of these actions related to Tarmac and I was not involved with the Rinker consent order. At first glance, note that the Tarmac case appears to be at least a violation of a BACT limit in a PSD permit (PSD-FL-142). Construction projects offer the best chance for upgrading emissions controls and that opportunity arose for Tarmac during the coal conversion. Tarmac (or Pennsucco) has known (or should have known) for at least 17 years roughly what levels of NOx emissions represent BACT for NOx for Kiln 2. Tarmac did not approach DEP with a clear solution to its NOx problem even after they were advised in writing on October 16, 1996 that "the Department will have to take appropriate action to enforce the existing permit limits."

The Rinker case involves violation of a fairly recent RACT rule and Rinker apparently did not implement a major construction project affording a routine opportunity to upgrade its emissions control. That does not excuse a violation, but it is a difference. Presumably the modernization project at Rinker will afford that opportunity. In any case, Rinker approached the DEP with proposed solutions to its problem.

Our staff is available to assist, but by and large it appears that the facts to adequately support your action can be readily retrieved from your files. I can come by during one of my routine visits and review them with DERM. Please call me or John Reynolds if you have technical questions regarding Tarmac. If you wish to consult on Rinker or (possible) Tarmac consent orders, please contact Jim Pennington directly. We can be contacted at 850/488-1344.

AAL/aal

cc: Pat Wong, DERM
Sharon Crabtree, DERM
Clair Fancy, BAR
Jim Pennington, BAR
Tom Tittle, SED

Date: 4/15/97 7:22:21 AM
From: Thomas Tittle WPB
Subject: Re: Tarmac Kiln 2
To: See Below

> Tom. Can you provide any recent compliance-related reports
>you might have on them. I do think that Dade does compliance on
these
>guys and maybe they have most relevant stuff in their own files?
>Thanks.

You are correct that Dade should have all recent compliance-related reports. If we can get a list of the pertinent tests they have, then we could check our files and see if we have any pertinent reports they are missing. If they need a complete test report of something we have, then we will need to get the bulk of the report(s) from ARCHIVE. Only a few key pages of the test reports are kept in the Compliance folders (summary, pollutant test results, data tables, VE observations, etc...). We will be glad to provide as much as they need.

To: Alvaro Linero TAL
CC: Jim Pennington TAL
CC: Ewart Anderson MIAMI
CC: Thomas Tittle WPB
CC: Heather Hinst TAL
CC: Patricia Comer TAL
CC: Luna Ergas TAL
CC: John Reynolds TAL

Date: 4/14/97 10:16:21 AM
From: Alvaro Linero TAL
Subject: Tarmac Kiln 2
To: See Below

John. Donna Edwards of Dade County DERM Enforcement called. They will act on the enforcement matter. She would like a more complete file. Please help Heather who is trying to put it together.

They want copies of any test reports which support the action (i.e. besides KBN/Golder's summary table), extensions to the permit, and anything else that might be useful.

Tom. Can you provide any recent compliance-related reports you might have on them. I do think that Dade does compliance on these guys and maybe they have most relevant stuff in their own files? Thanks.

To: John Reynolds TAL
CC: Jim Pennington TAL
CC: Ewart Anderson MIAMI
CC: Thomas Tittle WPB
CC: Heather Hinst TAL
CC: Patricia Comer TAL
CC: Luna Ergas TAL

Memorandum

Florida Department of Environmental Protection

TO: Donna Gordon, Chief, Code Enforcement
Dade County DERM

THRU: Clair Fancy, Chief
DARM/Bureau of Air Regulation

FROM: A. A. Linero, P.E. Administrator
DARM/New Source Review

DRAFT

DATE: March 20, 1997

SUBJECT: Tarmac/Pennsucco Kiln 2 Air Construction Permit Emission Limits

Kiln 2 is one of the original cement kilns at Tarmac/Pennsucco. It produces 25 tons per hour (TPH) of clinker. Kiln 2 was permitted to convert to coal-firing from natural gas in 1991. The permit No. is AC13-169901 and is a Florida Department of Environmental Protection (FDEP) air construction permit issued pursuant to Chapter 403, Florida Statutes and the associated Department rules. Certain conditions pursuant to the Department's Prevention of Significant Deterioration (PSD) rules are incorporated therein. Since its conversion, the kiln has not achieved the permitted limits for nitrogen oxides (NOx) given in the permit. Attached for your review and action are the following items from the permitting files:

- Copy of air construction permit dated February 25, 1991 including Best Available Control Technology (BACT) Determination. Kiln No. 2 has not demonstrated compliance with Specific Condition 5 on page 6. It limits NOx emissions to 4.55 pounds per ton clinker (lb/ton) and 113.8 pounds per hour (lb/hr). Specific Condition 12, page 6 provides for a **one year** test program. Based on the results of the program, **upward** adjustment of the NOx limits to 6.77 lb/ton and 169.3 lb/hr may result.

- Petition for Formal Administrative Proceedings filed for Tarmac by Hopping Boyd Green & Sams on June 19, 1990. The relief requested was that limits be initially set at 169.3 lb/hr (6.77 lb/ton) with the possibility of adjustment downward. This petition was dismissed after a joint stipulation resulted in the above mentioned permit in consideration of Tarmac's request.

- Department letter of October 16, 1996 requesting an update from Tarmac and advising of possible enforcement.

- Letter dated January 21, 1997 from Golder Associates. According to attached Table A, Tarmac has conducted a **two and one-half** year program and has been unable to meet <u>even its own requested NOx limit</u>. The ranges have been 177 to 450 lb/hr and 8.08 to 21.54 lb/ton.

Although Tarmac continues to conduct tests and plans to provide the results to the Department, we consider the period during which the Department shall not initiate enforcement to have ended. The effective date of the possible violations is January 23, 1997 when we received Golder's most recent letter with all of the test results.

Copies of past permitting documents should be in the files of the DERM Air Division. Please advise Tom Tittle of the Southeast District of your intended action within two weeks. If you have any questions, please call me or John Reynolds at (904)488-1344.

AAL/aal/l

cc: Pat Wong, DERM
Tom Tittle, SED
Pat Comer, OGC
Luna Ergas, OGC
Jim Pennington, BAR

Golder Associates Inc.
6241 NW 23rd Street, Suite 500
Gainesville, FL 32653-1500
Telephone (352) 336-5600
Fax (352) 336-6603

Golder Associates

January 21, 1997

RECEIVED
JAN 23 1997
BUREAU OF
AIR REGULATION

Mr. A. A. Linero, Administrator
New Source Review Section
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Fl 32399-2400

Re: Investigation of NO_x Emissions
Tarmac Florida, Kiln No. 2

Dear Mr. Linero:

The purpose of this letter is to respond to the Florida Department of Environmental Protection (the "Department") letter dated October 16, 1996, and to present a status report on the investigation of NO_x emissions from Kiln No. 2. As you are aware, Tarmac Florida, Inc., has been investigating the high NO_x emissions being experienced from Kiln 2, and potential methods to reduce the emissions. The thrust of our efforts has been toward discovering the reasons for the high emissions, and what can be done to reduce the emissions.

This letter presents a status report to the Department, which presents the results of our efforts to date. Some of the information presented in our May 28, 1996, status report is repeated herein, in order to be complete. In addition, Tarmac's continuing efforts to determine if NO_x reduction measures implemented by Tarmac can result in achieving the permitted NO_x limit, or to what extent they can reduce emissions, are described.

Kiln No. 3 Emissions and Basis for Original BACT

The Department has requested that Tarmac investigate why the NO_x emissions from Kiln No. 2 exceed the BACT limit stated in the permit, and why such emissions are much higher than Kiln No. 3, which was the basis for the BACT. Therefore, a review of the permitting history of the Kiln No. 2 coal conversion PSD permit is presented.

In the original PSD permit application for the Kiln No. 2 coal conversion, Tarmac proposed BACT levels of 400 lb/hr for SO_2 (16 lb/ton clinker) and 169.3 lb/hr for NQ (6.77 lb/ton clinker) as starting points for the BACT evaluation. This starting point for NO_x was based on the permitted emission limit for Kiln No. 3, which experience had shown was achievable in Kiln No. 3, as well as a limited set of test data from Kiln No. 2 in 1980 when burning fuel oil and gas (see attached data).

It is important to recognize that the proposed BACT control technology was determined by the Department to be good combustion practices and the inherent SO_2 removal within the kiln system. Due to concerns over the nearby PSD Class I area (Everglades National Park), SO_2

96510024/03

emissions were considered to be of much more importance at the time. Subsequently, EPA agreed that BACT for NO_x was good operating and maintenance procedures to minimize NQ emissions.

Tarmac proposed and strongly argued that a comprehensive test program be conducted prior to setting any final emission limits for Kiln No. 2. This was due to the uncertainty in emissions from Kiln No. 2 versus Kiln No. 3 (due to different size of the kilns and different firing types). Tarmac alluded to a similar experience with Kiln No. 3 when it was converted to coal. An emission limit was agreed to without any test data, and the limit proved to be unattainable. Therefore, the Kiln No. 3 emission limits were revised. Tarmac did not want to make this same error again. Tarmac's commitment was to minimize SO_2 emissions to the extent possible, again due to the Class I area concerns. EPA approved the testing plan as a mechanism to set the BACT limit for SO_2 in January 1990. The BACT limit for NQ was also to be set through the testing program.

The actual test data from Kiln No. 2 shows that the original commitment of minimizing SO_2 emissions to the extent practical is limited if NO_x emissions are to be reduced. The data reflect Tarmac's previous experience that reducing NO_x emissions results in an increase in SO_2 emissions. Prior to the most recent change to the coal burner on Kiln No. 2, actual SQ emissions were well below the allowable BACT limit. However, after installation of the new coal burner, which significantly reduced NO_x emissions, the SO_2 emissions increased markedly. As will be discussed in this report, the low NO_x emissions in effect cause the conversely high SO_2 emissions.

<u>**Kiln No. 2 NOx Emissions**</u>

A complete summary of the SO_2 and NO_x emissions data and related process data obtained to date for Kiln No. 2 is presented in Table A attached. A discussion of these tests is provided below.

Burner Modifications

The series of tests spanning April 1994 through December 1995 were required by the original construction permit. These tests were conducted with the original coal burner installed under the construction permit. The nozzle diameter of the coal burner was 13 inches during these tests. Since these series of tests resulted in relatively high NO_x emissions, Tarmac decided to modify the coal burner. The rationale for this change is described below.

Kiln No. 2 is a direct fired kiln. This means that the primary combustion air to the kiln is provided through the coal burner. Air is swept through the coal mill, which provides for drying of the coal, as well as pneumatic conveying of the coal. The air and coal is then discharged into the kiln through the burner. Additional secondary combustion air to the kiln is provided via air from the clinker cooler. Clinker cooler air is drawn into the kiln by means of the draft created by the kiln.

In the direct fired system, the control over the primary combustion air is limited since a certain minimum air flow through the coal mill must be maintained in order to dry and convey the coal. Flame characteristics (i.e., flame length and intensity) are critical to producing clinker of acceptable quality. However, one potential means of reducing the primary air requirements, and potentially reducing NO_x emissions, is to reduce the coal burner nozzle diameter. By reducing the nozzle diameter, it may be possible to maintain the critical flame characteristics and at the same time reduce the amount of primary air.

In order to investigate this potential, prior to the May 1996 testing the coal burner was modified to a 10 inch nozzle diameter. Although this modification resulted in NO_x emissions which were at the low end of the range of emissions experienced in the past for Kiln No. 2, emissions were still well above the permitted limit. In addition, this nozzle diameter was considered to be too small by plant personnel because it limited too severely the air flow through the coal mill, and high velocities at the nozzle tip were causing excessive wear on the burner tip.

As a result, the burner nozzle diameter was increased to 11 inches prior to the July 31, 1996 testing. Initial test results indicate that this nozzle configuration has significantly reduced NO_x emissions, that the burner is not adversely affected, and that satisfactory clinker can be produced using this burner. However, additional testing is needed to confirm these initial results. The December 1996 tests results were inconclusive due to kiln operating problems during the testing period.

Results of Testing

As shown in Table A, during the tests when the coal burner diameter was 13 inches (1994 and 1995 testing), the SO_2 emissions were generally very low, while the NQ emissions were high compared to the permitted emission rates. According to plant kiln operators, the SO_2 and NO_x emissions are related to the oxygen level in the kiln. They state that as the oxygen level in the kiln increases, SO_2 emissions decrease while NO_x emissions increase. They stated that this trend has also been evident on Kiln No. 3.

The available test data for Kiln No. 2 was analyzed to determine if a correlation exists between NO_x, oxygen and SO_2 emissions. During the stack tests on Kiln No. 2, oxygen level at the stack is measured. However, this measurement is affected by infiltration of ambient air into the system and is not reflective of conditions in the kiln. Therefore, oxygen levels in the kiln itself are needed. Tarmac maintains a kiln oxygen monitor on Kiln No. 2, and data from this monitor is archived. Due to this archiving, kiln oxygen data for only the 1996 tests were available. As a result, the stack oxygen data were analyzed to determine if any correlation exists between NO_x emissions and stack oxygen level. Kiln oxygen levels were also evaluated for the 1996 data.

Based on this evaluation, no significant relationship between stack or kiln oxygen level and NO_x or SO_2 emissions was found. However, there is a general trend towards lower NO_x emissions as oxygen level in the kiln is decreased.

The coal burner nozzle diameter was 10 inches during the May 1996 testing. As described previously, this burner diameter caused operating problems with the burner and the coal mill. Also, NO_x emissions averaged 253 lb/hr and 2.1 lb/MMBtu, which are lower than many pervious tests, but remained above the permit "window" of 169.3 lb/hr , and above the RACT limit of 2.0 lb/MMBtu.

As a result, Tarmac modified the burner to an 11 inch nozzle diameter for the July/August 1996 testing. While resulting in satisfactory kiln and coal mill operation, the NO_x emissions from the July/August testing averaged 199.4 lb/hr and 1.56 lb/MMBtu. Although this emission level exceeds the permit "window" of 169.3 lb/hr, it is within the RACT limit of 2.0 lb/MMBtu.

Additional testing was conducted in December 1996 in an effort to duplicate the success of the July/August tests. Results from this test were much higher than the July/August testing, averaging 307 lb/hr and 2.90 lb/MMBtu. However, these higher emission rates are not considered to be representative of normal operation, because the kiln was experiencing some operational problems during the testing. During the testing, the kiln was experiencing several "hot spots" on the kiln shell.

Hot spots are areas of the kiln shell where the inner coating of brick and clinker has worn thin, causing the outer shell temperature to rise. When such conditions occur, the operator reduces fuel consumption and therefore clinker production, so as to not cause damage to the kiln. During this testing, the hot spots were in the area of the coal flame. As a result, the operator also increased the combustion air to the kiln, as a means of decreasing kiln temperatures. These operating changes are believed to be the cause of the higher NO_x emissions.

Because of the hot spots developing in the kiln, Tarmac is shutting down the kiln in January for repairs. The kiln will be brought back on-line in late February. Tarmac is planning an additional test for NO_x and SO_2 emissions in February or early March to confirm the emissions with the new burner pipe when the kiln is operating normally.

Conclusions

Based on the information gathered to date for Kiln No. 2, the reasons for the high NO_x emissions can be summarized as follows:

1. Kiln No. 2 operates at a kiln oxygen level normally in the range of 2 to 2.5%. By comparison, Kiln No. 3 normally operates at an oxygen level of approximately 1.0%.

2. Kiln No. 3 is an indirect fired kiln, meaning that the coal fuel and the primary combustion air are delivered to the kiln separately. This allows more control over the combustion air, allowing the combustion air to be varied to obtain optimum combustion conditions and flame characteristics. The air associated with the coal burner normally is not varied. In a wet process cement kiln, the flame characteristics (flame length and intensity) are critical to clinker production.

In contrast, Kiln No. 2 is a direct fired kiln, which means that the primary combustion air is delivered to the kiln through the coal feed system. In such a system, the amount of combustion air cannot be reduced or varied, because the air velocity through the burner is critical to the flame characteristics.

120,000 dscf / ton clinker 144,000

3. This difference in the two kilns is reflected in the gas flow rates from the kilns. Kiln No. 2, with a maximum clinker production rate of 25 TPH, has an exhaust gas flow rate of 50,000 to 60,000 dscfm. This equates to 2,000 to 2,400 dscfm per ton per hour of clinker produced. Kiln No. 3 normally operates at 87.5 TPH clinker with exhaust gas flow of 140,000 to 160,000 dscfm. This equates to 1,600 to 1,830 dscfm per ton per hour of clinker produced. Therefore, Kiln No. 2 requires approximately 25% more air to operate than Kiln No. 3. This in turn results in a higher oxygen level in the kiln, and hence higher NO_x emissions but lower SO_2 emissions compared to Kiln No. 3.

Continuing Investigation

Based on the above discussion, Tarmac is focusing on reducing the amount of combustion air to the kiln as the only feasible means of lowering NO_x emissions. To this end, Tarmac recently installed a modified coal burner on Kiln No. 2 during the recent outage in April 1996, and again modified the burner in July 1996. The previous coal burner had a 13 inch nozzle, while the new burner will have a 11 inch nozzle. The intention in reducing the nozzle diameter is to reduce the amount of primary air introduced through the coal burner, while maintaining the velocity through the burner obtained by the previous burner design, thus maintaining the previous flame characteristics. The additional emissions test will also be used to determine the effects of the changes upon the grind ability of the clinker product. As discussed above, proper clinker production is dependent upon the flame characteristics.

Tarmac is planning on conducting an additional stack test on Kiln No. 2 with the new burner in late February or early March. This test will further assess the effectiveness and potential in reducing NO_x emissions from Kiln No. 2. The Department will be notified prior to the testing as to the exact test dates. Upon completion of the testing, the test data will be analyzed and submitted to the Department. This analysis, along with analysis of the historic test data as described above, will be submitted to the Department within 45 days of completing the testing.

Please call if you have any questions concerning this status report.

Sincerely,

Mark J. Aguilar for

David A. Buff, P.E.
Principal Engineer
Florida P.E. #19011

SEAL

cc: Al Townsend
Scott Quass
Jim Alves

cc: G. Reynolds, BAR
P. Comer, OGC
T. Tittle, SED
E. Anderson, Dade Co.
B. Beals, EPA

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Table A. Summary of NOx/SO2 Emissions From Kiln No. 2, Tarmac Florida

Date	Run#	Kiln Feed (TPH)	Clinker (TPH)	Coal Usage(a) (TPH)	Coal Heating Value(b) (Btu/lb)	Heat Input (MMBtu/hr)	Heat Rate (MMBtu/ton clinker)	Coal Sulfur %	Sulfur Dioxide Emissions ppm	Sulfur Dioxide Emissions lb/hr	Sulfur Dioxide Emissions lb/MMBtu	Sulfur Dioxide Emissions lb/ton kiln feed	Sulfur Dioxide Emissions lb/ton clinker	Nitrogen Dioxide Emissions ppm	Nitrogen Dioxide Emissions lb/hr	Nitrogen Dioxide Emissions lb/MMBtu	Nitrogen Dioxide Emissions lb/ton kiln feed	Nitrogen Dioxide Emissions lb/ton clinker	Oxygen Level (%) Stack	Oxygen Level (%) Kiln	Stack Flow acfm	Stack Flow dscfm
04/26/94	1	39.58	24.08	4.58	13,241	121.29	5.04	1.86	0.63	0.37	0.003	0.009	0.015	1,187	450	3.71	11.37	18.69			86,415	59,855
04/26/94	2	39.58	24.08	4.58	13,241	121.29	5.04	1.86	0.61	0.36	0.003	0.009	0.015	1,092	427	3.52	10.79	17.73			91,144	59,855
04/26/94	3	39.58	24.08	4.58	13,241	121.29	5.04	1.86	0.61	0.35	0.003	0.009	0.015	1,117	422	3.48	10.66	17.52			86,816	57,827
06/28/94	1	38.33	23.6	5.33	13,241	141.15	5.98	1.75	54.18	32.33	0.229	0.843	1.370	610	255	1.81	6.65	10.81			93,138	59,875
06/28/94	2	38.33	23.6	5.33	13,241	141.15	5.98	1.75	108.16	62.76	0.445	1.637	2.659	669	281	1.99	7.33	11.91			90,738	58,286
06/28/94	3	38.33	23.6	5.33	13,241	141.15	5.98	1.75	88.07	51.46	0.365	1.343	2.181	655	282	2.00	7.36	11.95			92,633	58,642
06/28/94	4	38.46	24.0	5.41	13,241	143.27	5.97	1.75						787	332	2.32	8.63	13.83				58,937
06/28/94	5	38.46	24.0	5.41	13,241	143.27	5.97	1.75						579	246	1.72	6.40	10.25				59,280
08/31/94	1	32.8	19.3	4.90	13,241	129.76	6.72	0.85	9.90	5.03	0.039	0.153	0.261	648	237	1.83	7.23	12.28	9.40		78,548	50,967
08/31/94	2	32.8	19.3	4.90	13,241	129.76	6.72	0.85	20.60	10.89	0.084	0.332	0.564	514	195	1.50	5.95	10.10	9.40		80,268	51,988
08/31/94	3	32.8	19.3	4.90	13,241	129.76	6.72	0.85	15.00	7.76	0.060	0.237	0.402	488	182	1.40	5.55	9.43	9.40		78,548	50,967
10/27/94	1	38.9	24.7	5.10	13,241	135.06	5.47	0.76	4.39	2.56	0.019	0.066	0.104	754	316	2.34	8.12	12.79	9.72		115,146	58,456
10/28/94	3	39.8	26.1	5.50	13,241	145.65	5.58	0.76	3.43	1.96	0.013	0.049	0.075	809	333	2.29	8.37	12.76	9.76		115,912	57,531
10/28/94	4	39.8	26.1	5.50	13,241	145.65	5.58	0.76	30.52	16.75	0.115	0.421	0.642	544	215	1.48	5.40	8.24	9.28		113,480	55,094
01/03/95	1	40.5	25.0	4.75	13,278	126.14	5.05	0.88	1.61	0.92	0.007	0.023	0.037	618	255	2.02	6.29	10.19	10.30		91,761	57,583
01/03/95	2	40.5	25.0	4.75	13,278	126.14	5.05	0.88	1.26	0.70	0.006	0.017	0.028	988	398	3.16	9.84	15.93	10.30		88,956	56,308
01/03/95	3	40.5	25.0	4.75	13,278	126.14	5.05	0.88	1.23	0.07	0.001	0.002	0.003	883	354	2.81	8.74	14.16	9.76		89,294	56,002
05/31/95	1	38.5	24.0	5.30	13,278	140.75	5.86	0.67	NA	4.23	0.030	0.110	0.176	923	347	2.46	9.01	14.45	10.70		105,551	52,186
05/31/95	2	38.5	24.0	5.29	13,278	140.48	5.85	0.67	NA	7.26	0.052	0.189	0.303	883	332	2.36	8.62	13.84	11.10		105,918	51,013
05/31/95	3	38.5	24.0	5.29	13,278	140.48	5.85	0.67	NA	1.81	0.013	0.047	0.075	821	322	2.29	8.35	13.40	11.20		107,367	53,963
12/11/95	1	35.0	20.8	5.10	13,278	135.44	6.51		1.51	0.91	0.007	0.026	0.044	728	308	2.28	8.80	14.81	11.00		113,178	59,063
12/11/95	2	35.0	20.8	5.10	13,278	135.44	6.51		1.53	0.91	0.007	0.026	0.044	824	355	2.62	10.14	17.07	11.30		120,039	60,164
12/11/95	3	35.0	20.8	5.10	13,278	135.44	6.51		0.00	0.00	0.000	0.000	0.000	1,044	448	3.31	12.80	21.54	10.90		118,322	59,898
5/31/96	1	35.0	22.1	4.80	12,893	123.77	5.60	1.19	3.90	2.13	0.017	0.061	0.096	547	217	1.75	6.20	9.82	9.80	1.50	113,456	55,435
5/31/96	2	35.0	22.1	4.80	12,893	123.77	5.60	1.19	2.20	1.25	0.010	0.036	0.057						9.70	1.70	118,408	57,881
5/31/96	2-A	35.0	22.1	4.70	12,893	121.19	5.48	1.19						629	261	2.15	7.46	11.81	9.70	1.70		
5/31/96	2-B	35.0	22.1	4.60	12,893	118.62	5.37	1.19						588	244	2.06	6.97	11.04	9.72	1.75		
5/31/96	3	35.0	22.1	4.60	12,893	118.62	5.37	1.19	1.50	0.89	0.008	0.025	0.040	646	267	2.25	7.63	12.08	9.75	1.75	118,041	57,609
5/31/96	4	35.0	22.1	4.50	12,893	116.04	5.25	1.19	1.70	1.02	0.009	0.029	0.046	655	275	2.37	7.86	12.44	9.87	1.90	118,479	58,598
7/31/96	1	27.8	21.9	5.00	12,429	124.29	5.68	0.96						433	177	1.42	6.37	8.08		0.75		56,923
8/01/96	1	32.0	20.7	5.20	12,429	129.26	6.24	1.03	253	147	1.137	4.594	7.101	468	195	1.51	6.09	9.42	9.45	1.00	117,376	58,211
8/01/96	2	32.0	20.7	5.15	12,429	128.02	6.18	1.03	339	193	1.508	6.031	9.324	487	199	1.55	6.22	9.61	9.21	0.70	115,061	57,150
8/01/96	3	32.0	20.7	5.15	12,429	128.02	6.18	1.03	311	181	1.414	5.656	8.744	512	215	1.68	6.72	10.39	9.06	0.50	112,202	58,517
8/01/96	4	32.0	20.7	5.15	12,429	128.02	6.18	1.03	235	133	1.039	4.156	6.425	520	211	1.65	6.59	10.19	9.04	0.60	114,985	56,793
12/18/96	1	32.6	21.0	3.90	13,589	105.99	5.05	1.19	324	183	1.727	5.613	8.714	756	307	2.90	9.42	14.62		1.50		56,751
12/19/96	2	31.0	20.4	3.90	13,589	105.99	5.20	1.19	86	48	0.453	1.548	2.353	721	291	2.75	9.39	14.26		1.50		56,401
12/19/96	3	31.0	20.4	3.90	13,589	105.99	5.20	1.19	295	157	1.481	5.065	7.696	842	323	3.05	10.42	15.83		1.50		53,484
							Number of Tests =		32	32	32	32	32	36	36	36	36	36	25	14	29	35
							Minimum =		0.0	0.0	0.000	0.000	0.000	433	177	1.40	5.40	8.08	9.04	0.50	78,548	50,967
							Average =		68.6	39.3	0.322	1.199	1.863	721	291	2.27	8.05	12.87	9.95	1.31	103,144	56,786
							Maximum =		339.0	193.0	1.727	6.031	9.324	1187	450	3.71	12.80	21.54	11.3	1.90	120,039	60,164
							RACT Limit =			NA			NA		NA	2.00		NA				
							Permit Limit =			195.0			7.8		113.8			4.55				
										275.0 (c)			11.0 (c)		169.3 (c)			6.77 (c)				

(a) As-fired values.
(b) 1996 data based on weekly as-fired coal analysis; all other data based on yearly average coal analysis.
(c) Represents maximum value which limit can be raised to based on test data.

Department of
Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

October 16, 1996

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Scott Quaas
Environmental Manager
Tarmac America, Inc.
455 Fairway Drive
Deerfield Beach, Florida 33441

RE: NO_X Emissions - Tarmac Kiln No. 2

Dear Mr. Quaas:

This concerns the investigative effort begun by Tarmac over one year ago to determine the reasons for high NO_X emissions from Kiln No. 2 and what can be done about them. KBN's letter of May 28, 1996 stated that Tarmac would conduct tests on a modified coal burner around June 1 and report the results to us within 60 days of test completion. After four months, we have not received any test results.

At some point, the problem will have to be solved by Tarmac or the Department will have to take appropriate action to enforce the exisiting permit limits. We believe that point should be fast approaching, with the matter being finally resolved one way or the other by the end of this year.

Please give us your immediate assessment of whether the approach currently underway will result in the current NO_X limits being met by early 1997.

If there are any questions regarding the above, please contact John Reynolds or myself at (904)488-1344.

Sincerely,

A. A. Linero 10/16

A. A. Linero, P.E.
Administrator
New Source Review Section

AAL/JR

c: Pat Comer, DEP
Tom Tittle, SED
Ewart Anderson, DCDERM
Brian Beals, EPA
David Buff, KBN

I N T E R O F F I C E   M E M O R A N D U M

Date: 06-May-1996 08:33am EST
From: Thomas Tittle WPB
TITTLE_T@A1@WPB1
Dept: Southeast District Office
Tel No: 407-681-6624
SUNCOM:

TO: Jim Pennington TAL (PENNINGTON_J@A1@DER)

CC: Alvaro Linero TAL (LINERO_A@A1@DER)
CC: Patrick Wong MIAMI (WONG_P@A1@EPIC66)

Subject: FWD: Tarmac NOx Emissions > BACT - AC Permit Language

In reviewing the November 20, 1995 extension of PSD-FL-142 for Kiln No. 2 and the attached correspondence, I do not recall that guidance has been received (if it has been given, I must have misplaced it).

Under delegation DERM would initiate any enforcement for this situation, but to date I do not see any action reflected in ARMS on this matter. They may need similar questions resolved before initiating any action.

I do not see where any of the problematic language in the subject permit has been changed. Please recommend what you think might be appropriate action at this time in light of the whole situation.

Thank you.

I N T E R O F F I C E   M E M O R A N D U M

Sensitivity: COMPANY CONFIDENTIAL

Date: 06-May-1996 10:04am EST
From: Alvaro Linero TAL
LINERO_A
Dept: Air Resources Management
Tel No: 904/921-9532
SUNCOM: 291-9532

TO: John Reynolds TAL (REYNOLDS_J)

Subject: FWD: Tarmac NOx Emissions > BACT - AC Permit Language

John. What do you think of the various memos from Tittle? When we extended the permit we did not make any other changes which, according to Tittle, would have clarified our intent better with resect to BACT on NOx.

October 13, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Scott Quaas
Environmental Manager
Tarmac America, Inc.
455 Fairway Drive
Deerfield Beach, Florida 33441

Re: Permit Extension PSD-FL-142
Pennsuco Cement Kiln No. 2

Dear Mr. Quaas:

The Department reviewed your extension request dated August 30, our discussions on that same date, and a letter from Hopping Green Sams and Smith (HGSS) on your behalf dated October 3, 1995 regarding the Nitrogen Oxides (NO_X) limit pursuant to the referenced permit.

As discussed during our August 30 meeting, we are interested in knowing why emissions from Kiln No. 2 exceed Kiln No. 3. However, we do not need a detailed report justifying a higher emission limit. The thrust of the effort should be toward actually identifying the reasons for Tarmac's benefit to expeditiously comply with the permit limits.

We are willing to extend the construction permit for another seven months to provide time for further testing, optimization, and project implementation. It will be with the understanding that this extended permit will become the most recent and applicable one for the purpose of Title V fees. Also, it would be with the understanding that the permit will not be automatically extended beyond that date by the recent Department rule which extends all active construction permits expiring after September 1, 1995 to September, 1996. That rule is geared toward new facilities or sources which have never had an operating permit and for which it would be more convenient to wait until their Title V application is processed.

If you have any questions regarding this matter, please call me or John Reynolds at (904)488-1344.

Sincerely,

A. A. Linero, Administrator
New Source Review Section

AAL/t

cc: C. Fancy, DEP
J. Pennington, DEP
J. Kahn, SED
P. Wong, DCDERM
J. Braswell, DEP
J. Alves, HGSS
D. Buff, KBN

METROPOLITAN DADE COUNTY, FLORIDA

METRO-DADE

DERM

ENVIRONMENTAL RESOURCES MANAGEMENT
ENFORCEMENT SECTION
33 SOUTHWEST 2nd AVENUE
SUITE 1100
MIAMI, FLORIDA 33130-1540
(305) 372-6902

February 3, 1998

Richard D. Pluta, Director
Technical Services
Tarmac America, Inc.
1151 Azalea Garden Road
Norfolk, Virginia 23502

CERTIFIED MAIL NO. Z165003834
RETURNED RECEIPT REQUESTED

Re: Tarmac, Pennsuco Portland Cement Plant located at, near, or in the vicinity of 11000 N.W. 121 Way, Medley, Florida 33178.

Enclosed you will find an original Consent Agreement for the referenced facility which was executed on February 2, 1998. Be advised that the date of execution initiates specific time frames within the Agreement with which you must comply.

If you have any questions concerning the above please contact me at 372-6902.

Sincerely,

Sharon Crabtree

Sharon Crabtree
Code Enforcement Officer

cc: Jim Alves
Mike Unger

SC:ocv

cc: J. Reynolds, BAR
A. Linero, BAR

AGREEMENT

DADE COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES MANAGEMENT)
Complainant,)

vs.)
Tarmac America, Inc.)
Respondent)

THIS AGREEMENT, entered into by and between MIAMI-DADE COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES MANAGEMENT (hereinafter referred to as DERM), and Tarmac America, Inc. (hereinafter referred to as Tarmac or Respondent) pursuant to Section 24-5(15)(c) Miami-Dade County Environmental Protection Ordinance, shall serve to redress the alleged violations of Section 24-55 of the Code of Miami-Dade County as set forth in a June 17, 1997 Notice of Violation and Orders for Corrective Action, concerning the site located at 11000 NW 121 Way, Medley, DADE County, Florida (Folio #30-2031-001-0030).

The DERM finds the following:

FINDINGS OF FACT

1. The DERM is an agency of Miami-Dade County, a political subdivision of the State of Florida which is empowered to control and prohibit pollution and protect the environment within Dade County pursuant to Article VIII, Section 6 of the Florida Constitution, the Dade County Home Rule Charter and

Section 403.182 of the Florida Statutes.

2. Tarmac is a Delaware corporation that has its principal place of business in Norfolk, Virginia. Tarmac owns and operates a portland cement manufacturing plant located in Dade County, Florida, under the authority of DEP permit no. AC 13-169901. Tarmac is currently doing business in the State of Florida and is a person within the meaning of section 403.031(5), Florida Statutes.

3. Tarmac's cement plant (Pennsuco Plant) in Dade County includes kiln # 2, a wet process, direct-fired cement kiln that originally was constructed in 1969. In wet process cement manufacture, a slurry of filtrate of crushed limerock containing between 20% and 40% moisture content is introduced into an inclined kiln for calcination into quicklime (calcium oxide) clinker by the application of high thermal energies. At Tarmac's kiln # 2, this thermal energy currently is provided primarily by the direct firing of crushed coal. Flow from the coal mill both conveys the crushed coal to the kiln and serves as the primary combustion air for the kiln.

4. On July 8, 1980 the United States Environmental Protection Agency (EPA) issued Final Determination PSD-FL-050 for proposed fuel conversions of the Pennsuco kilns 1,2 and 3 from natural gas to coal. Condition #8 of the Final Determination limited coal-fired NOx emissions from kiln # 2 to 118 lb/hr at the maximum operating rate or 4.73 lb/ton of clinker produced

at lesser operating rates. These limiting emission rates were proposed by Respondent to ensure validity of the exemption from further Prevention of Significant Deterioration (PSD) review (no net increase in emissions). The PSD permit and accompanying regulatory materials specifically contemplated the possibility, based on published emission rate information for large utility boilers and site-specific variables that could not be quantified in advance, that actual NOx emissions while firing coal could be higher than predicted. However, Tarmac produced published test data which reported that "emissions of NOx are less using coal than when using gas or oil as a fuel for cement kilns" due to the "characteristics of the flame". Also, the EPA concurred with Tarmac "that operating conditions can be found which will result in reduced emissions or at least no net increased emissions" when utilizing coal instead of gas.

5. The conversion to coal for kiln # 2 was deferred for several years, and that kiln was never converted under PSD-FL-050. On August 21, 1989 Respondent again submitted an application to the Florida Department of Environmental Regulation (FDER, now known as the Florida Department of Environmental Protection, DEP) to convert kiln # 2 to coal. In this application Respondent requested, based on NOx emission rate data associated with a dissimilar kiln, a maximum allowable NOx emission rate of 169.25 lbs/hr for kiln # 2.

6. On February 27, 1991 DEP issued Construction Permit No. AC 13-169901 (exhibit A attached) to convert kiln # 2 to coal firing. Specific Condition # 5 of said permit limited NOx emissions to 113.8 lbs/hr. Additionally Specific Condition # 12 in DEP permit no. AC 13-169901 required that after the commencement of operation while firing coal, Tarmac shall conduct NOx emissions tests every two months for up to one year. In the event that the required compliance testing resulted in NOx emissions in the range of 113.8 lbs/hr to 169.3 lbs/hr, Specific Condition #12 of said permit provided Tarmac with the opportunity to request DEP to re-evaluate BACT and consider adjustment of the NOx emissions limitations upward from 113.8 lbs/hr to a maximum of 169.3 lbs/hr. The permit stated that DEP would not initiate enforcement proceedings while evaluating an adjustment of the NOx limitation, provided Tarmac made reasonable efforts to limit air emissions.

7. Tarmac did not convert kiln # 2 to coal for an extended period of time after issuance of permit no. AC 13-169901 in 1991 due to reported variabilities in demand for cement and fuel prices. Accordingly, the performance tests were delayed until coal-firing actually commenced. On April 24, 1994 Respondent initiated the bi-monthly compliance testing for a one year period ending April 1995. By letter dated July 21, 1995, Tarmac provided DEP with data from six stack emission tests performed while firing coal in kiln # 2. NOx emissions

exceeded permittable levels at every testing event. Tarmac requested in its July 21, 1995 letter to DEP that the NOx limit be re-evaluated and, based on a statistical analysis of the test results, be adjusted to 445 lbs/hour. DEP's August 24, 1995 response stated that Tarmac's request was "not representative of BACT under PSD rules and that the NOx test results were beyond the range of values for re-evaluation, set by Tarmac."

8. Thereafter, there were several discussions and exchanges of correspondence through which Tarmac, attempted to initiate DEP re-evaluation of the NOx emission limitation. DEP declined to re-evaluate the NOx emission limitation and ultimately expressed its preference that Tarmac evaluate and then implement physical improvements that would result in continuous compliance with the original NOx emission projections (113.8 lbs/hr).

9. On May 28, 1996 Respondent's consulting firm submitted a plan for testing NOx emission levels using a modified coal burner nozzle installed on kiln # 2. Testing was to commence by early June 1996 and test data was to be submitted to DEP by early August 1996.

10. On October 16, 1996 DEP issued a letter to Respondent stating that DEP had not received NOx emissions testing data as stated in the May 28, 1996 letter. DEP requested that Tarmac provide

immediate assessment of the NOx emission using the modified burner nozzle. Resolution of the NOx emission violation was to be achieved by the end of 1996.

11. Resolution of the elevated NOx emissions issue was not achieved and pursuant to the FDEP/DERM air permitting delegation agreement, on April 14, 1997, FDEP referred the continuing NOx emissions violation at the subject site to DERM for follow-up enforcement action.

12. On June 17, 1997 DERM issued a Notice of Violation (NOV) and Orders for Corrective Action and Settlement for exceedances of permitted NOx emission rates. Said NOV ordered Respondent to submit a written plan detailing proposed corrective actions to ensure that the allowable limits for emissions are not exceeded.

13. Tarmac has reported that its analysis indicates that the level of NOx emissions demanded by DEP can be achieved at kiln #2 while firing coal only by developing alternatives that require very substantial expenditures, such as converting kiln # 2 to indirect firing (or other alternative technology), or modernizing its existing wet process system by converting it to employ dry process technology.

14. Tarmac has expressed a willingness to adopt whichever NOx emission reduction option is most cost-effective, taking into

consideration the age of the existing equipment and the degree of reduction in NOx and other criteria pollutant emissions achievable by each alternative. Due to the reported costs involved, the substantial preliminary engineering work required, as well as the need to design for the integration of new systems into existing operations, Tarmac has stated its need for additional time in which to select and implement its best alternative method. If no economically feasible alternative can be developed, Tarmac will cease operating kiln # 2 on coal.

15. Tarmac hereby consents to the terms of this Agreement without either admitting or denying the factual or legal allegations made by DERM in this Agreement or in the Notice of Violation and Orders for Corrective Action and Settlement; and

16. In an effort to insure continued protection of the health and safety of the public and the environment of Dade County and to insure compliance with Chapter 24, Miami-Dade County Environmental Protection Ordinance and to avoid time-consuming and costly litigation, the parties hereto stipulate and agree to the following, and it is ordered:

17. Upon execution of this Consent Agreement Respondent shall, on an interim basis, meet the NOx emission limit monthly average of 220 lbs/hr for kiln # 2 with 240 lbs/hr being the maximum limit on an instantaneous basis. This NOx emission limit shall

remain in effect until the applicable requirements set forth in paragraphs # 21, 22 or 23 of this Agreement are implemented. Respondent shall then meet NOx emission limitations for kiln # 2 as required.

18. In order to verify compliance with paragraph # 17 of this Agreement, Respondent shall install and have operational a continuous emission monitor on kiln #2 by June 1, 1998. Respondent shall obtain DERM concurrence of the system prior to installation. Until the aforementioned continuous emission monitoring system is operational, Respondent shall conduct monthly NOx emission verification testing. Additionally, beginning in July 1, 1998, respondent shall submit to DERM a written Nox emission monitoring report including the monthly Nox emissions chart from kiln #2. This report shall be due by the fifteenth of the month and shall contain the information obtained from the preceding month. The first report is due to DERM by July 15, 1998. Report submittals shall continue until the expiration of this Agreement in accordance with paragraph 38 of this Agreement.

19. On or before January 31, 1998, Respondent shall provide in writing to DERM its method for eliminating exceedances of the NOx emission limitations as stipulated in permit no. AC 13-169901 for kiln # 2. The method provided shall correspond with the applicable requirements set forth below in paragraphs 21, 22 or 23 of this Agreement.

20. If Respondent chooses to implement the requirements set forth in paragraph 22, Respondent shall submit applications by completing forms designated by agency regulations, signed by the appropriate company representative and sealed by a Florida registered professional engineer, with the appropriate fee, for the required air construction permits and/or permit modifications to the FDEP or Dade County DERM, as appropriate. Said application shall be submitted by February 15, 1998. Additional information requested by the appropriate agencies shall be provided by Respondent within fourteen (14) days of the date Respondent receives the request, unless the reviewing agency determines that additional time is necessary due to the scope of its request. If Respondent chooses to implement the requirements set forth in paragraph 23 of this Agreement, these same permitting procedures shall apply, except that the deadline for submitting the applications shall be June 30, 1998. In all cases Respondent shall diligently apply for and seek in a timely manner to obtain any other necessary approvals to perform the work within the same applicable timeframes stipulated above.

21. If Respondent relinquishes its authorization to burn coal in kiln # 2, it shall notify DEP and DERM in writing by January 31, 1998, that it surrenders permit no. AC 13-169901, and within 90 days thereafter shall cease utilizing coal, and operate kiln # 2 only on those fuels currently authorized

under DEP permit no. AO 13-238048 provided that emissions levels for NOx do not exceed the previously established RACT limitation and SO2 emissions do not exceed the current regulations.

22. Alternatively to the requirements set forth in paragraph # 21 of this Agreement, if kiln # 2 is converted to indirect firing or other DERM and DEP accepted technology that meets the NOx limits in permit no. AC 13-166901, construction shall be completed within 12 months after receiving the construction permit modifications referenced in paragraph #20, above, and any other required permits, and then Respondent shall meet the same BACT NOx emission limitations and all other emission limitations as set forth in construction permit NO. AC 13-169901.

23. Alternatively to the requirements set forth in paragraphs # 21 and # 22 of this Agreement, if the plant's manufacturing process is changed to dry process technology, construction shall be completed within 36 months after the required permits have been issued and then Respondent shall meet the permitted emission limitations.

24. Commencing at the next time at which such fees are due under DEP's regulations, Respondent shall pay to FDEP the Title V permitting fee for kiln # 2 NOx emissions based on the monthly interim average of 220 lbs/hr. This fee shall be effective

upon execution of this Consent Agreement and shall remain in effect until Respondent is in compliance with kiln # 2 permitted NOx emissions limitations.

SAFETY PRECAUTIONS

25. The Respondent shall maintain the subject site, during the pendency of this Agreement, in a manner which shall not pose a hazard or threat to the public at large or the environment and shall not cause a nuisance or sanitary nuisance as set forth in Chapter 24, Miami-Dade County Environmental Protection Ordinance.

VIOLATION OF REQUIREMENTS

26. This Agreement constitutes a lawful order of the Director of the Department of Environmental Resources Management and is enforceable in a civil or criminal court of competent jurisdiction pursuant to Chapter 24, Miami-Dade County Environmental Protection Ordinance. Violation of any requirement of the Agreement may result in enforcement action by DERM. Each violation of any of the terms and conditions of this Agreement by the Respondent shall constitute a separate offense.

SETTLEMENT COSTS

27. The Respondent hereby certifies that ~~he~~ it has the financial ability to comply with the terms and conditions stipulated herein and to comply with the payments specified in this Agreement.

28. DERM has determined, that due to DERM's Administrative costs incurred to bring the subject facility into compliance and other sums recoverable pursuant to Section 24-57(e) of the Miami-Dade County Code, an environmental remediation fee of $200,000.00 is appropriate. DERM will allow $50,000 (25%) of the required $200,000.00 environmental remediation fee to be used towards offsetting the costs of continuous emission monitoring equipment installation at kiln #2 (Pennsuco Plant). If for any reason Respondent fails to install the required continuous emission monitoring system Respondent shall pay DERM the full environmental remediation fee of $200,000.00. The Respondent shall within thirty (30) days of the effective date of this Agreement, submit to DERM a certified check in the amount of $150,000.00, for environmental remediation as set forth in Section 24-57(e) for the purpose of the enforcement of environmental laws in Dade County. The check shall be made payable to DERM and sent to the Department of Environmental Resources Management, c/o Sharon Crabtree, Suite 1100, 33 SW 2nd Avenue, Miami, Florida, 33130.

29. Except as otherwise provided under paragraph 33 below, in the event Respondent fails to submit, modify, implement, obtain, provide, operate, comply and or complete those items listed in paragraphs 17,18,19,20,21,22 or 23 (as applicable) herein, the Respondent shall pay DERM a civil penalty of one hundred dollars ($100.00) per day for each day of non-compliance and the Respondent shall be subject to enforcement action in a civil or criminal court of competent jurisdiction for such failure pursuant to the provisions set forth in Chapter 24, Miami-Dade County Environmental Protection Ordinance. Said payment shall be made by Respondent to DERM within ten (10) days of receipt of written notification and shall be sent to the Department of Environmental Resources Management, c/o Sharon Crabtree, at 33 S.W. 2nd Avenue, Miami, Florida 33130.

GENERAL PROVISIONS

30. Respondent shall allow authorized representatives of DERM access to the property at reasonable times for purposes of determining compliance with this Consent Agreement and the rules and regulations set forth in Chapter 24, Miami-Dade County Environmental Protection Ordinance.

31. The DERM expressly reserves the right to initiate appropriate legal action to prevent or prohibit the future violations of applicable statutes or the rules promulgated thereunder.

32. Entry into this Consent Agreement does not relieve Respondent of the responsibility to comply with applicable federal, state or local laws, regulations and ordinances.

33. If any event occurs which causes delay, or the reasonable likelihood of delay, in complying with the requirements or deadlines of this Agreement, Respondent shall have the burden of demonstrating to DERM, that the delay was, or will be, caused by circumstances beyond the control of Respondent. Upon occurrence of the event(s) causing delay, or upon becoming aware of a potential for delay, Respondent shall promptly notify DERM orally within twenty four (24) hours and shall, within five (5) days of oral notification to the DERM, notify DERM in writing of the anticipated length and cause of the delay, the measures taken or to be taken to prevent or minimize the delay, and the timetable by which Respondent intends to implement these measures. If DERM determines that the delay has been or will be caused by circumstances beyond the reasonable control of Respondent, the time for performance hereunder shall be extended for as reasonable a period as may be determined based on such circumstances. Excessive Emissions pursuant to Florida Administrative Code (F.A.C.) 62-210.700 may be considered a reasonable delay in emissions compliance with this Agreement provided Respondent complies with the requirements of this paragraph. The Respondent shall adopt all reasonable measures necessary to avoid or minimize delay.

Failure of Respondent to comply with the notice requirements of this paragraph in a timely manner shall constitute a waiver of Respondent's right to request an extension of time for compliance with the requirements or deadlines of this Agreement.

34. This Agreement shall neither be evidence of a violation of this Chapter or other environmental laws nor shall it be deemed to impose any limitation upon any investigation or action by DERM in the enforcement of Chapter 24, Miami-Dade County Environmental Protection Ordinance.

35. In consideration of the complete and timely performance by the Respondent of the obligations contained in the Agreement, DERM waives its rights to seek judicial imposition of damages or criminal or civil penalties for the matters alleged in this Agreement and the June 17, 1997 Notice of Violations and Orders for Correction Action.

36. This Agreement shall become effective upon the date of execution by the Director, Environmental Resources Management.

37. This Agreement shall expire upon written concurrence by The DERM, at such time as Respondent ceases to utilize coal in kiln #2 and has shown to be in compliance with paragraph 21 of this agreement or files with DEP and DERM a certificate of compliance documenting that it has commenced commercial

operation and has shown to be in compliance with the prescribed requirements of paragraphs 22 or 23.

STATE OF VIRGINIA
CITY OF NORFOLK

1-30-98	[signature]
Date	John D. Carr, President Tarmac America, Inc.

BEFORE ME, the undersigned authority, personally appeared JOHN D. CARR who after being duly sworn, deposes and says that he has read and agrees to the foregoing.

Sworn to and subscribed before me this 30th day of January, 1998 by JOHN D. CARR (name of affiant).

Personally Known ✓ or Produced Identification ______.
(Check one)

Type of Identification Produced: ______________________.

My Commission Expires August 31, 1999

Mildred H. Jolley
Notary Public

2-2-98	[signature]
Date	John W. Renfrow, P.E., Director Environmental Resources Management

Joseph T. Stilwell
Witness

Hugh P. Way
Witness

DERM
Complainant
vs.
Tarmac America, Inc.
Respondent

BEST AVAILABLE COPY

EXHIBIT A

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

PERMITTEE:
Tarmac Florida, Inc.
P. O. Box 2998
Hialeah, Florida 33012

Permit Number: AC 13-169901
PSD-FL-142
Expiration Date: June 30, 1992
County: Dade
Latitude/Longitude: 25°52'30"N
80°22'30"W
Project: Kiln No. 2 Coal Conversion

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the conversion of kiln No. 2 to coal firing. The project will be located at the permittee's existing facility in Medley, Dade County, Florida. The UTM coordinates are Zone 17, 562.8 km East and 2861.7 km North.

The source shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments are listed below:

1. Application to construct received September 5, 1989.
2. DER's letter of incompleteness dated October 4, 1989.
3. EPA's letter dated October 18, 1989.
4. KBN's response (to incompleteness letter) dated November 13, 1989.
5. Dade County DERM's letter dated November 17, 1989.
6. EPA's letter dated December 13, 1989.
7. KBN's letter dated December 21, 1989.
8. KBN's letter dated January 15, 1990.
9. KBN's letter dated January 30, 1990.
10. EPA's letter dated March 20, 1990.
11. EPA's letter dated April 13, 1990.
12. Dade County DERM's letter dated April 30, 1990.
13. NPS's letter dated May 30, 1990.

PERMITTEE:
Tarmac Florida, Inc.

Permit Number: AC 13-169901
PSD-FL-142
Expiration Date: June 30, 1992

GENERAL CONDITIONS:

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

a. Have access to and copy any records that must be kept under the conditions of the permit;

b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. a description of and cause of non-compliance; and

b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

GENERAL CONDITIONS:

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS:

1. The construction and operation of the subject modification of kiln No. 2 shall be in accordance with the capacities and specifications stated in the application.

2. The maximum clinker production rate of kiln No. 2 shall not exceed 25 tons per hour and 197,100 tons per year. Kiln No. 2 shall operate only on coal firing for up to 7,884 hours per year at a maximum firing rate of 162.5 MMBtu per hour. The coal used for firing kiln No. 2 shall have a maximum sulfur content of 2.0 percent by weight, with the rolling 30-day average sulfur content not exceeding 1.75 percent by weight.

3. Sulfur dioxide emissions from kiln No. 2 shall not exceed 7.8 lbs/ton of clinker produced, 195.0 lbs/hr, 768.7 tons/yr.

SPECIFIC CONDITIONS:

of 5.86 to 8.25 lbs/hr (up to 0.33 lbs/ton clinker, 32.52 TPY), the Department, if requested by the permittee, shall re-evaluate BACT and consider upward adjustments of the emission limitations for the indicated constituents based on available data. During this testing and evaluation period, the permittee shall make reasonable efforts to limit air emissions, and the Department shall not initiate enforcement proceedings. Any upward adjustment of emission limitations pursuant to this paragraph shall be the subject of public notice in a local newspaper pursuant to Department rules. The Department's determination based on the data produced under this paragraph shall be a point of entry for purposes of Section 120.57, Florida Statutes.

13. The compliance tests shall be conducted within 30 days after operation on coal begins. The Department's Southeast District office and the Dade County Department of Environmental Resources Management (DCDERM) shall be notified in writing at least 15 days prior to source testing and at least 5 days prior to initial startup. Written reports of the tests shall be submitted to those offices within 45 days of test completion.

14. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit (F.A.C. Rule 17-4.090).

15. An application for an operation permit must be submitted to the Department's Southeast District office and the DCDERM at least 90 days prior to the expiration date of this construction permit or within 45 days after completion of compliance testing, whichever occurs first. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (F.A.C. Rule 17-4.220).

Issued this 25 day of February, 1991

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

Carol M. Browner

Carol M. Browner, Secretary

BEST AVAILABLE COPY

John K.

Florida Department of

Memorandum — Environmental Protection

TO: Donna Gordon, Chief, Code Enforcement
Dade County DERM

FROM: A. A. Linero, P.E. Administrator AALinero 7/28

DATE: July 28, 1997

SUBJECT: Tarmac/Pennsuco Kiln No. 2

Per our teleconference of July 25, 1997 enclosed are the following references to nitrogen oxides emissions limits for Tarmac Kiln 2 from our permit files:

- EPA-issued Final Determination PSD-FL-050 dated July 8, 1980 for proposed conversions of Pennsucco Kilns 1, 2, and 3 to coal. Permit Condition 8 limits NOx from Kiln 2 to 118 lb/hr and 4.73 lb/ton clinker while burning coal. Per Table 4, this was the limit proposed by the applicant. Apparently the Kiln 2 conversion was deferred for some 10 years.

- Excerpt from application dated August 31, 1989 for Kiln 2 coal conversion project. Page 4 of the sealed application gives a maximum NOx emission rate of 169.25 lb/hr (6.77 lb/ton clinker). Value is also given on Page 2-6.

- Letter dated March 9, 1993 from KBN to DEP requesting exemption of Kilns 2 and 3 from Reasonable Available Control Technology (RACT) requirements for NOx. Table 2-1 attached to the letter acknowledges that the NOx limit is 113.8 lb/hr (4.55 lb/ton clinker). It includes the caveat that if emissions are between 113.8 to 169 lb/hr, Best Available Control Technology (BACT) may be re-evaluated by FDEP.

I was not the permitting engineer on any of these actions related to Tarmac and I was not involved with the Rinker consent order. At first glance, note that the Tarmac case appears to be at least a violation of a BACT limit in a PSD permit (PSD-FL-142). Construction projects offer the best chance for upgrading emissions controls and that opportunity arose for Tarmac during the coal conversion. Tarmac (or Pennsucco) has known (or should have known) for at least 17 years roughly what levels of NOx emissions represent BACT for NOx for Kiln 2. Tarmac did not approach DEP with a clear solution to its NOx problem even after they were advised in writing on October 16, 1996 that "the Department will have to take appropriate action to enforce the existing permit limits."

The Rinker case involves violation of a fairly recent RACT rule and Rinker apparently did not implement a major construction project affording a routine opportunity to upgrade its emissions control. That does not excuse a violation, but it is a difference. Presumably the modernization project at Rinker will afford that opportunity. In any case, Rinker approached the DEP with proposed solutions to its problem.

Our staff is available to assist, but by and large it appears that the facts to adequately support your action can be readily retrieved from your files. I can come by during one of my routine visits and review them with DERM. Please call me or John Reynolds if you have technical questions regarding Tarmac. If you wish to consult on Rinker or (possible) Tarmac consent orders, please contact Jim Pennington directly. We can be contacted at 850/488-1344.

AAL/aal

cc: Pat Wong, DERM
Sharon Crabtree, DERM
Clair Fancy, BAR
Jim Pennington, BAR
Tom Tittle, SED

JR
Kiln #2

METROPOLITAN DADE COUNTY, FLORIDA

METRO-DADE

RECEIVED
JUN 24 1997
BUREAU OF
AIR REGULATION

DERM
ENVIRONMENTAL RESOURCES MANAGEMENT
ENFORCEMENT SECTION
33 SOUTHWEST 2nd AVENUE
SUITE 1100
MIAMI, FLORIDA 33130-1540
(305) 372-6902

June 17, 1997

John D. Carr, President
Tarmac Florida, Inc.
1151 Azalea Garden Rd.
Norfolk, Va. 23502

CERTIFIED MAIL NO:P333150717
RETURN RECEIPT REQUESTED

Michael R. Kane, Vice President
Tarmac Florida, Inc.
11000 NW 121 Way
Medley, FL 33178

CERTIFIED MAIL NO:P333150723
RETURN RECEIPT REQUESTED

RE: Exceedances of permitted emissions at Tarmac/ Pennsuco portland Cement plant located at, near or in the vicinity of 11000 NW 121 Way, Medley, Florida, 33178.

Dear Messrs Carr and Kane:

NOTICE OF VIOLATION
AND
ORDERS FOR CORRECTIVE ACTION AND SETTLEMENT

A departmental review of reports for emission tests conducted on May 31, 1995 and December 17-20, 1996 revealed exceedances of allowable pollutants as follows:

Test Date	Emission Unit	Pollutant Test	Result	Allowable Emissions
5/31/95	kiln #2	Nitrogen Oxide	328.4 lbs/hr	113.8 lbs/hr
12/17/96	cooler #3	Particulate Matter	0.49 lbs/ton	0.1 lbs/ton
12/18/96	cooler #2	Particulate Matter	41.99 lbs/hr	23.71 lbs/hr
12/18/96	kiln #2	Particulate Matter	20.46 lbs/hr	14.40 lbs/hr
12/18/96	kiln #2	Nitrogen Oxide	307.21lbs/hr	113.8 lbs/hr
12/19/96	kiln #3	Sulfur Dioxide	6.98 lbs/ton	4.6 lbs/ton

Additionally, you have failed to submit the 1995 Annual Operating Report (AOR) for the referenced facility.

Be advised that the above constitute violations of the facility's Annual Operating Permits # AP-00604 and #AP-00368 issued by the Department of Environmental Resources Management (DERM) and specific conditions 5 and 8 of the Construction Permit AC 13-169901 and specific conditions 2 and 7 of the Operating Permit AO 13-238048 issued by the Florida Department of Environmental Protection (DEP).

Furthermore, said operations constitute violations of Section 62-296.320, 62-296.407 and 62-297.415 of the Florida Administrative Code and Sections 24-35.1, 24-54 and 24-55 of the Metropolitan Dade County Environmental Protection Ordinance.

Based on the above, and pursuant to the authority granted to me under Chapter 24, I am ordering you to submit to this Department the following items within thirty (30) days of receipt of this Notice:

(1) A complete written plan detailing proposed corrective actions to ensure that the allowable limits for emissions are not exceeded.

Be further advised that the above-referenced violations are subject to mandatory civil penalties which have been calculated at the amount of one hundred ninety two thousand dollars ($192,000). This case penalty calculation represents a settlement offer which shall remain open for thirty (30) days from your receipt of this letter.

Failure to resolve this matter within the thirty (30) day time period may result in this case being referred to the Office of the County Attorney for further enforcement action in a court of competent jurisdiction.

If you have any questions regarding the above please contact this office at (305) 372-6902 or the Air Facilities Section at (305) 372-6925.

Sincerely,

Sharon Crabtree

Sharon Crabtree
Code Enforcement Officer

CC: A.A. Linero, DEP
CC: Tom Tittle, DEP
CC: Albert Townsend, Tarmac PBC
SC:kjb

Memorandum

Florida Department of Environmental Protection

TO: Donna Gordon, Chief, Code Enforcement
Dade County DERM

FROM: A. A. Linero, P.E. Administrator *A A Linero 4/15*

DATE: April 15, 1997

SUBJECT: Tarmac/Pennsuco Kiln No. 2

Per your verbal request of April 14, 1997, attached are the following items from the permitting files in Tallahassee:

- Copy of Operating permit AO 13-238048 issued December 17, 1993
- Letter dated May 8, 1995 relating to the Department's extension of the construction permit PSD-FL-142 Kiln No. 2
- Letter dated July 21, 1995 from Tarmac to Mr. Clair Fancy containing data for six stack emissions tests
- Letter from Tarmac dated August 30, 1995 regarding the submittal of the processing fee of $250 for an extension
- Letter from Hopping, Green, Sams & Smith dated October 3, 1995, discussing future tactics for resolving NO_x issue
- Department letter dated November 20, 1995 to Tarmac granting the requested extension
- Letter from KBN dated February 16, 1996 consisting of a literature search completed on the behalf of Tarmac relating to NO_x issues
- Letter from KBN dated May 30, 1996 to the Department relating the status of Tarmac efforts to reduce NO_x, including a summary of SO_2 and NO_x emissions
- Copy of pertinent section 62-213.420(1)(a)4

Please call me if you have any further questions or requests at (904) 488-1344.

AL/hh

cc: Pat Wong, DERM (w/o attachments)
Tom Tittle, SED (w/o attachments)
Pat Comer, OGC (w/o attachments)
Luna Ergas, OGC (w/o attachments)
Jim Pennington, BAR (w/o attachments)

Golder Associates Inc.
6241 NW 23rd Street, Suite 500
Gainesville, FL 32653-1500
Telephone (352) 336-5600
Fax (352) 336-6603

Golder Associates

January 21, 1997

RECEIVED
JAN 23 1997
BUREAU OF
AIR REGULATION

Mr. A. A. Linero, Administrator
New Source Review Section
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Fl 32399-2400

Re: Investigation of NO_x Emissions
Tarmac Florida, Kiln No. 2

Dear Mr. Linero:

The purpose of this letter is to respond to the Florida Department of Environmental Protection (the "Department") letter dated October 16, 1996, and to present a status report on the investigation of NO_x emissions from Kiln No. 2. As you are aware, Tarmac Florida, Inc., has been investigating the high NO_x emissions being experienced from Kiln 2, and potential methods to reduce the emissions. The thrust of our efforts has been toward discovering the reasons for the high emissions, and what can be done to reduce the emissions.

This letter presents a status report to the Department, which presents the results of our efforts to date. Some of the information presented in our May 28, 1996, status report is repeated herein, in order to be complete. In addition, Tarmac's continuing efforts to determine if NO_x reduction measures implemented by Tarmac can result in achieving the permitted NO_x limit, or to what extent they can reduce emissions, are described.

Kiln No. 3 Emissions and Basis for Original BACT

The Department has requested that Tarmac investigate why the NO_x emissions from Kiln No. 2 exceed the BACT limit stated in the permit, and why such emissions are much higher than Kiln No. 3, which was the basis for the BACT. Therefore, a review of the permitting history of the Kiln No. 2 coal conversion PSD permit is presented.

In the original PSD permit application for the Kiln No. 2 coal conversion, Tarmac proposed BACT levels of 400 lb/hr for SO_2 (16 lb/ton clinker) and 169.3 lb/hr for NQ (6.77 lb/ton clinker) as starting points for the BACT evaluation. This starting point for NO_x was based on the permitted emission limit for Kiln No. 3, which experience had shown was achievable in Kiln No. 3, as well as a limited set of test data from Kiln No. 2 in 1980 when burning fuel oil and gas (see attached data).

It is important to recognize that the proposed BACT control technology was determined by the Department to be good combustion practices and the inherent SO_2 removal within the kiln system. Due to concerns over the nearby PSD Class I area (Everglades National Park), SO_2

emissions were considered to be of much more importance at the time. Subsequently, EPA agreed that BACT for NO_x was good operating and maintenance procedures to minimize NO_x emissions.

Tarmac proposed and strongly argued that a comprehensive test program be conducted prior to setting any final emission limits for Kiln No. 2. This was due to the uncertainty in emissions from Kiln No. 2 versus Kiln No. 3 (due to different size of the kilns and different firing types). Tarmac alluded to a similar experience with Kiln No. 3 when it was converted to coal. An emission limit was agreed to without any test data, and the limit proved to be unattainable. Therefore, the Kiln No. 3 emission limits were revised. Tarmac did not want to make this same error again. Tarmac's commitment was to minimize SO_2 emissions to the extent possible, again due to the Class I area concerns. EPA approved the testing plan as a mechanism to set the BACT limit for SO_2 in January 1990. The BACT limit for NO_x was also to be set through the testing program.

The actual test data from Kiln No. 2 shows that the original commitment of minimizing SO_2 emissions to the extent practical is limited if NO_x emissions are to be reduced. The data reflect Tarmac's previous experience that reducing NO_x emissions results in an increase in SO_2 emissions. Prior to the most recent change to the coal burner on Kiln No. 2, actual SO_2 emissions were well below the allowable BACT limit. However, after installation of the new coal burner, which significantly reduced NO_x emissions, the SO_2 emissions increased markedly. As will be discussed in this report, the low NO_x emissions in effect cause the conversely high SO_2 emissions.

<u>Kiln No. 2 NOx Emissions</u>

A complete summary of the SO_2 and NO_x emissions data and related process data obtained to date for Kiln No. 2 is presented in Table A attached. A discussion of these tests is provided below.

Burner Modifications

The series of tests spanning April 1994 through December 1995 were required by the original construction permit. These tests were conducted with the original coal burner installed under the construction permit. The nozzle diameter of the coal burner was 13 inches during these tests. Since these series of tests resulted in relatively high NO_x emissions, Tarmac decided to modify the coal burner. The rationale for this change is described below.

Kiln No. 2 is a direct fired kiln. This means that the primary combustion air to the kiln is provided through the coal burner. Air is swept through the coal mill, which provides for drying of the coal, as well as pneumatic conveying of the coal. The air and coal is then discharged into the kiln through the burner. Additional secondary combustion air to the kiln is provided via air from the clinker cooler. Clinker cooler air is drawn into the kiln by means of the draft created by the kiln.

In the direct fired system, the control over the primary combustion air is limited since a certain minimum air flow through the coal mill must be maintained in order to dry and convey the coal. Flame characteristics (i.e., flame length and intensity) are critical to producing clinker of acceptable quality. However, one potential means of reducing the primary air requirements, and potentially reducing NO_x emissions, is to reduce the coal burner nozzle diameter. By reducing the nozzle diameter, it may be possible to maintain the critical flame characteristics and at the same time reduce the amount of primary air.

In order to investigate this potential, prior to the May 1996 testing the coal burner was modified to a 10 inch nozzle diameter. Although this modification resulted in NO_x emissions which were at the low end of the range of emissions experienced in the past for Kiln No. 2, emissions were still well above the permitted limit. In addition, this nozzle diameter was considered to be too small by plant personnel because it limited too severely the air flow through the coal mill, and high velocities at the nozzle tip were causing excessive wear on the burner tip.

As a result, the burner nozzle diameter was increased to 11 inches prior to the July 31, 1996 testing. Initial test results indicate that this nozzle configuration has significantly reduced NO_x emissions, that the burner is not adversely affected, and that satisfactory clinker can be produced using this burner. However, additional testing is needed to confirm these initial results. The December 1996 tests results were inconclusive due to kiln operating problems during the testing period.

Results of Testing

As shown in Table A, during the tests when the coal burner diameter was 13 inches (1994 and 1995 testing), the SO_2 emissions were generally very low, while the NQ emissions were high compared to the permitted emission rates. According to plant kiln operators, the SO_2 and NO_x emissions are related to the oxygen level in the kiln. They state that as the oxygen level in the kiln increases, SO_2 emissions decrease while NO_x emissions increase. They stated that this trend has also been evident on Kiln No. 3.

The available test data for Kiln No. 2 was analyzed to determine if a correlation exists between NO_x, oxygen and SO_2 emissions. During the stack tests on Kiln No. 2, oxygen level at the stack is measured. However, this measurement is affected by infiltration of ambient air into the system and is not reflective of conditions in the kiln. Therefore, oxygen levels in the kiln itself are needed. Tarmac maintains a kiln oxygen monitor on Kiln No. 2, and data from this monitor is archived. Due to this archiving, kiln oxygen data for only the 1996 tests were available. As a result, the stack oxygen data were analyzed to determine if any correlation exists between NO_x emissions and stack oxygen level. Kiln oxygen levels were also evaluated for the 1996 data.

Based on this evaluation, no significant relationship between stack or kiln oxygen level and NO_x or SO_2 emissions was found. However, there is a general trend towards lower NO_x emissions as oxygen level in the kiln is decreased.

The coal burner nozzle diameter was 10 inches during the May 1996 testing. As described previously, this burner diameter caused operating problems with the burner and the coal mill. Also, NO_x emissions averaged 253 lb/hr and 2.1 lb/MMBtu, which are lower than many pervious tests, but remained above the permit "window" of 169.3 lb/hr , and above the RACT limit of 2.0 lb/MMBtu.

As a result, Tarmac modified the burner to an 11 inch nozzle diameter for the July/August 1996 testing. While resulting in satisfactory kiln and coal mill operation, the NO_x emissions from the July/August testing averaged 199.4 lb/hr and 1.56 lb/MMBtu. Although this emission level exceeds the permit "window" of 169.3 lb/hr, it is within the RACT limit of 2.0 lb/MMBtu.

Additional testing was conducted in December 1996 in an effort to duplicate the success of the July/August tests. Results from this test were much higher than the July/August testing, averaging 307 lb/hr and 2.90 lb/MMBtu. However, these higher emission rates are not considered to be representative of normal operation, because the kiln was experiencing some operational problems during the testing. During the testing, the kiln was experiencing several "hot spots" on the kiln shell.

Hot spots are areas of the kiln shell where the inner coating of brick and clinker has worn thin, causing the outer shell temperature to rise. When such conditions occur, the operator reduces fuel consumption and therefore clinker production, so as to not cause damage to the kiln. During this testing, the hot spots were in the area of the coal flame. As a result, the operator also increased the combustion air to the kiln, as a means of decreasing kiln temperatures. These operating changes are believed to be the cause of the higher NO_x emissions.

Because of the hot spots developing in the kiln, Tarmac is shutting down the kiln in January for repairs. The kiln will be brought back on-line in late February. Tarmac is planning an additional test for NO_x and SO_2 emissions in February or early March to confirm the emissions with the new burner pipe when the kiln is operating normally.

Conclusions

Based on the information gathered to date for Kiln No. 2, the reasons for the high NO_x emissions can be summarized as follows:

1. Kiln No. 2 operates at a kiln oxygen level normally in the range of 2 to 2.5%. By comparison, Kiln No. 3 normally operates at an oxygen level of approximately 1.0%.

2. Kiln No. 3 is an indirect fired kiln, meaning that the coal fuel and the primary combustion air are delivered to the kiln separately. This allows more control over the combustion air, allowing the combustion air to be varied to obtain optimum combustion conditions and flame characteristics. The air associated with the coal burner normally is not varied. In a wet process cement kiln, the flame characteristics (flame length and intensity) are critical to clinker production.

In contrast, Kiln No. 2 is a direct fired kiln, which means that the primary combustion air is delivered to the kiln through the coal feed system. In such a system, the amount of combustion air cannot be reduced or varied, because the air velocity through the burner is critical to the flame characteristics.

120,000 dscf / ton clinker 144,000

3. This difference in the two kilns is reflected in the gas flow rates from the kilns. Kiln No. 2, with a maximum clinker production rate of 25 TPH, has an exhaust gas flow rate of 50,000 to 60,000 dscfm. This equates to 2,000 to 2,400 dscfm per ton per hour of clinker produced. Kiln No. 3 normally operates at 87.5 TPH clinker with exhaust gas flow of 140,000 to 160,000 dscfm. This equates to 1,600 to 1,830 dscfm per ton per hour of clinker produced. Therefore, Kiln No. 2 requires approximately 25% more air to operate than Kiln No. 3. This in turn results in a higher oxygen level in the kiln, and hence higher NO_x emissions but lower SO_2 emissions compared to Kiln No. 3.

Continuing Investigation

Based on the above discussion, Tarmac is focusing on reducing the amount of combustion air to the kiln as the only feasible means of lowering NO_x emissions. To this end, Tarmac recently installed a modified coal burner on Kiln No. 2 during the recent outage in April 1996, and again modified the burner in July 1996. The previous coal burner had a 13 inch nozzle, while the new burner will have a 11 inch nozzle. The intention in reducing the nozzle diameter is to reduce the amount of primary air introduced through the coal burner, while maintaining the velocity through the burner obtained by the previous burner design, thus maintaining the previous flame characteristics. The additional emissions test will also be used to determine the effects of the changes upon the grind ability of the clinker product. As discussed above, proper clinker production is dependent upon the flame characteristics.

Tarmac is planning on conducting an additional stack test on Kiln No. 2 with the new burner in late February or early March. This test will further assess the effectiveness and potential in reducing NO_x emissions from Kiln No. 2. The Department will be notified prior to the testing as to the exact test dates. Upon completion of the testing, the test data will be analyzed and submitted to the Department. This analysis, along with analysis of the historic test data as described above, will be submitted to the Department within 45 days of completing the testing.

Please call if you have any questions concerning this status report.

Sincerely,

Mark J. Aguilar for

David A. Buff, P.E.
Principal Engineer
Florida P.E. #19011

SEAL

cc: Al Townsend
Scott Quass
Jim Alves

cc: G. Reynolds, BAR
P. Comer, OGC
T. Tittle, SED
E. Anderson, Dade Co.
B. Beals, EPA

Table A. Summary of NOx/SO2 Emissions From Kiln No. 2, Tarmac Florida

Date	Run#	Kiln Feed (TPH)	Clinker (TPH)	Coal Usage(a) (TPH)	Coal Heating Value(b) (Btu/lb)	Heat Input (MMBtu/hr)	Heat Rate (MMBtu/ton clinker)	Coal Sulfur %	Sulfur Dioxide Emissions ppm	lb/hr	lb/MMBtu	lb/ton kiln feed	lb/ton clinker	Nitrogen Dioxide Emissions ppm	lb/hr	lb/MMBtu	lb/ton kiln feed	lb/ton clinker	Oxygen Level (%) Stack	Kiln	Stack Flow acfm	dscfm
04/26/94	1	39.58	24.08	4.58	13,241	121.29	5.04	1.86	0.63	0.37	0.003	0.009	0.015	1,187	450	3.71	11.37	18.69			86,415	59,855
04/26/94	2	39.58	24.08	4.58	13,241	121.29	5.04	1.86	0.61	0.36	0.003	0.009	0.015	1,092	427	3.52	10.79	17.73			91,144	59,855
04/26/94	3	39.58	24.08	4.58	13,241	121.29	5.04	1.86	0.61	0.35	0.003	0.009	0.015	1,117	422	3.48	10.66	17.52			86,816	57,827
06/28/94	1	38.33	23.6	5.33	13,241	141.15	5.98	1.75	54.18	32.33	0.229	0.843	1.370	610	255	1.81	6.65	10.81			93,138	59,875
06/28/94	2	38.33	23.6	5.33	13,241	141.15	5.98	1.75	108.16	62.76	0.445	1.637	2.659	669	281	1.99	7.33	11.91			90,738	58,286
06/28/94	3	38.33	23.6	5.33	13,241	141.15	5.98	1.75	88.07	51.46	0.365	1.343	2.181	655	282	2.00	7.36	11.95			92,633	58,642
08/28/94	4	38.46	24.0	5.41	13,241	143.27	5.97	1.75						787	332	2.32	8.63	13.83				58,937
06/28/94	5	38.46	24.0	5.41	13,241	143.27	5.97	1.75						579	246	1.72	6.40	10.25				59,280
08/31/94	1	32.8	19.3	4.90	13,241	129.76	6.72	0.85	9.90	5.03	0.039	0.153	0.261	648	237	1.83	7.23	12.28	9.40		78,548	50,967
08/31/94	2	32.8	19.3	4.90	13,241	129.76	6.72	0.85	20.60	10.89	0.084	0.332	0.564	514	195	1.50	5.95	10.10	9.40		80,268	51,988
08/31/94	3	32.8	19.3	4.90	13,241	129.76	6.72	0.85	15.00	7.76	0.060	0.237	0.402	488	182	1.40	5.55	9.43	9.40		78,548	50,967
10/27/94	1	38.9	24.7	5.10	13,241	135.06	5.47	0.76	4.39	2.56	0.019	0.066	0.104	754	316	2.34	8.12	12.79	9.72		115,146	58,456
10/28/94	3	39.8	26.1	5.50	13,241	145.65	5.58	0.76	3.43	1.96	0.013	0.049	0.075	809	333	2.29	8.37	12.76	9.76		115,912	57,531
10/28/94	4	39.8	26.1	5.50	13,241	145.65	5.58	0.76	30.52	16.75	0.115	0.421	0.642	544	215	1.48	5.40	8.24	9.28		113,480	55,094
01/03/95	1	40.5	25.0	4.75	13,278	126.14	5.05	0.88	1.61	0.92	0.007	0.023	0.037	618	255	2.02	6.29	10.19	10.30		91,761	57,583
01/03/95	2	40.5	25.0	4.75	13,278	126.14	5.05	0.88	1.26	0.70	0.006	0.017	0.028	988	398	3.16	9.84	15.93	10.30		88,956	56,308
01/03/95	3	40.5	25.0	4.75	13,278	126.14	5.05	0.88	1.23	0.07	0.001	0.002	0.003	883	354	2.81	8.74	14.16	9.76		89,294	56,002
05/31/95	1	38.5	24.0	5.30	13,278	140.75	5.86	0.67	NA	4.23	0.030	0.110	0.176	923	347	2.46	9.01	14.45	10.70		105,551	52,186
05/31/95	2	38.5	24.0	5.29	13,278	140.48	5.85	0.67	NA	7.26	0.052	0.189	0.303	883	332	2.36	8.62	13.84	11.10		105,918	51,013
05/31/95	3	38.5	24.0	5.29	13,278	140.48	5.85	0.67	NA	1.81	0.013	0.047	0.075	821	322	2.29	8.35	13.40	11.20		107,367	53,963
12/11/95	1	35.0	20.8	5.10	13,278	135.44	6.51		1.51	0.91	0.007	0.026	0.044	728	308	2.28	8.80	14.81	11.00		113,178	59,063
12/11/95	2	35.0	20.8	5.10	13,278	135.44	6.51		1.53	0.91	0.007	0.026	0.044	824	355	2.62	10.14	17.07	11.30		120,039	60,164
12/11/95	3	35.0	20.8	5.10	13,278	135.44	6.51		0.00	0.00	0.000	0.000	0.000	1,044	448	3.31	12.80	21.54	10.90		118,322	59,898
5/31/96	1	35.0	22.1	4.80	12,893	123.77	5.60	1.19	3.90	2.13	0.017	0.061	0.096	547	217	1.75	6.20	9.82	9.80	1.50	113,456	55,435
5/31/96	2	35.0	22.1	4.80	12,893	123.77	5.60	1.19	2.20	1.25	0.010	0.036	0.057						9.70	1.70	118,408	57,881
5/31/96	2-A	35.0	22.1	4.70	12,893	121.19	5.48	1.19						629	261	2.15	7.46	11.81	9.70	1.70		
5/31/96	2-B	35.0	22.1	4.60	12,893	118.62	5.37	1.19						588	244	2.06	6.97	11.04	9.72	1.75		
5/31/96	3	35.0	22.1	4.60	12,893	118.62	5.37	1.19	1.50	0.89	0.008	0.025	0.040	646	267	2.25	7.63	12.08	9.75	1.75	118,041	57,609
5/31/98	4	35.0	22.1	4.50	12,893	116.04	5.25	1.19	1.70	1.02	0.009	0.029	0.046	655	275	2.37	7.86	12.44	9.87	1.90	118,479	58,598
7/31/98	1	27.8	21.9	5.00	12,429	124.29	5.68	0.96						433	177	1.42	6.37	8.08		0.75		56,923
8/01/96	1	32.0	20.7	5.20	12,429	129.26	6.24	1.03	253	147	1.137	4.594	7.101	468	195	1.51	6.09	9.42	9.45	1.00	117,376	58,211
8/01/96	2	32.0	20.7	5.15	12,429	128.02	6.18	1.03	339	193	1.508	6.031	9.324	487	199	1.55	6.22	9.61	9.21	0.70	115,061	57,150
8/01/96	3	32.0	20.7	5.15	12,429	128.02	6.18	1.03	311	181	1.414	5.656	8.744	512	215	1.68	6.72	10.39	9.06	0.50	112,202	58,517
8/01/96	4	32.0	20.7	5.15	12,429	128.02	6.18	1.03	235	133	1.039	4.156	6.425	520	211	1.65	6.59	10.19	9.04	0.60	114,985	56,793
12/18/96	1	32.6	21.0	3.90	13,589	105.99	5.05	1.19	324	183	1.727	5.613	8.714	756	307	2.90	9.42	14.62		1.50		56,751
12/19/96	2	31.0	20.4	3.90	13,589	105.99	5.20	1.19	86	48	0.453	1.548	2.353	721	291	2.75	9.39	14.26		1.50		56,401
12/19/96	3	31.0	20.4	3.90	13,589	105.99	5.20	1.19	295	157	1.481	5.065	7.696	842	323	3.05	10.42	15.83		1.50		53,484
								Number of Tests =	32	32	32	32	32	36	36	36	36	36	25	14	29	35
								Minimum =	0.0	0.0	0.000	0.000	0.000	433	177	1.40	5.40	8.08	9.04	0.50	78,548	50,967
								Average =	68.6	39.3	0.322	1.199	1.863	721	291	2.27	8.05	12.87	9.95	1.31	103,144	56,786
								Maximum =	339.0	193.0	1.727	6.031	9.324	1187	450	3.71	12.80	21.54	11.3	1.90	120,039	60,164
								RACT Limit =		NA			NA		NA	2.00		NA				
								Permit Limit =		195.0			7.8		113.8			4.55				
										275.0 (c)			11.0 (c)		169.3 (c)			6.77 (c)				

(a) As-fired values.
(b) 1996 data based on weekly as-fired coal analysis; all other data based on yearly average coal analysis.
(c) Represents maximum value which limit can be raised to based on test data.

Table 1. Summary of Nitrogen Oxide Emissions from Coal-Fired Wet Process Cement Kilns.

Source of Emission Factor	Fuel	No. of Source Tests or CEM Data	Reference	Heat Input Rate (lb/MMBtu)	Clinker Production Rate (tons/hr)	NOx Emissions lb/hr Average	lb/hr Range	lb/MMBtu Average	lb/MMBtu Range	lb/ton clinker Average	lb/ton clinker Range
Tarmac Kiln 2 NOx Limit	Coal	1	1	162.5	25	--	113.8, max	--	0.70, max	--	4.55, max
Tarmac Kiln 3 NOx Limit	Coal	1	1	417.5	88	--	592, max	--	1.42, max	--	6.77, max
Tarmac Source Tests: No. 2 Kiln, 1994 and 1995	Coal	6	2	115-138	19-26	308.8	205 - 417	2.50	1.67 - 3.78	8.1	6.24 - 10.94
Tarmac Source Tests: No. 3 Kiln, 1982 thru 1993	Coal	16	3	360-473	79-92	533.0	218 - 855	1.34	0.71-2.11	6.2	3.5 - 8.8
Rinker Source Tests: 2 Kilns	Coal	3	4	352.4	71.4	1,182.3	883 - 1431	3.36	2.5 - 4.08	16.6	12.25 - 20.14
1982 PCA Survey of Coal-fired Wet Process Cement Kilns (b)	Coal	8	5	--	--	--	--	--	--	5.0	1.69 - 8.25
Continental Cement Company: June 20, 1990	Coal	1	6	475.0 (a)	57.0	671.6	--	1.41	--	--	--
Holnam, Inc. CEM Data: July 16, 1992	Coal	1	7	--	--	--	--	--	--	12.50	--
Holnam, Inc. Source Test: October 24, 1991	Coal	1	8	--	--	--	--	--	--	5.80	--
Lehigh Portland Cement Company Source Test: May 22, 1990	Coal	1	9	162.5	--	--	--	1.12	--	5.90	--
AVERAGE						539.2		1.6		3.0	
RANGE						(113.8 - 1182.3)		(0.7 - 3.36)		(4.55 - 16.6)	

Footnotes
(a) Heat input (Btu/hr) is based on burning 100% coal, and any supplemental fuel is added at a rate of 50% of the coal Btu load (i.e., 50% coal Btu/hr, 50% hazardous waste Btu/hr).
(b) Emissions are based on a study of 8 wet process cement kilns firing 100% coal.

References

1. From Permit Allowables for Kiln 2 (AC13-169901 ;PSD-FL-142), and for Kiln 3 .
2. Tarmac Source Tests - No. 2 Kiln: April 26-27, 1994, June 28-29, 1994, August 31, 1994, October 27-28, 1994, January 3, 1995, and May 31, 1995; Medley, Florida.
3. Tarmac Source Tests - No. 3 Kiln: April and May 1982, May 16, 24, 31, and August 1985, December 1986, April and December 1987, July and August 1988, May and August 1989, October 1990, August 1992, and September 1993; Medley, Florida.
4. Rinker Materials Corporation Source Tests: January 1993; Dade County, Florida. Fired with 100% Coal.
5. "An Overview of the Formation of SOx and NOx in Various Pyroprocessing Systems" by Peter Bechtoft Nielsen & Ove Lars Jepsen, F.L. Smidth & Co. A/S, Copenhagen, Denmark. Figure 8.1.
6. Continantal Cement Company Source Test: June 20, 1990; Hannibal, Missouri. Fired with 100% Coal.
7. Holnam, Inc. CEM Data: July 16, 1992; Artesia, Mississippi. Fired with 100% Coal.
8. Holnam, Inc. Source Test: October 24, 1991; Florence, Colorado. Fired with 100% Coal.
9. Lehigh Portland Cement Company Source Test: May 22, 1990; Cementon, New York. Fired with 100% Coal.

Table 2. Nitrogen Oxide Emissions From Mixed-Fuel-Fired Wet Process Cement Kilns

Source of Emission Factor	Type of Fuel	No. of Source Tests or CEM Data	Reference	Heat Input Rate (MMBtu/hr)	Clinker Production Rate (tons/hr)	NOx Emissions lb/hr	NOx Emissions lb/MMBtu Average	NOx Emissions lb/MMBtu Range	NOx Emissions lb/ton clinker Average	NOx Emissions lb/ton clinker Range
Holnam Source Tests: October 17-18, 1990	Coal /Coke/Tires	2	1	258.6	50.1	449.9	1.74	1.61 - 1.86	9.0	8.3 - 9.6
Blue Circle, Inc. CEM Data	Coal/Coke	1	2	162.5			1.91		9.38	
Holnam Source Test: October 16, 1990	Coal/Coke	1	3	258.0	50.0	529.2	2.05		10.6	
Holnam, Inc. CEM Data	Coal/Coke	1	4						6.80	
Holnam, Inc. CEM Data: June 28 and July 9, 1992	Coal/Coke (Oil)	2	5						5.50	5.3 - 5.7
LaFarge Corporation Source Test: May 25, 1982	Coal/Coke/WDF	1	6	162.5			0.68		3.60	
Ash Grove Cement Company CEM Data: July 10, 1992	Coal/Coke/WDF/Gas		7	162.5			1.37		9.00	
Continental Cement Company: July 5-6, 1990	Coal/Diesel	2	8	475.0	75.9	218.9	0.46	0.3 - 0.61		
Holnam, Inc. Source Test: June 1992	Coal/Gas	2	9						17.70	15.9 - 19.5
Ash Grove Cement Company CEM Data: July 1992	Coal/LWDF/SWDF	3	10	162.5			2.26	1.97 - 2.58	15.83	13.51 - 18.34
Continental Cement Company: June 21, 1990	Coal/Waste	3	11	475.0	78.6	754.5	1.59			
Holnam, Inc. Source Test: November 21, 1991	Coal/Waste (Gas)	2	12						6.04	6.61 - 5.46
Lone Star Industries CEM Data	Coal/Waste (Oil/Waste)	1	13						5.0	
Holnam, Inc. Source Test: February 10, 1986	Gas (Coal)	1	14						11.60	
AP-42, Section 11.6	Various	6	15						7.4	
AVERAGE						**488.1**	**1.5**	**0.3 - 2.58**	**9.0**	**5.3 - 19.5**

Footnotes
(a) Heat input (Btu/hr) is based on burning 100% coal and a heating value of 12,500 lb/MMBTU. Any supplemental fuel is added at a rate of 50% of the coal Btu load (i.e., 50% coal Btu/hr, 50% hazardous waste Btu/hr).

References
1. Holnam Source Tests: October 17-18, 1990; Seatle, Washington. Fired with 44% Coal, 32% Pet Coke, 11% Black Diamond (coal), and 11% tire derived fuel (TDF).
2. Blue Circle, Inc. CEM Data; Ravena, New York. Fired with 40% Coal and 60% Coke.
3. Holnem Source Test: October 16, 1990; Seatle, Washington. Fired with 50% Coal, 37% Pet Coke, and 13% Black Diamond (coal).
4. Holnam, Inc. CEM Data; Artesia, Mississippi. Fired with Coal and Coke.
5. Holnam, Inc. CEM Data: June 28 and July 9, 1992; Holly Hill, South Carolina. Fired with Coal/Coke (Oil).
6. LaFarge Corporation Source Test: May 25, 1982; Paulding, Ohio. Fired with 45.3% Coal, 2.5% Coke, and 52.2% Waste-derived fuel (WDF).
7. Ash Grove Cement Company CEM Data: July 10 & 18, 1992; Foreman, Arizona. Fired with 30% Coal, 7.1% Coke, 61.6% Waste-derived fuel (WDF), and 1.3% gas.
8. Continental Cement Company Source Test: July 5-6, 1990; Hannibal, Missouri. Fired with 50% Coal and 50% diesel.
9. Holnem, Inc. Source Test: June 1992; Ada, Oklahoma. Fired with Coal/Gas..
10. Ash Grove Cement Company CEM Data: July 1992; Foreman, Arizona. Fired with 42% Coal, 42% Liquid waste-derived fuel (LWDF), and 16% Solid waste-derived fuel (SWDF).
11. Continental Cement Company Source Test: June 21-23, 1990; Hannibal, Missouri. Fired with 50% Coal and 50% hazardous waste.
12. Holnam, Inc. Source Test: November 21and 27, 1991; Morgan, Utah. Fired with Coal/Waste (Gas).
13. Lone Star Industries CEM Data; Greencastle, Indiana. Fired with Coal/Waste (Oil/Waste).
14. Holnam, Inc. Source Test: February 10, 1986; Three Forks, Montanta. Fired with Gas (Coal).
15. AP-42, Table 11.6-8. Emission factor based on 6 stack tests (3 from Tarmac's Medley, Florida facility).

ATTACHMENT A

Attachment A. Literature Search Contacts and Results - Page 1 of 8

Firm/Agency	Contact	Telephone	Results of Conversation	
U.S. Environmental Protection Agency; Research Triangle Park, NC	Jim Southerland OAQPS Section Chief	(919) 541-5523	Office closed due to government shutdown.	
U.S. Environmental Protection Agency; Research Triangle Park, NC	Ron Myers Project Officer for AP-42, Portland Cement Manufacturing	(919) 541-		
U.S. Environmental Protection Agency; Research Triangle Park, NC	Kristen Roland Library Assistant	(919) 541-2777	She performed a search, but did not find anything. Faxed instructions for accessing On-Line Library System. However, KBN could not access, system error.	
San Diego Air Pollution Control District (APCD), Air Permitting Section	Mike Lake Chief of Engineering Division	(619) 694-3313	1-9-96	Left Voice Mail message @ 2:30pm
			1-10-96	He had Dan Speer return my call.
San Diego APCD, Air Permitting Section	Dan Speer Senior Engineer	(619) 694-3311	1-10-96	Mike Lake had Dan call me back. He knows of only one wet process cement kiln in California, Riverside Cement in the South Coast Air Quality Management District (AQMD). Also recommended contacting Fred Lettuce there if I cannot find anyone there to help me.
Santa Barbara County, Air Permitting Section	Jerry Scheibe Engineering Supervisor	(805) 961-8800	1-9-96	He will have someone search their database and get back to me. He also recommended contacting SCAQ; CARB, Bob Georges @ (916) 327-5601 for BACT Clearinghouse and Don Coberline @ (916) 327-1505 for BART Clearinghouse; and Bay Area for their BACT databases.
Santa Barbara County, Air Permitting Section	Frances Gilliland Air Quality Specialist	(805) 961-8800	1-9-96	Their district does not have any wet process cement kilns. Suggested contacting Bay Area for their BACT database for guidelines on cement kilns. Also suggested Kern County APCD (805) 861-2593 and South Coast AQMD (909) 396-2000. Faxed a copy of a BACT Guideline Table for Cement Kilns in the Bay Area Air Quality Management District.
South Coast AQMD	Richard Haurylew Air Permit Engineer	(909) 396-2657	1-9-96	Left Voice Mail message @ 4:00pm
South Coast AQMD	Sean Cullins Air Permit Engineer	(909) 396-2655	1-10-96	They have BACT guidelines on dry kiln fired with natural gas. Suggested contacting Jon Henninger, Air Quality and Analysis and Compliance Supervisor @ (909) 396-2278.

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Firm/Agency	Contact	Telephone	Results of Conversation	
South Coast AQMD	Jon Henninger Air Quality & Analysis and Compliance Supervisor	(909) 396-2278	1-10-96	Riverside Cement (white cement) in Riverside @ (909) 683-3660 and Cal Portland Cement (grey cement) in Colton @ (909)... Recommended contacting Dixie Richards @ (909) 396-2395. Richard Thrash @ (909) 396-2397 for each plant, respectively. Also recommended contacting Doug Macauley in the Mojave Desert AQMD for two other cement kilns.
South Coast AQMD	Dixie Richards	(909) 396-2278	1-10-96	Out of office until 1-17-96. Call Hubert Wilson @ (909) 396-2496 for immediate assistance.
South Coast AQMD	Hubert Wilson Air Quality and Analysis Supervisor	(909) 396-2496	1-10-96	Neither Riverside Cement or Cal Portland Cement have wet process cement kilns in this area. He believes that Cal Portland is also in Mojave Desert, but it is a dry process cement kiln. **Suggested that using natural gas (low N2 content) or hydro-treated oil (removes excess H_2 and ammonia from the oil) in place of coal to reduce NO_x.**
South Coast AQMD	Richard Thrash Air Quality Engineer II	(909) 396-2397	1-10-96	Cal Portland Cement is not a wet process cement kiln. Recommended contacting San Bernardino County APCD (619)...
Mojave Desert AQMD	Jim Lehmann Air Quality Engineer III	(619) 245-1846	1-10-96	6-15% reduction of NOx on a BTU basis for dry cement kilns. Activated Sewage Sludge has reduced NOx on a dry kiln. The Cement Industry Environmental Consortion, 1490 Rubidoux Blvd., Riverside, CA 92509 did research testing for sewage additions. Recommended contacting L.L. Afeild @ (909) 683-7349 Fax 686-05703. Marquet Cement Company (out of business, he thinks) in Madison, WI, Ashland, KY, Lone Star, TX (Midland, Dallas). There are only 5 cement kilns in CA, this district only has three. San Bernardino County APCD does not have any wet kilns.
Cement Industry Environmental Consortion	Stretch Mayfield Executive Director	(909) 683-7349	1-10-96	Mitsubishi precalciner (1.5 million ton) in Lucerne Valley added Biosolids to reduce NOx about 40%. Low NOx burners generally hurt the kiln more than helping reduce the NOx.
Calif Air Resources Board (CARB)	Bob Georges BACT Clearinghouse	(916) 327-5601	1-9-96	Out of office until 1-26-96. Voice mail recommended contacting Lars Rydell @ (916) 327-7215.

Attachment A. Literature Search Contacts and Results - Page 3 of 8

Firm/Agency	Contact	Telephone	Results of Conversation	
CARB	Lars Rydell BACT Clearinghouse	(916) 327-5601	1-9-96	Does not have any information on wet process cement kilns. He will double check. Also suggested contacting San Joaquin Valley Unified APCD Seyed Sedredin @ (209) 497-1000 and Ruppie Gil @ (209) 545-7000. Also stated that Don Coberline only works with internal combustion engines and turbines and recommended not contacting for the cement industry.
Bay Area AQMD, Permitting Section	Barry Young Supervising Engineer	(415) 771-6000	1-9-96	He will fax me the Cement Kiln section of the BAAQMD Clean Air Plan which provides the background information for the BACT Guideline Table Frances Gilliland faxed earlier. Also recommended contacting Bobby Nishimura, Supervising Air Quality Engineer @ (415) 749-4679.
Bay Area AQMD, Permitting Section	Bobby Nishimura Supervising Air Quality Engineer	(415) 749-4679	1-9-96	5-10% of kilns may use radioaxial burner (low NOx burners) but do not work well because of the temperatures required for reactions to be completed. There are other EPA documents. Book/Encyclopedia from Portland Cement Association which covers the cement process including control methods, Critical Evaluation of Potential Impacts of Emissions from Midlothian Industries, Summary Report from Texas Natural Resources Conservation Commission. Methanol added with urea to change temperature
Kern County APCD	Mary Flynn Air Quality Engineer	(805) 861-2593	1-9-96	Their district only has dry process cement kilns. She did not know of any wet process cement kilns in use currently. They are not used very much because they are inefficient with fuel usage. She will fax me a list of all the Air Districts in California so I can contact them if necessary.

Attachment A. Literature Search Contacts and Results - Page 4 of 8

Firm/Agency	Contact	Telephone	Results of Conversation	
Portland Cement Association; Skoakie, IL	Ann Dougherty Program Mgr. of Environmental Process Technology	(708) 966-6200 Ext. 363	1-8-96	Ann will be out of the office until Thursday, 1-11-96. Her secretary, Flo Redman, referred me to Greg Miller of Construction Technologies Laboratory.
			1-16-96	Have presentation papers on NOx reductions, but only dry process, not wet process kilns. She recommended contacting Greg Miller at Construction Technologies Laboratory for additional information.
			1-31-96	Left voice mail message @ 10:30am. I would like to get the 1982 PCA survey of NOx emissions from coal-fired cement kilns.
Portland Cement Association; Skoakie, IL	Corinne Guth	(708) 966-6200 Ext. 378	1-8-96	The publication, *U.S. And Canadian Portland Cement Industry Plant Information Summary*, is available for $100 to nonmembers, and Tarmac is not a member. It provides a list of cement plants, location, type of cement kiln located at each plant, type of fuel, but not types of control devices or methods. There are approx. 73 wet process cement kilns presently operating. Suggested contacting Cheryl Solomon, U.S. Bureau of Mines for similar information.
			1-9-86	Ordered the publication listed above and had shipped for overnight delivery
Construction Technologies Laboratory; Skoakie, IL	Greg Miller Senior Principal Scientist	(708) 965-7500 Ext. 522	1-8-96	Write up a fax with my questions and he will get back to me. Probably not by tomorrow.
			1-9-86	Faxed a list of questions and requested the information by Thursday.
			1-16-96	Left voice mail message @ 4:30pm
U.S. Bureau of Mines; Washington, DC	Cheryl Solomon	(202) 501-9393	1-9-96	hours 7:30-5:00, LM @ 11:25am. Offices may be closed due to government shutdown.
Armstrong Cement & Supply Corporation; Cabot, PA	Rick Smith Plant Manager	(412) 352-4471	1-10-96	They have two coal fired wet process cement kilns.
			1-12-96	Left message @ 2:00pm
Armstrong Cement & Supply Corporation; Cabot, PA	Dan Coggins Quality Control Director	(412) 352-4471	1-15-96	Left message @ 11:45am
			1-16-96	Left message @ 4:15pm

Attachment A. Literature Search Contacts and Results - Page 5 of 8

Firm/Agency	Contact	Telephone	Results of Conversation	
Essroc Materials; P.O. Box 779 Bessemer, PA 16112	Alan Fay Process Engineer, E.I.T.	(412) 667-7702 Ext. 311	1-10-96 1-12-96 1-12-96 1-15-96	They have two coal fired wet process cement kilns. He returned my call, but I was not available. Left voice mail message @ 2:00pm Do not have a limit at the present time, but will by the end of the year. Are putting NOx CEMS on per state request by the end of the year to measure the emissions in order to set limits. Recommended contacting Ann Dougherty at Portland Cement Assoc. for more information.
Essroc Materials; Frederick, MD 21702	Lisa Environmental	(301) 662-8244 Ext. 6	1-18-96 1-18-96	They have two coal (waste) fired wet process cement kilns. Left voice mail message @ 5:10pm
Holnam Inc.; Florence, CO	Leo Jurjovec Plant Manager	(719) 784-6325	1-10-96 1-12-96	They have three coal fired wet process cement kilns. Recommended contacting Mark Johnson @ (313) 529-4344 at their corporate office in Dundee, MI.
Holnam Inc.; P.O. Box 122 Dundee, MI 48131	Mark Johnson Manager of Environmental Affairs	(313) 529-4344	1-12-96 1-16-96 1-17-96	Left voice mail message @ 2:00pm He returned my call, but I was not in. I left voice mail message @ 4:00pm Mark requested that I fax (313) 529-2719 a letter to request all the information I need.

Attachment A. Literature Search Contacts and Results - Page 6 of 8

Firm/Agency	Contact	Telephone	Results of Conversation	
Holnam Inc.; Dundee, MI	Rex Jameson Senior Environmental Project Manager	(313) 529-4352	1-19-96	Mark had Rex respond to my fax. European kilns may have NOx control techniques, but they are mostly dry kilns. **Flame temperature reduction to get same heat transfer without as much thermal NOx.** Holnam is adding tires with injection with the coal blown in 2-inch chunks in some of their wet kilns, but probably won't reduce NOx unless added mid-kiln. Also recommended contacting two of their facilities: Steve Otto in Mason City, IA @ (515) 421-3308 and Conrad Fzymczak in Seattle, WA @ (206) 937-8025. Both facilities are firing tires and have NOx permit limits. The Mason City facility only has dry cement kilns. Ash Grove Cement Co. in Foreman, AR is injecting tires into its wet process kiln (mid-kiln). Call to see if they are reducing their NOx levels. Also contact Doug Sweeney (913) 451-8900 in Ashgrove's Corporate office in Kansas City, KS to see if they have any other similar sources.
Holnam Inc.; Seattle, WA	Conrad Fzymczak Environmental Engineer	(206) 937-8025	1-19-96	They have one coal/tire (oil, gas, coke) fired wet process cement kiln. They do not have a permit for NOx. Chipped tires blown in with coal in front of kiln, not specifically for NOx reduction. Recommended contacting Angela Blaisdell at AMTest Air Quality (206) 222-7746 for looking at their test results with and without firing tires. Holnam has two other facilities with wet kilns firing tires. Contact: Kevin Ovard @ (801) 829-6821 in Devil's Slide, UT and Eric Ervin @ (719) 784-6325 in Portland, CO.
AMTest Air Quality; Preston, WA	Angela Blaisdale Vice President	(206) 222-7746	1-19-96	Left message @ 11:00am
AMTest Air Quality; Preston, WA	Jim Guenthoer Senior Air Quality Specialist Jan Alden Senior Technical Writer	(206) 222-7746	1-19-96	Left message @ 11:00am. He returned my call at 12:00pm, but I was not available. I returned call, and spoke with Jan Alden. She will contact Conrad to determine which source test I need and then fax the summary page to our Jacksonville office. She will also mail me a copy.

Attachment A. Literature Search Contacts and Results - Page 7 of 8

Firm/Agency	Contact	Telephone	Results of Conversation	
Holnam Inc.; Devil's Slide, UT	Kevin Ovard Environmental Manager	(801) 829-6821	1-19-96	They have two coal/waste/tire (gas) fired wet process cement kilns. Left message @ 11:55am
Holnam Inc.; 3500 Highway 120 Florence, CO 81226	Eric Ervin Environmental Engineer	(719) 784-6325	1-19-96	They have three coal fired wet process cement kilns. Permitted to burn tires. Fire with coal at front-end of kiln. NOx emissions caused primarily from the coal firing. Firing mid-kiln may or may not make a difference in NOx emissions. Tires have much less nitrogen content; however, lower Tires are used primarily for a less expensive fuel, not NOx reduction. Have stack tests 1. Reduce NOx by flame reduction. Not at this fafacility. 2. Lowering Nitrogen content. Decrease in nitrogen input of fuel by adding tires. Yes at this facility. 3. Thermal NOx is the major constituent of the NOx production. Recommended contacting Doug Sweeney at Ashrove Cement. He will know much more about wet process kilns with tire injection mid-kiln. Similar kilns, even with same dimensions can behave very differently in relation to process characteristics, including NOx emissions. Recommended obtaining "Burning Tires for Fuel and Tire Pyrolysis: Air Implications", EPA-450/3-91-024 does include NOx reduction summary from Holnam's, Seattle, WA wet process cement kiln.
Independent Cement Corporation; Catskill, NY	Charlie Klotz Environmental Manager	(518) 943-4040	1-10-96 1-12-96 1-15-96	They have one coal fired wet process cement kiln. Left voice mail message @ 2:15pm. He returned my call, but I was not available. He is out of office until Wednesday. Call Wed.
Medusa Cement Company; Clinchfield, GA	Randy Stillwell Environmental Engineer	(912) 987-2121	1-10-96 1-15-96	They have one coal fired wet process cement kiln. Have not operated their wet kiln since 1979.

Attachment A. Literature Search Contacts and Results - Page 8 of 8

Firm/Agency	Contact	Telephone	Results of Conversation	
Tarmac Florida; Deerfield Beach, FL	Scott Quass Environmental Manager	(800) 226-8167	1-9-96	He will get existing burner system specs and their suppliers of coal burners.
			1-15-96	Left voice mail message @ 4:00pm.

ATTACHMENT B

Attachment B. Literature Search Articles

Publication	Authors	Recommended NOx Control Techniques
"Alternative Control Techniques Document - NOx Emissions from Cement Manufacturing"; EPA-453/R-94-004	U.S. EPA, OAQPS, ESD	1) Combustion Modifications - Normal operational practices; therefore, not considered a NOx control technique, 2) Low NOx burners, 3) Staged Combustion - May be achieved using Low NOx burners, 4) External Flue Gas Recirculation - Has not been demonstrated for NOx reduction in cement kilns, 5) "Mid-Kiln" Firing of Tires/Waste - Difficult in Wet process kilns, 6) Selective Non-Catalytic Reduction (SNCR) - Preheater/Precalciner kilns only, 7) Selective Catalytic Reduction (SCR) - Limited Pilot plant data available. Low NOx burners may be used to control the available oxygen and temperature of the kiln burning zone which can reduce NOx formation. No flue gas treatment is used in any U.S. cement plant to reduce NOx emissions.
Cement Kiln NOx Control	A.T, McQueen, S.J. Bortz, M.S. Hatch, J.J. Buening, D.E. Shore, R.L. Leonard, E.F. Bouse; Radian Corporation.	1) Combustion Modifications, 2) Low NOx burners, 3) Staged Combustion, 4) Selective Non-Catalytic Reduction (SNCR), 5) Selective Catalytic Reduction.
"An Overview of the Formation of SOx and NOx in Various Pyroprocessing Systems"	Peter Bechtoft Nielsen, Ove Lars Jepsen; F.L. Smidth & Co. A/S, Copenhagen, Denmark.	NOx emissions from wet process kilns are determined exclusively by the conditions in the kiln burning zone. Factors which determine NOx formation in the kiln burning zone: 1) Max. theoretical (adiabatic) flame temperature, 2) Flame shape (burner type), 3) Excess air rate, 4) Max. necessary material temperature, 5) Material retention time in burning zone, and 6) Gas retention time in burning zone. High specific combustion air consumption, low secondary air temperature, and long material retention time in the burning zone should reduce NOx concentration in the exhaust gas of the kiln burning zone. Low NOx burners may be used to control these conditions as well as an automatic kiln control system to maintain constant burning conditions. A 1982 PCA survey of eight wet process coal-fired cement kilns is referenced. The average emission factor from this survey is 4.97 lbs (NOx)/ton (clinker) with a standard deviation of 3.28.

I N T E R O F F I C E   M E M O R A N D U M

Date: 09-Oct-1995 03:39pm ES
From: John Reynolds TAL
REYNOLDS_J
Dept: Air Resources Manageme
Tel No: (904)488-1344
SUNCOM: 278-1344

TO: Alvaro Linero TAL (LINERO_A)

Subject: Tarmac Memo Dated Oct. 3, 1995

I don't recall that we agreed to a BACT "re-determination" as Jim Alves implied. We said we would like more information regarding why the NOx numbers were so high relative to Kiln No. 3, but we didn't say we would use that information to redetermine BACT.

I suggest we respond with the following:

"This is in response to your letter dated October 3. As indicated during the Tarmac meeting on August 30, the Department would like more information as to why the NOx emissions from Kiln No. 2 exceed the BACT limit and why they are so much higher than Kiln No. 3 which was the basis for the Kiln No. 2 BACT limit. However, please understand that no agreement has been made to revise the BACT determination or to avoid enforcement of the current emission limit.

Rather than spending a lot of time and money developing an extensive report on various wet kiln technologies geared toward a revised BACT, Tarmac should be zeroing in on specific peculiarities of Kiln No. 2 affecting NOx emissions, perhaps conducting additional testing with another burner and/or employing kiln/burner design consultants to see if the problem can be solved through non-major physical/operational modifications. The Department will agree to a 7-month time period to accomplish this, which means that Tarmac must present evidence of its modification investigation and the results to the Department by May 15, 1996. "

HOPPING GREEN SAMS & SMITH
PROFESSIONAL ASSOCIATION
ATTORNEYS & COUNSELORS
123 SOUTH CALHOUN STREET
POST OFFICE BOX 6526
TALLAHASSEE, FLORIDA 32314
(904) 222-7500
FAX (904) 224-8551
FAX (904) 425-3415

JAMES S. ALVES
BRIAN H. BIBEAU
KATHLEEN L. BLIZZARD
ELIZABETH C. BOWMAN
RICHARD S. BRIGHTMAN
PETER C. CUNNINGHAM
RALPH A. DEMEO
THOMAS M. DEROSE
WILLIAM H. GREEN
WADE L. HOPPING
FRANK E. MATTHEWS
RICHARD D. MELSON
DAVID L. POWELL
WILLIAM D. PRESTON
CAROLYN S. RAEPPLE
DOUGLAS S. ROBERTS
GARY P. SAMS
ROBERT P. SMITH
CHERYL G. STUART

KRISTIN M. CONROY
CONNIE C. DURRENCE
JONATHAN S. FOX
JAMES C. GOODLETT
GARY K. HUNTER, JR.
JONATHAN T. JOHNSON
ROBERT A. MANNING
ANGELA R. MORRISON
GARY V. PERKO
KAREN M. PETERSON
MICHAEL P. PETROVICH
LISA K. RUSHTON
R. SCOTT RUTH
JULIE R. STEINMEYER

OF COUNSEL
CARLOS ALVAREZ
W. ROBERT FOKES

WRITER'S DIRECT DIAL NO.
425-2360

October 3, 1995

RECEIVED
OCT 3 1995
Bureau of
Air Regulation

<u>VIA HAND DELIVERY</u>

Mr. Al Linero
New Source Review Section
Florida Department of Environmental Protection
111 S. Magnolia Avenue, Suite 4
Tallahassee, FL 32302

RE: Tarmac Florida, Inc.
Kiln No. 2

Dear Al:

As discussed by telephone last month, Tarmac Florida requests that in addition to extending the expiration date of its PSD permit, DEP also include, as a minor modification, a schedule for resolving the pending issues concerning the final BACT determination for NOx. More specifically, this schedule would consist of the following three steps in development and consideration of pertinent information:

(1) <u>January 15, 1996</u> -- KBN to complete and submit to DEP results of a literature search compiling available information related to NOx emissions and NOx control technologies potentially applicable to wet process kilns. The results will be provided in narrative, tabular, and graphic format, as indicated from the data. The following potential sources of information will be consulted: EPA (Research Triangle Park Regional Offices, and BACT Clearinghouse); State of California; Portland Cement Association; air pollution control equipment vendors; supplies of coal burners; and sources operating NOx control systems on wet process kilns.

(2) <u>April 15, 1996</u> -- KBN to prepare and to submit a report addressing technically feasible NOx control technologies applicable to wet process cement kilns along

with economic evaluations of feasible alternatives. With respect to technical feasibility, an engineering analysis will be conducted of the cement kiln process, process variables, and factors affecting NOx emissions. Areas investigated will include the species of NOx generated, the formation steps in the kiln, and the potential magnitude and species of NOx formed. Both Tarmac's cement kiln and other operating wet process cement kilns may be visited during this task, to assess the feasibility of various technologies. A written discussion of the results will be provided, along with supportive tables, graphs, etc. With regard to the economic evaluation of the technically feasible alternative control technologies, capital and annual operating costs will be developed for each alternative, and the total and incremental cost effectiveness for each will be determined. Costs will be based upon vendor information and standard cost estimating procedures published by EPA.

(3) May 15, 1996 -- Based on the results of the economic evaluation and other information gathered during the study, KBN's BACT recommendation will be submitted. This recommendation will follow the EPA's "top-down" approach for determining BACT. A report describing the information and analysis gathered in all tasks will be developed for presentation to the Department. A meeting with the Department will be convened to present the results of the study and to discuss the analysis.

This process would facilitate the orderly development of relevant information, and allow DEP and Tarmac to address and evaluate pertinent questions in a systematic manner. Certainly a major advantage to this requested permit modification is that it identifies an endpoint to negotiations on this issue.

Please let me know at your earliest convenience whether this suggestion is acceptable to DEP. Of course, David Buff of KBN and I would be pleased to answer any questions regarding this proposal.

Very truly yours,

Jim

James S. Alves

JSA:lb

Tarmac

Tarmac America, Inc.
455 Fairway Drive
Deerfield Beach, FL 33441
Telephone: 305.481.2800
Facsimile: 305.480.9352

HAND DELIVERED

30 August 1995

Mr. A. A. Linero, P.E.
Administrator – New Source Review
Fla. Dept. Of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: **Pennsuco Cement Plant**
Dade County - AP
Kiln No. 2 Coal Conversion
FDEP Permit No. AC13-169901 [PSD-FL-142]

Dear Mr. Linero:

I am in receipt of your letter dated August 24, 1995 regarding my recent extension request for the above referenced permit. I have enclosed a check in the amount of $250.00 [check# 207080] for the required processing fee. Your comment regarding Tarmac's statement in a letter dated April 24, 1995 is noted. However, the submittal of an operation permit application would be premature in view of the requested reevaluation of the NO_x emission limits. We will discuss those matters at our meeting scheduled for this date.

Sincerely,

Scott Quaas
Environmental Manager
Technical Services–Florida Region

I N T E R O F F I C E   M E M O R A N D U M

Date: 29-Aug-1995 12:26pm ES
From: John Reynolds TAL
REYNOLDS_J
Dept: Air Resources Manageme
Tel No: (904)488-1344
SUNCOM: 278-1344

TO: Patricia Comer TAL (COMER_P)

CC: Alvaro Linero TAL (LINERO_A)

Subject: Tarmac

Correction, I should have said "meet the BACT limit of 1.04 lb/MMBTU" which represents the top of their proposed range.

I N T E R O F F I C E   M E M O R A N D U M

Date: 29-Aug-1995 07:15am EST
From: Patricia Comer TAL
COMER_P
Dept: Office General Counsel
Tel No: 904/488-9730
SUNCOM: 278-9730

TO: John Reynolds TAL (REYNOLDS_J)

Subject: Tarmac

John
I saw Jim Alves today and we decided that the meeting tomorrow should be technical, no attorneys. He says that the reason that Tarmac had a range was because nobody knew what BACT should be, but that they couldn't meet the range. Maybe you can talk to these guys about what the problem is, etc. but keep the legal issues open for later. Jim also says that the bubble rule, that's in the making this year, might resolve this problem. I'm not sure about any of that right now, but if so, all the better.
I think we suffer from not having Barry's input here. I wish I knew what the ranges were based on, if they were intended for BACT. Maybe you can find that out from the Tarmac people?
Thanks
Pat

I N T E R O F F I C E   M E M O R A N D U M

Date: 09-Aug-1995 01:49pm ES
From: John Reynolds TAL
REYNOLDS_J
Dept: Air Resources Manageme
Tel No: (904)488-1344
SUNCOM: 278-1344

TO: Patricia Comer TAL (COMER_P)

Subject: TARMAC CASE NO. 90-0954

The New Source Review Section would like the OGC's input regarding Tarmac's current request to amend a 1991 PSD construction permit quadrupling allowable NO_x emissions. Tarmac wants to meet with us right away on this, so we need a response ASAP. Specifically, we need to know why the Department agreed, in the Stipulation for Dismissal of the case, to a rather bizarre arrangement whereby the Department would reevaluate the BACT limits if emission results from a one-year test program fell within a stated range of values. Is the Department legally bound to reevaluate the permit limits if the test results are above the stated range of values as are the NO_x results?

The stipulated permit condition is:

"Tarmac shall conduct a series of compliance tests for SO_2, H_2SO_4 mist, and NO_x emissions every two months for up to one year to allow representative sampling during different times of the year. The tests shall be performed in accordance with the compliance test methods specified in this permit. In the event that this series of tests results in SO_2 emissions in the range of 195 to 275 lbs/hr (up to 11 lbs/ton clinker, 1,084.1 TPY), NO_x emissions in the range of 113.8 to 169.3 lbs/hr (up to 6.77 lbs/ton clinker, 667.2 TPY), or H_2SO_4 mist emissions in the range of 5.86 to 8.25 lbs/hr (up to 0.33 lbs/ton clinker, 32.52 TPY), the Department, if requested by the permittee, shall reevaluate BACT and consider upward adjustments of the emission limitations for the indicated constituents based on available data. During this testing and evaluation period, the permittee shall make reasonable efforts to limit air emissions, and the Department shall not initiate enforcement proceedings. Any upward adjustment of emission limitations pursuant to this paragraph shall be the subject of public notice in a local newspaper pursuant to Department rules. The Department's determination based on the data produced under this paragraph shall be a point of entry for purposes of Section 120.57, Florida Statutes."

Tarmac

Tarmac America, Inc.
455 Fairway Drive
Deerfield Beach, FL 33441
Telephone: 305.481.2800
Facsimile: 305.480.9352

CERTIFIED MAIL - RRR
Z 056 630 740

17 July 1995

RECEIVED
JUL 24 1995
Bureau of
Air Regulation

Ms. Stephanie Brooks, P.E.
Air Resources Management
Fla. Dept. Of Environmental Regulation
P.O. Box 15425
W. Palm Beach, Florida 33416

RE: **Pennsuco Cement Plant**
Dade County - AP
Kiln No. 2 Coal Conversion
FDEP Permit No. AC13-169901

Dear Ms. Brooks:

Please find enclosed stack a emission test report in accordance with the test protocol specified in the above referenced permit. The protocol required a series of compliance tests every two months for one year and the enclosed test conducted on May 31, 1995 is the last in that series. The table below summarizes the series test results.

Test Date	Clinker Production	Sulfur Dioxide	Sulfuric Acid Mist	Nitrogen Oxides	Carbon Monoxide	VOC's	Particulate Matter	PM10
4/26-27/94	24.08	0.36	0.07	417.32	9.73	1.00	13.26	11.27
6/28-29/94	23.80	48.85	*	279.08	-	-	-	-
8/31/94	19.30	7.89	3.60	204.53	-	-	-	-
10/27-28/94	24.7	5.94	*	287.92	-	-	-	-
1/3/95	23.0	0.77	0.91	335.71	-	-	-	-
5/31/95	24.0	4.43	2.27	328.4	-	-	-	-
AVERAGE	23.15	11.37	1.71	308.83	9.73	1.00	13.26	11.27

[all test results in lbs/hr] * interference problems - see report

Copies of this letter and the enclosed test reports have been forwarded to the DERM. In accordance with the permit protocal, a request will be prepared and submitted for modification of the emission limits for NO_x and SO_2 relative to the test results. Should you have any questionsat this time regarding the enclosed reports please call me at (800) 330-3380 x4165.

Sincerely,

Scott Quaas

Scott Quaas
Environmental Manager
Technical Services–Florida Region

cc: A. Townsend
R. Pluta
E. Anderson - DERM
C. Fancy - FDEP, Tallahassee ✓

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

June 15, 1995

PSD-FL-142

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. David A Buff, P.E.
Principal Engineer
KBN Engineering and Applied Sciences, Inc.
6241 N.W. 23rd Street - Suite 500
Gainesville, FL 32653-1500

Re: Petcoke Project
Tarmac Florida, Inc.
AO13-238048

Dear Mr. Buff:

Your letter of May 19, 1995 was forwarded to this office by the Southeast District. They cannot amend the Operating Permit as requested until any underlying construction permits are modified to provide for utilization of petroleum coke.

The scenario described in your letter indicates no increase in sulfur dioxide (SO_2) emissions if the proposed petcoke/coal blend has a sulfur content equal to the maximum allowed sulfur content of the presently-used coal. It is still necessary to compare the future potential emissions of regulated pollutants affected by the change with present actual emissions. The latter are based on what emissions have been in recent years instead of what they could have been.

Because of its high vanadium content, petcoke usage results in higher sulfuric acid mist emissions even if sulfur content remains constant. This is because of catalytic oxidation of SO_2 to sulfur trioxide in the presence of vanadium. Since acid mist is a pollutant subject to Prevention of Significant Deterioration (PSD) analysis, it is necessary to know the effects of the operational change on actual emissions for this pollutant. It should also be substantiated that the additional vanadium and nickel found in petcoke will indeed be retained in the clinker or control equipment.

We recommend you take a second look at the proposed project. At a minimum it will require modification of existing construction permit(s) and engineering calculations showing the changes in all pollutants affected by the change. It may be necessary to conduct a trial burn, if information is not already available for emissions predictions.

If you have any questions regarding this matter, please call me or John Reynolds at (904)488-1344.

Sincerely,

A.A. Linero 6/15

A.A. Linero, P.E.
Administrator, New
Source Review

AAL/aal/1

cc: Stephanie Brooks, SED

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

May 8, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Albert W. Townsend
Director, Technical Services
Tarmac Florida, Inc.
455 Fairway Drive
Deerfield Beach, Florida 33441

Dear Mr. Townsend:

Re: Extension of Permit No. PSD-FL-142/Kiln No. 2

The Department received Tarmac's April 7 letter requesting an extension of the expiration date of the above permit. The expiration date is changed as shown below:

From: December 31, 1993

To: **August 31, 1995**

This letter shall become Attachment No. 15 to this permit.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes (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 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the applicant of the amendment request/application and the parties listed below must be filed within 14 days of receipt of this amendment. Petitions filed by other persons must be filed within 14 days of the amendment issuance or within 14 days of their receipt of this amendment, whichever occurs first. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information:

(a) The name, address and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
(d) A statement of the material facts disputed by Petitioner, if any;
(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,
(g) A statement of the relief sought by petitioner, stating precisely the action the petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this amendment. Persons whose substantial interests will be affected by any decision of the Department with regard to the amendment request/application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this amendment in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, Florida Administrative Code.

Sincerely,

Howard L. Rhodes

Howard L. Rhodes, Director
Division of Air Resources
Management

HLR/jr/t

cc: I. Goldman, SED
D. Buff, P.E.
J. Harper, EPA
E. Anderson, DERM

Memorandum

Florida Department of
Environmental Protection

RECEIVED
MAY 5 1995
Bureau of
Air Regulation

TO: Howard L. Rhodes

FROM: Clair Fancy CHF

DATE: May 5, 1995

SUBJ: Tarmac Florida, Inc.
PSD-FL-142 - Kiln No.2

Attached for your approval and signature is a letter extending the expiration date of the subject construction permit to provide additional time needed for testing.

I recommend that this extension be approved.

HLR/jr/t

Attachments

BEST AVAILABLE COPY

JKS copy

Department of Environmental Protection

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

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

May 3, 1995

Mr. Scott Quaas
Environmental Manager
Technical Services
Tarmac Florida, Inc.
455 Fairway Drive
Deerfield Beach, Florida 33441

Re: Pennsuco Cement Plant Kiln No. 2 Coal Conversion
FDEP Permit No. AC13-169901, PSD-FL-142

Dear Mr. Quaas:

The Department has reviewed your letter of April 24 and will act on your original request of October 1, 1993, to extend the referenced construction permit.

Unfortunately, your letter to the Southeast District dated March 28, 1994, did not reference your extension amendment request, nor indicate any other action for the Tallahassee office. The letter with the Certificate of Completion indicated that construction was finished and we inferred that there was no need to act on the extension request.

Because the Certificate of Completion satisfies our requirement that Tarmac "show that construction has commenced," we will act on the extension. However, you must submit a timely and complete Title V permit application to the Southeast District at least sixty days prior to expiration of the extended construction permit.

If you have any questions regarding this matter, please call A. A. Linero at 904/488-1344.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/ch

cc: A. A. Linero
Stephanie Brooks
Patrick Wong

Tarmac

TARMAC FLORIDA, INC.

455 Fairway Drive
Deerfield Beach, Florida 33441

Telephone:
Deerfield Beach (305) 481-2800

RECEIVED

APR 26 1995

Bureau of
Air Regulation

CERTIFIED MAIL - RRR
Z 115 124 470

24 April 1995

Mr. C.H. Fancy, P.E.
Chief – Bureau of Air Regulation
Fla. Dept. Of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Pennsuco Cement Plant
Dade County - AP
Kiln No. 2 Coal Conversion
FDEP Permit No. AC13-169901 [PSD-FL-142]

Dear Mr. Fancy:

A review of the above facility permit file revealed that Tarmac's request for permit extension was not acted upon by the Department. Your letter of October 19, 1993 (copy enclosed) stated " . . . the existing permit shall remain in effect until the renewal application has been finally acted upon by the Department. ". By the same letter requested Tarmac to provide evidence to show that construction had commenced prior to April 1, 1994. Tarmac submitted to the Department on March 28, 1994 (copy enclosed) a *Certificate of Completion of Construction* along with notice that testing as specified in the referenced permit was to commence. That information should have satisfied the Department's request.

Tarmac would ask that the Department review the enclosed documents and grant a permit extension until August 31, 1995. By the testing specified by the permit conditions will be completed within the next 30 days and an operation permit application should be ready for submittal within 60 days thereafter. Should you have any questions or need further information please call me at (800)330-3380 x4165.

Sincerely,

Scott Quaas
Environmental Manager
Technical Services

cc: R. Pluta
A. Townsend
B. Smith
D. Bailey
S. Brooks – FDEP, WPB
DERM

Bruce

Tarmac

TARMAC FLORIDA, INC.

455 Fairway Drive
Deerfield Beach, Florida 33441

Telephone:
Deerfield Beach (305) 481-2800

CERTIFIED MAIL - RRR
P 388 117 592

RECEIVED

JUN 17 1994

Bureau of
Air Regulation

14 June 1994

Ms. Stephanie Brooks
Supervisor – Air Resource Management
Fla. Dept. of Environmental Protection
P.O. Box 15425
W. Palm Beach, Florida 33416

RE: **Pennsuco Cement Plant**
Dade County - AP
Kiln No. 2 Coal Conversion
FDEP Permit No. AC13-169901

Dear Ms. Brooks:

Please find enclosed stack a emission test report in accordance with the test protocol specified in the above referenced permit. The protocol requires a series of compliance tests every two months for one year and the enclosed test is the first in that series. The next compliance test is scheduled for June 28-29, 1994. The table below summarizes the test results and will be up-dated after each of the compliance tests.

Test Date	Clinker Production	Sulfur Dioxide	Sulfuric Acid Mist	Nitrogen Oxides	Carbon Monoxide	VOC's	Particulate Matter	PM10
4/26-27/94	24.08	0.36	0.07	417.32	9.73	-1.00	13.26	11.27

all test results in lbs/hr

I have also enclosed the annual stack emission test results for the Cooler No. 2 which was conducted concurrent with the above tests. The results indicate compliance with applicable particulate emission standards. Copies of this letter and the enclosed test reports have been forwarded to the DERM and will serve as proper notice of the next scheduled test. Should you have any questions regarding the enclosed reports please call me at (800)330-3380 x4165.

Sincerely,

Scott Quaas
Environmental Manager
Technical Services

cc: A. Townsend
R. Pluta
E. Anderson - DERM
C. Fancy - FDEP, Tallahassee

Tarmac

TARMAC FLORIDA, INC.

455 Fairway Drive
Deerfield Beach, Florida 33441

Telephone:
Deerfield Beach (305) 481-2800

RECEIVED

APR 01 1994

Bureau of
Air Regulation

CERTIFIED MAIL - RRR
P 388 117 566

28 March 1994

Ms. Stephanie Brooks
Supervisor – Air Resource Management
Fla. Dept. of Environmental Regulation
P.O. Box 15425
W. Palm Beach, Florida 33416

RE: **Pennsuco Cement Plant**
Dade County - AP
Kiln No. 2 Coal Conversion
FDEP Permit No. AC13-169901 [PSD-FL-142]

Dear Ms. Brooks:

Please find enclosed a *Certificate of Completion of Construction* for the above referenced air pollution project. The *Certificate* is being submitted to present evidence that construction under the referenced permit has been completed and testing specified in the permit will commence to establish emission limitations. Stack emission testing has been scheduled for April 26 through April 29 for the parameters listed in the permit. Method 26A will be used for VOC emissions instead of Method 26. A copy of the *Certificate* along with this letter has been forwarded to the DERM as proper notice of testing. Should you have any questions or need further information please call me at (800)330-3380 x4165.

Sincerely,

Scott Quaas
Environmental Manager
Technical Services

cc: A. Townsend
C. Fancy - FDEP, Tallahassee
E. Anderson - DERM

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

AIR POLLUTION SOURCES
CERTIFICATE OF COMPLETION OF CONSTRUCTION*

PERMIT NO. AC13-169901 [PSD-FL-142] DATE: 28 March 1994

Company Name: TARMAC FLORIDA, INC. County: Dade

Source Identification(s): Kiln No. 2 coal conversion

Actual costs of serving pollution control purpose: $ NA

Operating Rates: 197,000 T/yr clinker - 162.5 MMBtu/hr Design Capacity: 197,000 T/yr clinker - 162.5 MMBtu/hr

Expected Normal ______ During Compliance Test ______

Date of Compliance Test: test scheduled 4/26/94 - 4/29/94 (Attach detailed test report)

Test Results:	Pollutant	Actual Discharge	Allowed Discharge

Date plant placed in operation: 28 March 1994

This is to certify that, with the exception of deviations noted**, the construction of the project has been completed in accordance with the application to construct and Construction Permit No. AC13-169901 dated 30 June 1992.

A. Applicant:

Scott Quaas - Environmental Manager
Name of Person Signing (Type)

Signature of Owner or Authorized Representative and Title

Date: 28 MAR 1994 Telephone: (305)481-2800

B. Professional Engineer:

John D. Light
Name of Person Signing (Type)

Signature of Professional Engineer

TARMAC FLORIDA, INC
Company Name

Florida Registration No. 43339

Date: 3-28-94

(Seal)

455 Fariway Drive, Deerfield Beach, FL 33441
Mailing Address

(305)481-2800
Telephone Number

*This form, satisfactorily completed, submitted in conjunction with an existing application to construct permit and payment of application processing fee will be accepted in lieu of an application to operate.

**As built, if not built as indicated include process flow sketch, plot plan sketch, and updates of applicable pages of application form.

Florida Department of
Environmental Protection

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

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

October 19, 1993

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Albert W. Townsend
Director of Technical Services
Tarmac Florida, Inc.
455 Fairway Drive
Deerfield Beach, Florida 33441

Dear Mr. Townsend:

RE: Extension of Permit No. PSD-FL-142/Kiln No. 2

This is in reply to your October 1, 1993, letter requesting another eighteen-month extension of the referenced permit. This would amount to a three-year extension of the original permit expiration date. Such a lengthy extension brings into question whether or not the BACT determination and emission limits are still representative of "best available control technology" required for PSD permits. Although the extensions may have been needed for reasons beyond Tarmac's control, the Department is reluctant to continue granting extensions without revisiting the BACT determination.

Since a timely request for permit renewal has been made in accordance with Florida Administrative Code, Rule 17-4.090, the existing permit shall remain in effect until the renewal application has been finally acted upon by the Department. On or before March 31, 1994, Tarmac must present evidence to the Department sufficient to show that construction has commenced as described in the permit, at which time the second extension will be granted. If construction has not begun prior to April 1, 1994, the Department will decide whether or not to revise and extend the permit at that time. If there are questions regarding any of the above, please contact Preston Lewis or John Reynolds of our staff at 904-488-1344.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

c: I. Goldman, SED
J. Harper, EPA
E. Anderson, DCDERM
D. Buff, P.E.

Tarmac

0000733

TARMAC FLORIDA, INC.

455 Fairway Drive
Hillsboro Executive Center North
Deerfield Beach, Florida 33441

Telephone:
Deerfield Beach (305) 481-2800

October 1, 1993

Certified Mail: P 411 882 319

Mr. C. H. Fancy, P.E.
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399

RE: Tarmac Kiln #2 Coal Conversion Permit - #AC13-169901 expiring 12/31/93.

Dear Mr. Fancy:

This letter is to update you on the status of our coal conversion of Kiln #2 and to request an extension of same. In our last correspondence we were starting up the Kiln on gas and operating on it until it became uneconomical to continue; at that time we were going to convert to coal. We have operated for almost eighteen months on gas and our last contract renewal (which expires 3/31/94) was at a price that made the investment of capital to install the coal system feasible. Our contract is a take or pay contract and we are obligated until 3/31/94. At that time, the conversion will be made.

Our current conversion permit expires 12/31/93. Therefore, we respectfully request pursuant to FAC 17-4.080 (3) our construction/testing permit be extended until 6/31/95. This will give us adequate time to install, test, and analyze the results so that the appropriate emission standards can be set. This methodology is required by our permit. We have enclosed a check in the amount of $50.00 as required. All other conditions shall remain the same.

If you have any questions please contact me at 1-800-330-3380 ext.# 4161.

Sincerely,

Albert W. Townsend
Director of Technical Services

062222

cc. D. Bailey, C. James, A. Hopkins, D. Buff

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Virginia B. Wetherell, Secretary

April 28, 1993

Mr. David A. Buff, M.E., P.E.
Principal Engineer
KBN Engineering & Applied Sciences, Inc.
1034 N.W. 57th Street
Gainesville, Florida 32605

Dear Mr. Buff:

This is in response to your recent letter on behalf of Tarmac Florida, Inc., requesting confirmation of non-applicability of the new NO_x/VOC RACT requirements (Florida Administrative Code (F.A.C.) Rule 17-296.570) to their facility in Dade County. According to F.A.C. Rule 17-296.500(1)(b), the requirements of F.A.C. Rule 17-296.570 do not apply to Tarmac Florida since the facility has been reviewed pursuant to 40 CFR 52.21 (PSD/New Source Review) for NO_x emissions and it is not a major source of VOC emissions.

If additional information is needed, please contact John Reynolds at (904) 488-1344.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/JR/plm

cc: I. Goldman, SED
J. Renfrow, DCDERM

3/25
John Brown ~~[illegible]~~
John Reynolds
pls prepare response

KBN

March 9, 1993

RECEIVED
MAR 10 1993
Division of Air Resources Management

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

Re: Applicability of RACT Requirements for Tarmac Florida, Inc.

Dear Mr. Fancy:

On behalf of Tarmac Florida, Inc., KBN recently requested an extension for filing an application for a determination of reasonably available control technology (RACT). Under recently enacted Florida air quality regulations, all major source of NO_x and/or VOCs are required to submit an operating permit application by March 1, 1993, unless an extension is granted in writing by the Florida Department of Environmental Regulation (FDER).

KBN has conducted a thorough review of previous permits issued for Tarmac's two operating cement kilns (Kilns 2 and 3). A summary of these permits is presented in the attached tables. This review has revealed that these two kilns have previously undergone prevention of significant deterioration (PSD) new source review under 40 CFR 52.21. The U.S. Environmental Protection Agency (EPA) issued a PSD permit for Kilns 2 and 3 on July 8, 1980 (PSD-FL-050) (copy of permit attached). The PSD permit included specific emission limits for NO_x emissions. In addition, Kiln 2 was issued a second PSD permit on February 26, 1991 (AC13-169901; PSD-FL-142). The permit included a NO_x limit as a specific permit condition.

According to the adopted RACT rule, all sources which have undergone PSD review pursuant to 40 CFR 52.21 are exempt from the RACT requirements. It is therefore requested that Tarmac be exempted from the RACT requirements for NO_x emissions.

Recent source testing at Tarmac has shown that VOC emissions are low. Testing of Kiln 3 resulted in an average VOC emission rate of 5.05 lb/hr, or 0.059 lb/ton clinker produced (using the highest test results from either the baseline or ash testing). The permitted clinker production rate for both kilns combined is 112.5 tons per hour (TPH), or 985,500 tons per year (TPY) at 8,760 hr/yr operation. Therefore, annual VOC emissions are calculated at 29.1 TPY. This is well below the major source emission threshold of 100 TPY.

Please contact me if you need any further information concerning this request.

Sincerely,

David A. Buff

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

cc: Al Townsend
Scott Quass

13024A1/2

KBN ENGINEERING AND APPLIED SCIENCES, INC.
1034 Northwest 57th Street Gainesville, Florida 32605 904/331-9000 FAX: 904/332-4189

Table 2-1. Permitting History For Kiln 2 at Tarmac Florida

Source	Permit No.	Issued	Clinker Production Rate (TPH)	Fuels	Permitted NOx Emission Rate lb/hr	Permitted NOx Emission Rate lb/ton clinker	Comments
Kiln 2							
	A013-8961	06/01/78	25.0	Natural gas	--	--	FDER Operating permit
				No. 6 Fuel oil	--	--	
	AC13-27742	05/28/80	25.0	Natural gas	--	--	Original FDER permitting of coal conversion
				No. 6 Fuel oil	--	--	
				Coal	--	--	
	PSD-FL-050	07/08/80	25.0	Natural gas	118	4.73	Original EPA permitting of coal conversion
				No. 6 Fuel oil	118	4.73	
				Coal	118	4.73	
	PSD-FL-050	12/28/84	25.0	Natural gas	118	4.73	Revision of EPA PSD permit for coal conversion (revised SO2 emission limits)
				No. 6 Fuel oil	118	4.73	
				Coal	118	4.73	
	AC13-054054	03/22/85	25.0	Natural gas	--	--	Revision of FDER permit for coal conversion (revised SO2 emission limits)
				No. 6 Fuel oil	--	--	
				Coal	--	--	
	A013-144183	12/09/85					Operating permit
	A013-157297	02/02/89	25.0	Natural gas	--	--	Renewal of operating permit
				No. 6 Fuel oil	--	--	
	AC13-169901 PSD-FL-142	02/26/91	25.0	Coal only	113.8 a	4.55 a	Re-permitting of Kiln 2 coal conversion (BACT for NOx)

a If emissions are in range of 113.8 to 169.3 lb/hr (up to 6.77 lb/ton clinker), BACT may be re-evaluated by FDER.

TARMAC

Table 2-2. Permitting History For Kiln 3 at Tarmac Florida

Source	Permit No.	Issued	Clinker Production Rate (TPH)	Fuels	Permitted NOx Emission Rate lb/hr	lb/ton clinker	Comments
Kiln 3							
	A013-8992	05/01/78	87.5	Natural gas	--	--	FDER Operating permit
				No. 6 Fuel oil	--	--	
	AC13-27742	05/28/80	87.5	Natural gas	--	--	Original FDER permitting of coal conversion
				No. 6 Fuel oil	--	--	
				Coal	--	--	
	PSD-FL-050	07/08/80	87.5	Natural gas	592	6.77	Original EPA permitting of coal conversion
				No. 6 Fuel oil	592	6.77	
				Coal	592	6.77	
	PSD-FL-050	12/28/84	87.5	Natural gas	592	6.77	Revision of EPA PSD permit for coal conversion (revised SO2 emission limits)
				No. 6 Fuel oil	592	6.77	
				Coal	592	6.77	
	AC13-054054	03/22/85	87.5	Natural gas	--	--	Revision of FDER permit for coal conversion (revised SO2 emission limits)
				No. 6 Fuel oil	--	--	
				Coal	--	--	
	A013-144183	12/09/85					Operating permit
	A013-157297	02/02/89	87.5	Natural gas	--	--	Renewal of operating permit
				No. 6 Fuel oil	--	--	
				Coal	--	--	
				Used oil	--	--	

TARPERM
3/4/93

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30308

JUL 8 1980

REF: 4AH-AP

Mr. Albert W. Townsend
Coordinator of Ecological Planning
Lonestar Florida/Pennsuco, Inc.
P. O. Box 122035
Palm Village Station
Hialeah, Florida 33012

Re: PSD-FL-050 Fuel Conversion on 3 Kilns

Dear Mr. Townsend:

Review of your February 11, 1980 application to construct a coal handling facility and to convert three existing kilns to coal firing (PSD-FL-050) near Hialeah, Florida has been completed. The construction is subject to rules for the Prevention of Significant Deterioration (PSD) of air quality, contained in 40 CFR 52.21.

It has been determined that the modification, as described in the application meets all applicable requirements of the PSD regulations, subject to the conditions in the conclusion section to the Final Determination (enclosed). EPA has performed the Preliminary Determination concerning the proposed modification, and published a request for public comment on May 29, 1980.

Only one comment was received, that being from your company. In response to that comment, condition 11 has been reworded to clarify the exact definition of what averages constitute a compliance performance test for each of the various pollutants.

Authority to construct a modification to a Stationary Source is hereby issued, subject to the conditions in the Final Determination. This Authority to Construct is based solely on the requirements of 40 CFR 52.21, the Federal regulations governing significant deterioration of air quality. It does not apply to other permits issued by this agency or permits issued by other agencies.

Information regarding EPA permitting requirements can be provided if you contact Mr. Joe Franzmathes, Director, Office of Program Integration and Operations, at (404) 881-3476. Additionally, construction covered by this Authority to Construct must be initiated within 18 months from the receipt of this letter.

The United States Court of Appeals for the D.C. Circuit issued a (December 14, 1979) in the case of Alabama Power Co. vs. Douglas H. (78-1006 and consolidated cases) which has significant impact on the EPA Prevention of Significant Deterioration (PSD) program and permits issued thereunder. The ruling will require modification of the PSD regulations and could affect permits issued under the existing program. You are hereby advised that this permit may be subject to reevaluation. Please be advised that a violation of any condition issued as part of this approval, as well as any construction which proceeds in material variance with information submitted in your application will be subject to enforcement action.

Authority to Construct will take effect on the date of this letter. The complete analysis which justifies this approval has been fully documented for future reference, if necessary. Any questions concerning this approval may be directed to Kent Williams, Chief, New Source Review Section (404) 881-4552.

Sincerely yours,

Thomas W. Devine
Director
Air and Hazardous Materials Division

TWD:JWP:clu

Enclosure

cc: S. Smallwood
Florida Department of Environmental Regulation

PSD-FL-050

Final Determination

I. Applicant

Lonestar Florida/Pennsuco, Inc.
Cement and Aggregate Division
P. O. Box 122035
Palm Village Station
Hialeah, Florida 33012

II. Location

The proposed modification is located at the applicant's existing Portland Cement Plant at 11000 N.W. 121 Street, Hialeah (Dade County), Florida. The UTM coordinates are: Zone 17-562.75 km East and 2861.65 km North.

III. Project Description

The applicant proposes to convert fuel used in kilns #1, #2, and #3 from the permitted gas or oil firing to coal firing. Each kiln has one emission point. The coal to be fired will have a maximum sulfur content of 2 percent.

Further, the applicant proposes to construct a coal handling system with four (4) emission points. Each of these points are to be controlled by baghouse dust collectors.

A summary of new and modified facilities is shown in Table 1.

IV. Source Impact Analysis

Table 2 summarizes the total potential to emit (uncontrolled) from the proposed modification. The proposed modification has the potential to emit greater than 100 tons per year of particulates (TSP) and sulfur dioxide (SO_2). Therefore, in accordance with the provisions of Title 40, Code of Federal Regulations, Part 52.21 (40 CFR 52.21) promulgated June 19, 1978, a Prevention of Significant Deterioration (PSD) review is required for each of these pollutants.

TABLE 1

SUMMARY OF PROJECT

Facilities	Operating Capacity, Tons/Hour Input	Fuel	Process Weight Tons/Hour	Product Cement Clinker Tons/Hour
New Coal Handling				
Mill A	23	N/A	N/A	N/A
Mill B	15	N/A	N/A	N/A
Feedbin & Elevator	150[a]	N/A	N/A	N/A
Hopper & Weight Feeder	150[a]	N/A	N/A	N/A
Modified (After)	Feed	Coal (T/hr)		
#1 Kiln	40.5	7.5	48[c]	25
#2 Kiln	40.5	7.5	48[c]	25
#3 Kiln	141.75[b]	23		87.5
		38		137.5
Modified (Before)		Gas (MMCF/hr)		
#1 Kiln	40.5	.18	40.5[c]	25
#2 Kiln	40.5	.18	40.5[c]	25
#3 Kiln	141.75[b]	.54		87.5
		.90		137.5

[a] Intermittent capacity since average capacity equals the sum of the two mills (38 tons/hr).

[b] Basis of particulate emission standard - standards of Performance for New Stationary Sources (NSPS); 40 CFR 60 Subpart F.

[c] Basis of particulate emission standard - Florida State Implementation Plan (SIP); 17-2.05 (2) FAC.

The change in potential nitrogen oxide emissions due to the modification are not quantified. Without data to the contrary, the applicant has assumed the modification is subject to PSD review for nitrogen oxides. All other regulated pollutants are not subject to PSD review because potential emissions increase by less than 100 tons per year.

Full PSD review consists of:

1. Control Technology Review

2. Air Quality Review

   a. Impact upon Ambient Air Quality
   b. Impact upon Increment
   c. Impact upon Soils, Visibility and Vegetation
   d. Impact upon Class I Areas

3. Growth Analysis

Table 3 summarizes allowable emissions and the various categories of changes that determine the level of PSD review required under the regulations. Each type of facility and each pollutant is classified.

Line E of Table 3 shows that TSP has increased allowable emissions of less than 50 tons per year. With no limits placed upon operating time, 50 tons per year is more restrictive than the additional 100 pounds per hour or 1000 pounds per day criteria. Therefore, consistent with the provisions of 40 CFR 52.21(j) and (k), PSD review for particulates is limited to:

1. Ensuring compliance with State Implementation Plans (SIP) and Federal Regulations (40 CFR Parts 60 and 61), and

2. Impacts upon Class I areas and upon areas of known increment violation.

Table 3 shows that SO_2 increased allowable emissions of 562 tons per year requires full PSD review.

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TABLE 2

APPLICABILITY SUMMARY

Facilities	Potential to Emit (Uncontrolled), Tons/Year				
	TSP	SO_2	NO_x	CO	HC
A. New	25100[a]	0	0	0	0
B. Modificed (After)	137313[b]	612[c]	(d)	Negl.	Negl.
C. Modified (Before)	137313[b]	50[e]	(d)	Negl.	Negl.
Net Increase from Modification[f]	25100	562	(d)	Negl.	Negl.
Accumulated from Previous Modification[g]	N/A	97	N/A	6.6	38
Total Increase	25100	659	(d)	6.6	38

[a] Calculated from vender guaranteed controlled emissions (5.7 lb/hr) and assumed 99.9% efficiency.

[b] Based on AP-42 Table 8.6-1 uncontrolled emissions 228 pounds of particulate per ton on cement ash in coal is absorbed in the cement product. Substantially less kiln feed ash in required for coal burning.

[c] Potential emissions is based on the proposed allowable emission rate which is based on absorption of SO_2 in the clinker of 91.3 percent in kilns #1 and #2 and 98.7 percent in kiln #3.

[d] The change in nitrogen oxides emissions are not quantified. Without data to the contrary, the applicant assumed PSD review applies. (See discussion in Section IV, A.4).

[e] Based upon test results on existing facilities.

[f] Source is subject to PSD review for specific pollutant if potential increased by 100 tons/year or more.

[g] PSD-FL-028 was not major for SO_2, HC, and CO.

TABLE 3

ALLOWABLE EMISSIONS, TONS PER YEAR

(No Limits Upon Hours Per Year)

Facilities	TSP	SO_2	NO_x
A. New or Reconstructed	25.4		
B. Modified (After)	468.2	612	<2624[a]
C. Modified (Before)	460.3	50	2624
D. Increases from Modified	7.9	562	NONE
E. Increase New and Modified (A&D)	33.3	562	NONE

[a] The applicant will determine minimum NO_x emission rates with performance tests following start-up. The proposed allowable represent the maximum allowable rate.

It should be noted that the application was reviewed under the Partial Stay of PSD Regulations, published February 5, 1980 and the proposed revisions to the PSD regulations referenced in that partial stay. It was determined that the exemption outlined in the partial stay does not apply and that the proposed modification is subject to review under existing PSD regulations (promulgated 6/19/78) because:

1. The existing source is a major source of particulates as defined in the September 5, 1979 proposed revised regulations (greater than 100 tons of allowable emissions), and the proposed modification would significantly (greater than 10 tons per year) increase allowable emissions of particulates. And further,

2. The proposed modification alone is making the source a major modification because sulfur dioxide emissions increase by greater than 100 tons per year, irrespective of the sulfur dioxide emissions from the existing source.

A. Control Technology Review

Although these facilities are exempt from a Best Available Control Technology (BACT) review for the specific pollutants (TSP) and NO_x, they are required to meet all applicable emission limits and standards of performance under the Florida State Implementation Plan (SIP) and Federal Regulations (40 CFR Parts 60 and 61). In addition, and as discussed later in this section, the modification is subject to BACT review for SO_2. Several of the facilities proposed for construction are subject to Federal New Source Performance Standards (NSPS) and/or requirements under the Florida SIP. These requirements are referenced in Table 4 which summarizes the allowable emission limits for the proposed emission limits for the proposed new and modified facilities. Only the most stringent requirement of (1) NSPS, (2) Florida SIP, (3) Florida permit, or (4) allowable limit proposed by the applicant is listed.

The limitations upon emissions of nitrogen oxides from the three kilns were proposed by the applicant and are conditions of this permit to ensure the

TABLE 4

SUMMARY OF ALLOWABLE EMISSIONS LIMITS

Facility/Pollutant	Basis for Requirement	Emissions Limits Standard	lbs/hr
23 Ton Mill			
TSP	Proposed by Applicant, Florida BACT	<.01 grains/ACF	$\leq$ 3.1
Opacity	NSPS Subpart Y (40 CFR 60.252)	<20%	-
15 Ton Mill			
TSP	Same	$\leq$.01 grains/ACF	$\leq$2.1
Opacity	Same	<20%	-
Feedbin & Elevator			
TSP	Same	<.01 grains/ACF	$\leq$0.3
Opacity	Same	<20%	-
Hopper & Weight Feeder			
TSP	Same	$\leq$.01 grains/ACF	$\leq$0.3
Opacity	Same	<20%	-
#1 Kiln			
TSP	Florida SIP, Operating Permit	Florida Process Weight Equation	$\leq$32.2
SO_2	Proposed by Applicant as BACT	$\leq$2% S in Coal, 2.27 lbs/ton[a]	$\leq$56.7
NO_x	Proposed by Applicant	<4.73 lbs/Ton[a]	<118

TABLE 4

SUMMARY OF ALLOWABLE EMISSIONS LIMITS

(Continued)

Facility/Pollutant	Basis for Requirement	Emissions Limits Standard	lbs/hr
#2 Kiln			
TSP	Florida Permit	Florida Process Weight Equation	≤32.2
SO_2	Proposed by Applicant as BACT	≤2% S in Coal, 2.27 lbs/Ton[a]	≤56.7
NO_x	Proposed by Applicant	<4.79 lbs/Ton[a]	<[illegible]18
#3 Kiln			
TSP	Florida SIP & Federal NSPS Subpart F (40 CFR 60.62)	≤0.30 lb/Ton feed[b]	≤42.5
SO_2	Proposed by Applicant as BACT	≤2% S in Coal, 0.3 lbs/Ton[a]	≤26.3
NO_x	Proposed by Applicant	<6.77 lbs/Ton[a]	≤592
Opacity	Federal NSPS Subpart F (40 CFR 60.62)	≤20%	-

[a] Pounds of pollutant per ton of clinker produced.

[b] Pounds of TSP per ton of feed (except fuel).

validity of the exemption from further PSD review (no net increase in emissions).

The three kilns emitting increased sulfur dioxide are reviewed for a determination of Best Available Control Technology (BACT). To achieve the limited emissions of Table 4 the following control technologies will be utilized:

1. Coal Handling System - Particulates

All potential particulate emissions points are controlled by baghouse type dust collectors. These are to control 99.9 percent of the particles above 0.5 microns. The exhaust gases will have a maximum concentration of 0.01 grains per actual cubic foot.

These have been proposed to the State of Florida to meet the SIP BACT requirements.

These facilities must not emit gases which exhibit 20 percent opacity or greater. These baghouses and properly ducted dust collection system should comply with this requirement.

2. Kilns - Particulates

The existing kilns will continue to utilize their existing electrostatic precipitators to maintain compliance with the emission standards specified in their operating permits in accordance with the Florida SIP. Number 3 kiln will continue to operate in compliance with the NSPS standards under which it has been certified with continued compliance verified by the State of Florida.

A small increase in allowable TSP emissions is due to the addition of the solid coal to the process weight. The allowable emissions are calculated according to the Florida SIP process weight rule. The actual emissions will probably not increase because the ash introduced with the coal (compared with gas as a fuel) is compensated by a decrease in fly ash in the cement feed materials

3. Kilns - Sulfur Dioxide (BACT)

The three kilns are subject to a BACT review for the control of sulfur dioxide.

Sulfur dioxide potentially is derived from sulfur in the process feed materials and from sulfur in the fuel.

The majority of this potential sulfur dioxide combines with the process products (limestone). The efficiency of this absorption is a function of the size and design (mixing of gas and solids) of the kilns and also of the type of particulate control (baghouse is better than electrostatic precipitator - due to intimate contact of gas with fine particles). Since the three kilns and their particulate controls are existing these parameters will not change. The applicant presents test results using oil (2.38% sulfur) as fuel. These results show that 91.3 percent of the potential sulfur dioxide was absorbed by the products in the smaller kilns (#1 and #2), and that 98.7 percent of the potential sulfur dioxide was absorbed in the larger kiln (#3). The applicant proposes BACT be the use of low sulfur coal (maximum 2% sulfur) and a maximum of 2.27 pounds of SO_2 per ton of clinker produced from kiln #1 and #2, and 0.30 pounds of SO_2 per ton of clinker produced from kiln #3.

EPA concurs with the applicant that for the cases of existing kilns with existing particulate control technology these do constitute BACT. Further the applicant used these emission rates at full design operating rates in its air quality presentation.

4. Kilns - Nitrogen Oxides

The applicant has proposed to run tests to optimize operating conditions. The criteria to judge such optimization would be:

a. satisfactory product,
b. energy economy,
c. minimum NO_x emissions, and
d. continued negligible emissions of carbon monoxide and hydrocarbons.

The applicant further stipulates that the NO_x emissions shall be less than those from the existing gas fueled operation. These current NO_x emissions have been established by tests to be 6.77 pounds of NO_x per ton of clinker produced from Kiln #3 and 4.7 pounds per ton from Kilns #1 and #2.

The applicant has presented published[1] test data which reports emissions of nitrogen oxides are less using coal than when using gas or oil as a fuel for cement kilns. This report attributes this reduction to the characteristics of the flame. It has been described as a longer, "lazier" flame (with lower temperature in the center of the flame). The conclusion that reduced emissions of nitrogen oxides are experienced when cement kilns are converted from gas to coal fuel has also been reported in reference 2.

The coal to be used in this proposed modification will contain ~1.7 percent nitrogen (compared with ~0 percent for gas or <.5 percent for oil). Therefore, the potential for fuel derived NO_x is greater. The literature[2] confirms that less than 20 percent of the fuel nitrogen will be converted to nitrogen oxides and that the amount of conversion is a function of the same flame characteristic variables (maximum temperature, and time at high temperature) that control thermally derived NO_x (oxidation of atmospheric nitrogen). AP-42 emission factors and NSPS for large utility boilers seem to indicate the potential for increased NO_x emissions of coal firing over gas firing. Regardless of these factors that indicate nitrogen oxide emissions could increase, the EPA concurs with the applicant that operating conditions can be found which will result in reduced emissions, or at least no net increased emissions. Therefore, with testing to find allowable operating conditions required as a permit condition. No net increase in NO_x emissions will occur and no air quality impact analysis is required for NO_x consistent with paragraph (k) of 40 CFR 52.21.

TABLE 5

AIR QUALITY IMPACT ANALYSIS

	SO_2, micrograms/meter^3		
	Annual	24-hour average[a]	3-hour average[a]
NAAQS	80	365	1300
Class II Increments	20	91	512
Maximum Predicted Concentration	0.63	4.90	18
Significance Level	1	5	25

[a] Not to be exceeded more than once per year.

B. Air Quality Review - 40 CFR 52.21 (ℓ)

The applicant has demonstrated with the modeling results summarized in Table 5 that the impact upon the annual, 24-hour and 3-hour National Ambient Air Quality Standards for SO_2 and upon the annual and 24-hour Class II increment are below the significance levels as published 43 FR 26398, June 19, 1978.

The modeling was conservatively run upon the total SO_2 emissions from the three kilns rather than only the increase (coal less gas).

The CRSTER model was used to determine maximum predicted annual concentrations and to identify worst-case 24-hour and 3-hour meteorological conditions. The CRSTER was run using five years (1970-1974) of meteorological data. The maximum short term 24-hour and 3-hour predictions were made using the PTMTP-W model.

The lack of significant impact indicated by this modeling eliminates requirements for monitoring detailed NAAQS and increment impact analyses, growth impacts and additional impact analyses upon visibility, soils, and vegetation.

C. Class I Area Impact

The proposed modification is located about 30 km from the Everglades National Park. As discussed previously maximum impacts which occur in the vicinity of the plant are insignificant. On the basis that further dilution will occur over the 30 kilometers, the impact on this Class I area is considered insignificant and detailed assessment of Class I area impacts is not required.

V. Conclusions

EPA Region IV proposes a final determination of approval for construction of the new coal handling facilities and the conversion to coal as a fuel for kilns #1, #2, and #3 by Lonestar Florida/Pennsuco, Inc. as proposed in its application dated February 11, 1980 as amended by letter dated April 25, 1980.

The conditions set forth in the permit are as follows:

1. The modifications and the facilities constructed shall be in accordance with the capacities and specifications stated in the application. Specifically included are the operating capacities listed in Table 1 for new and modified facilities.

2. Particulate emissions from each of the four new emitting points of the coal handling system shall not exceed 0.01 grains per actual cubic foot or the emission limits listed in Table 4.

3. Visible emissions from four emission points of the coal handling system shall be less than 20 percent opacity. Visible emissions from any fugitive sources associated with the coal handling system shall be less than 20 percent opacity. Opacity shall be measured by EPA standard method 9.

4. Emissions of sulfur dioxide from #1 and #2 kilns shall not exceed 56.7 pounds per hour from each kiln at the maximum operating rate of 25 tons per hour of clinker produced per kiln. At lesser operating rates the emissions of sulfur dioxide shall not exceed 2.27 pounds per ton of clinker produced.

5. Emissions of sulfur dioxide from #3 kiln shall not exceed 26.3 pounds per hour at the maximum operating rate of 87.5 tons per hour of clinker produced. At lesser operating rates the emissions of sulfur dioxide shall not exceed 0.30 pounds per ton of clinker produced.

6. The coal used to fuel kilns #1, #2 and #3 shall have a sulfur content of 2 percent or less.

7. Tests shall be run to optimize the operating conditions toward a minimum emissions of nitrogen oxides. The results of the test shall be analyzed and the resulting optimum operating conditions shall be described to EPA Region IV with a plan describing how continuing compliance will be maintained.

8. Emissions of nitrogen oxides from #1 and #2 kilns shall be less than 118 pounds per hour from each kiln at the maximum operating rate of 25 tons per hour of clinker produced per kiln. At lesser operating rates the emissions of nitrogen oxides shall not exceed 4.73 pounds per ton of clinker produced.

9. Emissions of nitrogen oxides from #3 kiln shall be less than 592 pounds per hour from each kiln at the maximum operating rate of 87.5 tons per hour of clinker produced. At lesser operating rates the emissions of nitrogen oxides shall not exceed 6.77 pounds per ton of clinker produced.

10. Visible emissions from #3 kiln shall be less than 20 percent opacity as measured by EPA standard method 9.

11. Compliance with all hourly emissions limits (Table 4) shall be determined by performance tests scheduled in accordance the General Conditions attached. The performance tests shall be in accordance with the provisions of reference methods in Appendix A of 40 CFR 60, except as provided under 40 CFR 60.8(b), as follows:

    a. Method 1 for sample and velocity traverses;

    b. Method 2 for velocity and volumetric flow rate;

    c. Method 3 for gas analysis;

    d. Method 5 for concentration of particulate matter and associated moisture content;

    e. Method 6 for concentration of SO_2; and

    f. Method 7 for concentration of NO_x. For Method 7, each run shall consist of at least four grab samples taken at approximately 15-minute intervals. The arithmetic mean of the samples shall constitute the run value.

g. For Method 6, the minimum sampling time shall be 20 minutes and the minimum sampling volume 0.02 dscm (0.71 dscf) for each sample. The arithmetic mean of two samples shall constitute one run. Samples shall be taken at approximately 30-minute intervals.

A compliance test shall consist of the average of at least three (3) consecutive runs.

The processes shall operate within 10 percent of maximum capacity during sampling.

12. The source will comply with the requirements of the attached General Conditions.

GENERAL CONDITIONS

1. The permittee shall notify the permitting authority in writing of the beginning of construction of the permitted source within 30 days of such action and the estimated date of start-up of operation.

2. The permittee shall notify the permitting authority in writing of the actual start-up of the permitted source within 30 days of such action and the estimated date of demonstration of compliance as required in the specific conditions.

3. Each emission point for which an emission test method is established in this permit shall be tested in order to determine compliance with the emission limitations contained herein within sixty (60) days of achieving the maximum production rate, but in no event later than 180 days after initial start-up of the permitted source. The permittee shall notify the permitting authority of the scheduled date of compliance testing at least thirty (30) days in advance of such test. Compliance test results shall be submitted to the permitting authority within forty-five (45) days after the complete testing. The permittee shall provide (1) sampling ports adequate for test methods applicable to such facility, (2) safe sampling platforms, (3) safe access to sampling platforms, and (4) utilities for sampling and testing equipment.

4. The permittee shall retain records of all information resulting from monitoring activities and information indicating operating parameters as specified in the specific conditions of this permit for a minimum of two (2) years from the date of recording.

5. If, for any reason, the permittee does not comply with or will not be able to comply with the emission limitations specified in this permit, the permittee shall provide the permitting authority with the following information in writing within five (5) days of such conditions:

   (a) description of noncomplying emission(s),

   (b) cause of noncompliance,

   (c) anticipated time the noncompliance is expected to continue or, if corrected, the duration of the period of noncompliance,

   (d) steps taken by the permittee to reduce and eliminate the noncomplying emission,

   and

   (e) steps taken by the permittee to prevent recurrence of the noncomplying emission.

   Failure to provide the above information when appropriate shall constitute a violation of the terms and conditions of this permit. Submittal of this report does not constitute a waiver of the emission limitations contained within this permit.

6. Any change in the information submitted in the application regarding facility emissions or changes in the quantity or quality of materials processed that will result in new or increased emissions must be reported to the permitting authority. If appropriate, modifications to the permit may then be made by the permitting authority to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause violation of the emission limitations specified herein.

7. In the event of any change in control or ownership of the source described in the permit, the permittee shall notify the succeeding owner of the existence of this permit by letter and forward a copy of such letter to the permitting authority.

8. The permittee shall allow representatives of the State environmental control agency or representatives of the Environmental Protection Agency, upon the the presentation of credentials:

   (a) to enter upon the permittee's premises, or other premises under the control of the permittee, where an air pollutant source is located or in which any records are required to be kept under the terms and conditions of the permit;

   (b) to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit, or the Act;

   (c) to inspect at reasonable times any monitoring equipment or monitoring method required in this permit;

   (d) to sample at reasonable times any emission of pollutants;

   and

   (e) to perform at reasonable times an operation and maintenance inspection of the permitted source.

9. All correspondence required to be submitted by this permit to the permitting agency shall be mailed to the:

   Chief, Air Facilities Branch
   Air and Hazardous Materials Division
   U.S. Environmental Protection Agency
   Region IV
   345 Courtland Street
   Atlanta, Georgia 30308

10. The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

The emission of any pollutant more frequently or at a level in excess of that authorized by this permit shall constitute a violation of the terms and conditions of this permit.

REFERENCES

1. Hilovsky, Robert J., PE; NO_x Reductions in the Portland Cement Industry with Conversion to Coal-Firing, Presented at the 1977 EPA Emission Inventory/Factor Workshop, Raleigh, North Carolina. September 13-15, 1977.

2. EPA-450/1-78-001, January 1978, Control Techniques for Nitrogen Oxide Emissions from Stationary Sources.

KBN

February 25, 1993

RECEIVED

MAR 03 1993

Division of Air
Resources Management

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

Re: RACT Application for Tarmac Florida, Inc.

Dear Mr. Fancy:

Tarmac Florida, Inc., operates a portland cement manufacturing facility located in Miami, Florida. The plant is an existing major source of nitrogen oxides (NO_x). Under recently enacted Florida air quality regulations, all major source of NO_x are required to submit an operating permit application by March 1, 1993, unless an extension is granted in writing by the Florida Department of Environmental Regulation (FDER). The application is required for a determination of reasonably available control technology (RACT) by the FDER.

The purpose of this correspondence is to request an extension of the deadline for submittal of a RACT application by Tarmac. At present, KBN is developing information and working with Tarmac on the application. I anticipate requiring only an additional three weeks in order to finalize the application. Therefore, on behalf of Tarmac, I am requesting an extension of the submittal deadline until March 21, 1993.

The following information is provided on the sources and facilities covered in the extension request:

1) Facility/source name:	Tarmac Florida, Inc. Portland Cement Manufacturer
2) I.D. Number:	50/DAD/13/0020
3) Facility/source location:	County: Dade 11000 NW 121 Way Miami, Florida 33178 Lat/Long: 25°52'30"N/80°22'30"W
4) Operation permit:	AO13-157297 Issued February 2, 1989

Please call or write if you need any further information concerning this matter.

Sincerely,

David A. Buff

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

cc: Al Townsend

13024A1/1

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

April 20, 1992

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Albert W. Townsend
Director, Technical Services
Tarmac Florida, Inc.
455 Fairway Drive
Deerfield Beach, FL 33441

Dear Mr. Townsend:

Re: Extension of Permit No. PSD-FL-142/Kiln No. 2

The Department received your March 24 letter requesting an extension of the expiration date of the above permit. The expiration date is changed as shown below:

FROM: June 30, 1992

TO: December 31, 1993

Another $50.00 fee will be required if it is necessary to request another extension. This letter shall become Attachment No. 14 to this permit.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of their receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
(d) A statement of the material facts disputed by Petitioner, if any;
(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and
(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this intent. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this intent in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Sincerely,

Steve Smallwood

STEVE SMALLWOOD, P.E.
Director
Division of Air Resources
Management

SS/JR/plm

c: I. Goldman, SED
D. Buff, P.E.
J. Harper, EPA
E. Anderson, DCDERM

Tarmac

TARMAC FLORIDA, INC.

455 Fairway Drive
Hillsboro Executive Center North
Deerfield Beach, Florida 33441

Telephone:
Deerfield Beach (305) 481-2800

1992 MAR 30 AM 11: 12

March 24, 1992

Mr. C.H. Fancy, P.E.
Florida Department of Environmental Regulation
Twin Towers Office Bldg.
2600 Blair Stone Road
Tallahassee, Florida 32399

RE: Tarmac Pennsuco Cement Plant Coal Conversion Kiln # 2

Dear Mr. Fancy:

This letter is to update you on the status of Kiln #2's coal conversion and to request an extension of same. At the time of permitting it was anticipated that the cement demand would increase sufficiently to allow Kiln #2 to be started up. Unfortunately, this did not materialize in 1991. The market has just recently indicated an upturn sufficient to consume this added production. Also, the Venzueala cement dumping suit has been settled in favor of American producers and a tariff has been placed on these imports. Coincidentally, natural gas availability and prices have become more favorable.

This being the case, and to keep our investment at a minimum we are opting to start Kiln #2 up on gas the last week of March. We do believe, however that the availability and/or the pricing of the gas will be short lived and expect to convert to coal within the next twelve months.

We respectfully request persuant to FAC 17-4.080(3) our construction/testing permit #AC13-169901 be extended until 12/31/93. A $50.00 check is enclosed for the extension persuant to F.A.C. 17-4.050(4)(0)3. We will timely notify the department as when our compliance testing will be performed on Kiln #2 persuant to the existing operation permit.

If you have any additional questions you can contact me at (305) 425-4161.

Sincerely,

Albert W. Townsend

Albert W. Townsend
Director Technical Services

901031

cc: E. Anderson, DCDERM
D. Buff, KBN Engineering
B. Smith
D. Bailey
M. Kane
S. Brooks, SE Dist.
J. Reynolds

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF PERMIT

Scott Quaas, Environmental Specialist
Tarmac Florida, Inc.
P. O. Box 2998
Hialeah, Florida 33012

February 26, 1991

Enclosed is construction permit No. AC 13-169901, PSD-FL-142 to convert kiln No. 2 to coal firing at Tarmac, Inc. in Medley, Dade County, Florida. This permit is issued pursuant to Section 403, Florida Statutes.

Any party to this permit has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; 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 days from the date this permit is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

Copy furnished to:

I. Goldman, SE District
D. Buff, P.E.
M. Armentrout, EPA
E. Anderson, DCDERM

<u>CERTIFICATE OF SERVICE</u>

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of buisness on 2-27-91.

FILING AND ACKNOWLEDGEMENT FILED, on this date, pursuant to §120.52(9), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Kim Tober 2-27-91
Clerk Date

FINAL DETERMINATION

The Technical Evaluation and Preliminary Determination for the permit to convert kiln No. 2 to coal firing at Tarmac, Inc. in Medley, Dade County, Florida, was distributed on March 29, 1990. The Notice of Intent to Issue was published in The Miami Herald on August 7, 1990. Copies of the evaluation were available for public inspection at the Department's Tallahassee and West Palm Beach offices.

Comments from the U.S. Environmental Protection Agency (EPA), the National Park Service (NPS), and the Dade County Department of Environmental Resources Management (DCDERM) were submitted on the Department's Intent to Issue the permit.

The EPA commented that the permit must include an emission limit and test method for CO and PM_{10}, and specific measures for controlling fugitive emissions from the storage of coal. These changes are included in the final permit.

The NPS took exception to the applicant's proposal of setting final emission limits after performance testing has been completed, arguing that this approach is inconsistent with today's "top down" BACT policy. Considering that the EPA did not take exception to this, the Department decided to agree to consider upward adjustments of the emission limits if warranted based on extensive testing to be carried out by the applicant over a period of one year. The NPS also pointed out that the applicant's air quality analysis may not have included increment consuming sources located outside of Dade County which may impact the Everglades National Park. The Department again reviewed the application and verified that the emissions inventory used in the modeling analysis did include sources located in Broward as well as Dade County. The NPS also expressed concern about the potential of the applicant's proposed source to contribute to the regional haze problem, citing published reports that such large sources can cause marked reductions in visibility, primarily as a result of sulfates and organics. The Department believes that the emission limits in the final permit will not result in future reduced visibility for the Everglades National Park, and especially since the allowable Class I SO_2 increment is virtually consumed by this source thus precluding further impact.

The DCDERM stated that the applicant has not adequately demonstrated that Kilns 2 and 3 are substantially different justifying higher emission limits for Kiln 2. They feel that data for Kiln 3 can be used as a basis for the BACT determination for Kiln 2. The Department believes that the final permit conditions satisfy the concerns expressed by the DCDERM.

On June 19, 1990, a petition was filed by Tarmac for an administrative hearing to review the BACT Determination and proposed emission limits. The issues contested in the petition were later resolved between the parties without the hearing. A final order containing modified permit conditions was filed on December 7, 1990. The final action of the Department will be to issue construction permit AC 13-169901, PSD-FL-142 as modified by the final order and incorporating the changes required by EPA.

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Lawton Chiles, Governor
Carol M. Browner, Secretary

PERMITTEE:
Tarmac Florida, Inc.
P. O. Box 2998
Hialeah, Florida 33012

Permit Number: AC 13-169901
PSD-FL-142
Expiration Date: June 30, 1992
County: Dade
Latitude/Longitude: 25°52'30"N
80°22'30"W
Project: Kiln No. 2 Coal Conversion

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the conversion of kiln No. 2 to coal firing. The project will be located at the permittee's existing facility in Medley, Dade County, Florida. The UTM coordinates are Zone 17, 562.8 km East and 2861.7 km North.

The source shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments are listed below:

1. Application to construct received September 5, 1989.
2. DER's letter of incompleteness dated October 4, 1989.
3. EPA's letter dated October 18, 1989.
4. KBN's response (to incompleteness letter) dated November 13, 1989.
5. Dade County DERM's letter dated November 17, 1989.
6. EPA's letter dated December 13, 1989.
7. KBN's letter dated December 21, 1989.
8. KBN's letter dated January 15, 1990.
9. KBN's letter dated January 30, 1990.
10. EPA's letter dated March 20, 1990.
11. EPA's letter dated April 13, 1990.
12. Dade County DERM's letter dated April 30, 1990.
13. NPS's letter dated May 30, 1990.

PERMITTEE:
Tarmac Florida, Inc.

Permit Number: AC 13-169901
PSD-FL-142
Expiration Date: June 30, 1992

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

GENERAL CONDITIONS:

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

a. Have access to and copy any records that must be kept under the conditions of the permit;

b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. a description of and cause of non-compliance; and

b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

GENERAL CONDITIONS:

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-30.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes a Determination of Best Available Control Technology (BACT) and Determination of Prevention of Significant Deterioration (PSD).

14. The permittee shall comply with the following:

   a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

PERMITTEE:
Tarmac Florida, Inc.

Permit Number: AC 13-169901
PSD-FL-142
Expiration Date: June 30, 1992

GENERAL CONDITIONS:

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS:

1. The construction and operation of the subject modification of kiln No. 2 shall be in accordance with the capacities and specifications stated in the application.

2. The maximum clinker production rate of kiln No. 2 shall not exceed 25 tons per hour and 197,100 tons per year. Kiln No. 2 shall operate only on coal firing for up to 7,884 hours per year at a maximum firing rate of 162.5 MMBtu per hour. The coal used for firing kiln No. 2 shall have a maximum sulfur content of 2.0 percent by weight, with the rolling 30-day average sulfur content not exceeding 1.75 percent by weight.

3. Sulfur dioxide emissions from kiln No. 2 shall not exceed 7.8 lbs/ton of clinker produced, 195.0 lbs/hr, 768.7 tons/yr.

PERMITTEE:
Tarmac Florida, Inc.

Permit Number: AC 13-169901
PSD-FL-142
Expiration Date: June 30, 1992

SPECIFIC CONDITIONS:

4. Sulfuric acid mist emissions from kiln No. 2 shall not exceed 0.23 lb/ton of clinker produced, 5.86 lbs/hr, 23.06 tons/yr.

5. Nitrogen oxides emissions from kiln No. 2 shall not exceed 4.55 lbs/ton of clinker produced, 113.8 lbs/hr, 448.4 tons/yr.

6. Carbon monoxide emissions from kiln No. 2 shall not exceed 346 lbs/hr, 1363.9 tons/yr.

7. VOC emissions from kiln No. 2 shall not exceed 28.8 lbs/hr, 113.5 tons/yr.

8. Particulate matter emissions from kiln No. 2 shall not exceed 14.40 lbs/hr, 56.76 tons/yr.

9. PM_{10} emissions from kiln No. 2 shall not exceed 12.24 lbs/hr, 48.25 tons/yr. Compliance for PM_{10} shall be determined by applying a factor of 0.85 to the measured particulate matter emissions.

10. All reasonable precautions that apply under F.A.C. Rule 17-2.610(3) shall be implemented to limit unconfined emissions of particulate matter from any activity associated with this project. Adequate watering of the coal pile area shall be conducted whenever visible emissions occur in that area. The frequency of watering shall be no more than every half hour.

11. Initial and annual compliance tests shall be conducted using the following test methods:

EPA Method 5 for particulate matter
EPA Method 7 for nitrogen oxides
EPA Method 8 for sulfur dioxide and acid mist
EPA Method 25 for VOC
EPA Method 10 for carbon monoxide

12. Tarmac shall conduct a series of compliance tests for SO_2, H_2SO_4 mist, and NO_x emissions every two months for up to one year to allow representative sampling during different times of the year. The tests shall be performed in accordance with the compliance test methods specified in this permit. In the event that this series of tests results in SO_2 emissions in the range of 195 to 275 lbs/hr (up to 11 lbs/ton clinker, 1,084.1 TPY), NO_x emissions in the range of 113.8 to 169.3 lbs/hr (up to 6.77 lbs/ton clinker, 667.2 TPY), or H_2SO_4 mist emissions in the range

PERMITTEE:
Tarmac Florida, Inc.

Permit Number: AC 13-169901
PSD-FL-142
Expiration Date: June 30, 1992

SPECIFIC CONDITIONS:

of 5.86 to 8.25 lbs/hr (up to 0.33 lbs/ton clinker, 32.52 TPY), the Department, if requested by the permittee, shall re-evaluate BACT and consider upward adjustments of the emission limitations for the indicated constituents based on available data. During this testing and evaluation period, the permittee shall make reasonable efforts to limit air emissions, and the Department shall not initiate enforcement proceedings. Any upward adjustment of emission limitations pursuant to this paragraph shall be the subject of public notice in a local newspaper pursuant to Department rules. The Department's determination based on the data produced under this paragraph shall be a point of entry for purposes of Section 120.57, Florida Statutes.

13. The compliance tests shall be conducted within 30 days after operation on coal begins. The Department's Southeast District office and the Dade County Department of Environmental Resources Management (DCDERM) shall be notified in writing at least 15 days prior to source testing and at least 5 days prior to initial startup. Written reports of the tests shall be submitted to those offices within 45 days of test completion.

14. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit (F.A.C. Rule 17-4.090).

15. An application for an operation permit must be submitted to the Department's Southeast District office and the DCDERM at least 90 days prior to the expiration date of this construction permit or within 45 days after completion of compliance testing, whichever occurs first. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (F.A.C. Rule 17-4.220).

Issued this 25 day
of February, 1991

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Carol M. Browner

Carol M. Browner, Secretary

Best Available Control Technology (BACT) Determination
Tarmac Florida, Inc.
Dade County

The applicant proposes to convert an existing natural gas/No. 6 fuel oil kiln to coal firing at their portland cement manufacturing plant in northwest Dade County. The kiln (No. 2) is one of three cement kilns at the facility. Each of the kilns was permitted to convert to coal in 1984, however kiln No. 2 was never converted. In addition, it is expected that the permit limit that was established for sulfur dioxide is not adequate based on experience with burning coal in kiln No. 3.

The applicant has indicated the maximum net total annual tonnage of regulated air pollutants emitted from the fuel conversion project based on 197,100 tons per year clinker production to be as follows:

Pollutant	Max. Net Increase in Emissions (TPY)	PSD Significant Emission Rate (TPY)
TSP	18.6	25
PM_{10}	14.8	15
SO_2	1,563	40
NOx	270.5	40
CO	98.1	100
VOC	39.8	40
Pb	1.46	0.6
H_2SO_4 Mist	46.9	7
Be	0.03	0.0004

Rule 17-2.500(2)(f)(3) of the Florida Administrative Code (F.A.C.) requires a BACT review for all regulated pollutants emitted in an amount equal to or greater than the significant emission rates listed in the previous table.

BACT Determination Requested by the Applicant

Pollutant	Determination
SO_2	16.0 lb/ton of clinker
H_2SO_4 Mist	0.48 lb/ton of clinker
NOx	8.02 lb/ton of clinker

Date of Receipt of a BACT Application

September 5, 1989

Review Group Members

This determination was based upon comments received from the applicant and the Permitting and Standards Section.

BACT Determination Procedure

In accordance with Florida Administrative Code Chapter 17-2, Air Pollution, this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

(a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).

(b) All scientific, engineering, and technical material and other information available to the Department.

(c) The emission limiting standards or BACT determinations of any other state.

(d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

BACT Analysis

A review of the BACT/LAER clearinghouse for portland cement manufacturing facilities indicates a wide range of SO_2 limitations. The BACT determinations have been established in terms of percent reduction, mass emissions per ton of feed, per ton of product (clinker), and per unit of time (hour). In some cases determinations have been expressed in terms of pounds per million Btu heat input, or parts per million.

For percent SO_2 reduction BACT determinations have ranged from a low of 20 percent to a high of 90 percent for coal fired facilities.

For mass emissions as a function of heat input, previous BACT determinations from coal fired facilities range from 0.488 to 2.41 pounds per million Btu. Although the BACT/LAER Clearinghouse has several determinations which have been expressed in terms of throughput (lbs/ton), it is not clear as to whether or not the emissions rate given is based on raw materials, feed or clinker produced. As this is the case, these determinations will not be used in evaluating the proposed emission rate of 16 pounds per ton of clinker produced.

The applicant has proposed a SO_2 emission rate of 400 lbs/hr (16 lb/ton of clinker). This emission is based on an inherent removal efficiency of 36 percent, considering that the coal for firing the kiln will have a maximum sulfur content of 2.0 percent. Taking into consideration the kiln's maximum heat input of 162.5 MMBtu/hr, the proposed emission rate can also be equated to 2.46 lb/MMBtu.

The proposed SO_2 emission rate reduction can be compared to previous BACT determinations as follows:

Previous BACT Determinations

Basis	Least Stringent	Most Stringent	Applicant's Proposal
Percent SO_2 Reduction	20	90	36
lbs/MMBtu	2.41	0.488	2.46

A review of the SO_2 emission rate/reduction summary indicates that the applicant's proposal is not representative of what BACT should be in terms of pounds emitted per million Btu heat input and is marginal for percent SO_2 reduction. In fact, the least stringent BACT determinations (20% reduction and 2.41 lb/MMBtu) were established for a source which was permitted in 1981 and is not representative of today's "top down" BACT evaluations.

The sulfur dioxide emissions from coal fired portland cement production facilities can be reduced or controlled by restricting the coal's sulfur content, add on control equipment, and inherent removal attributed to the limestone feed which is dependent upon the kiln's design.

Several of the more stringent BACT determinations have been based on the use of low sulfur coal, with the lowest level indicated being 0.8 percent. In other cases the determinations have established that control be achieved by using lime injection and/or fabric filters as BACT, or have based BACT on the inherent SO_2 removal that is provided only by the limestone component of the feed to produce clinker. Each of these alternatives will be evaluated in greater detail below.

The applicant has proposed to use coal with a sulfur content not to exceed 1.75 percent on a monthly average with the maximum sulfur content not to exceed 2.0 percent. Given these maximums, a cost/benefit analysis of switching to a lower sulfur content coal can be conducted. The applicant has indicated that the cost of switching to coal with a sulfur content of 1.5 and 1.0 percent would be an additional $3.80 and $4.90 per ton of coal, respectively. Given the sulfur dioxide reductions that would be achieved using the lower sulfur coals the costs per ton of SO_2 controlled would be $1,784 and $983 for 1.5 and 1.0 percent sulfur coal, respectively. Each of these costs is below the New Source Performance Standard (NSPS) guideline of $2,000 per ton of SO_2 controlled that is used for establishing NSPS.

Several of the portland cement manufacturing facilities listed in the BACT/LAER Clearinghouse achieve part of the overall SO_2 control by using a baghouse as the particulate control device. The applicant stated that a baghouse would inherently provide greater removal (in the range of 20 to 45 percent) than the proposed ESP due to the filter cake formed on the bags. The clearinghouse lists some facilities in which the level of control has been additionally enhanced by incorporating lime/limestone injection.

The applicant has indicated that the additional removal which might be obtained from using a baghouse does not warrant the expense. In 1983 dollars, the cost of purchasing and operating a baghouse is estimated to be 1.9 million and 0.6 million, respectively. These costs are not justified since an efficient particulate control device (ESP) is already in place.

The BACT/LAER Clearinghouse lists facilities that provide SO_2 reductions up to 90 percent based on the inherent control that is provided only by the alkaline content of the cement dust and the particulate control device. The applicant stated that the proposed inherent SO_2 removal efficiency of 36 percent is based upon experience with burning coal in kiln No. 3. Testing of kiln No. 3 has shown an average SO_2 removal efficiency of approximately 75 percent. The applicant does not expect the same efficiency, however, for kiln No. 2 since kiln No. 2 is smaller, shorter, and less energy efficient. Being shorter, the applicant states that there would be less retention time of the gases in the kiln, thereby having less time for absorption into the clinker. In addition, the operating conditions (temperature, excess air, etc.) may be different in kiln No. 2 than kiln No. 3. As a result, the inherent SO_2 removal efficiency is expected to be less than that achieved in kiln No. 3 and is proposed to be 36 percent.

The applicant has indicated that the amount of sulfuric acid mist (H_2SO_4) emissions will be equivalent to approximately 3 percent of the SO_2 emissions. As this is the case, BACT for H_2SO_4 will be established at 3 percent of the BACT emission limit for SO_2.

Like SO_2, a review of the BACT/LAER Clearinghouse indicates a wide range of limitations for nitrogen oxides. For NOx, previous BACT determinations have been established in terms of pounds emitted per ton of feed, pounds per million Btu heat input and parts per million.

In terms of pounds per ton of feed, previous BACT determinations for NOx range from a low of 1.6 pounds to a high of 2.9 pounds. For BACTs that were expressed as pounds per million Btu heat input, the clearinghouse indicates a range of 0.32 to 0.7 lb/MMBtu.

The applicant has proposed a NOx emission rate of 169.3 lb/hr. Taking into consideration the kiln's raw material feed rate of 81,000 lb/hr and heat input of 162.5 MMBtu/hr, the proposed emission rate equates to 4.2 lb/ton of feed and 1.04 lb/MMBtu, respectively.

The proposed NOx emission rate can be compared to previous BACT determinations as follows:

Previous BACT Determinations

Basis	Least Stringent	Most Stringent	Applicant's Proposal
lbs/ton feed	2.9	1.6	4.2
lb/MMBtu	0.7	0.32	1.04

A review of the NOx emission rate summary indicates that the applicant's proposal is not representative of what BACT should be both in terms of pounds emitted per ton of feed and pounds emitted per million Btu heat input. Here again, the least stringent of these BACT determinations were established for sources which were permitted several years ago, and hence is not representative of today's "top down" BACT evaluation.

The emissions of nitrogen oxides result from the oxidation of nitrogen in the fuel (fuel NOx) as well as in incoming combustion air (thermal NOx). Based on these principles, the formation of NOx is dependent upon the type of fuel, its nitrogen content, and the combustion parameters of the kiln. Although cement kilns are limited as to what can be done to limit NOx emissions, previous BACT determinations indicate that most, if not all, facilities are controlling NOx emissions to levels which are lower than proposed by the applicant.

Environmental Impact Analysis

A review of the maximum ambient impacts associated with the coal conversion of kiln No. 2 indicates that the increase in SO_2 emissions will contribute significantly to the present background concentrations. Based on the applicant's proposal for BACT, the impacts associated with the increase in SO_2 emissions are estimated to be 162 ug/m^3, 3-hour; 54 ug/m^3, 24-hour; and 3.6 ug/m^3, annual average. These impacts are well in excess of the present background concentrations of 15 ug/m^3, 3-hour; 8 ug/m^3, 24-hour; and 3 ug/m^3, annual average.

Based on this impact review, the Department has determined that Tarmac's proposal to convert kiln No. 2 to coal firing has the potential to contribute substantially to the SO_2 concentration in that area. As this is the case, the Department believes that a BACT determination which would reduce the proposed SO_2 impacts is justified. Although BACT has also been required for NOx emissions, the maximum annual impact associated with the conversion of kiln No. 2 is below the significant impact level of 1.0 ug/m^3. As this is the case, the increase in NOx impact due to the proposal will not be a major factor in the BACT determination.

In addition to the increased emissions of criteria pollutants, the conversion to coal has the potential to generate hazardous air pollutants which are not associated with oil firing. These pollutants (zinc, phenol, and pyridine) should be controlled to some degree by the existing control equipment, and hence should not have an effect on the BACT determination. The conversion may also result in increases of other noncriteria pollutants. Here again, these increases would be minimal and would not affect the BACT determination.

Potential Sensitive Concerns

The applicant has indicated that any level of control which would result in higher costs to the facility such as switching to a lower sulfur content coal would affect the company's ability to be competitive with other cement suppliers. For example, the additional cost of switching to a coal with a 1.5 or 1.0 percent sulfur content would increase the cost of production by 8 and 9%, respectively. This would limit Tarmac's ability to be competitive with other cement manufacturers since Tarmac is currently just marginally competitive in this industry. In addition, Tarmac as well as other domestic cement producers, competitiveness is being currently strained by the importing of cement from Mexico.

Since 1983, Mexican producers have been importing gray portland cement and cement clinker into Arizona, New Mexico, Texas, and Florida. This cement, which has been alledgely sold at less than fair value and in some cases below production costs, has led to decreased sales by domestic producers, and resulted in the closure of 2 cement plants in Florida. As this is the case, any control measures that result in higher production costs would be economically burdensome to the applicant.

BACT Determination by DER

Discussion

Based on the information provided by the applicant and the studies conducted as part of the Department's review, the levels of control proposed by the applicant are not representative of BACT.

For sulfur dioxide the level of control proposed by the applicant (36% control and 2.46 lb/MMBtu) is only equivalent at best to the least stringent BACT determinations for other portland cement manufacturing facilities. Although the Department recognizes the economic hardship that could result from switching to a lower sulfur coal, there is evidence to suggest that a lower SO_2 emission rate can be achieved without switching.

In 1984 Tarmac applied for and received a modification of their 1980 federal Prevention of Significant Deterioration (PSD) permit to convert kiln Nos. 1, 2, and 3 to coal firing. An excerpt from the BACT determination for that PSD permit provides information on the expected level of control as follows:

"The applicant submitted test data while firing residual oil containing 2.38 percent sulfur to determine kiln product absorption of SO_2. The data indicated that 91.3% of the potential SO_2 was absorbed by the aggregate processed in kiln Nos. 1 and 2 and 98.7% in kiln No. 3. A BACT determination was made based upon the applicant's data.

After one of the kilns [kiln 3] had been converted to fire coal, the exhaust gases were tested for SO_2 content. The data indicated the absorption of SO_2 in the kiln product was 75 to 80 percent, not the reduction originally anticipated. The coal fired in the kiln during the test contained two percent sulfur."

This information indicates that for kiln No. 3 the efficiency of SO_2 absorption decreased by a maximum of 24 percent when coal was fired instead of residual oil. Although the data indicate that the efficiency of absorption was higher for kiln No. 3 (98.7% for kiln No. 3 compared to 91.3% for kiln Nos. 1 and 2) when firing residual oil, it is expected that the differential efficiency decrease for firing coal instead of residual oil should be similar for all three kilns. Based on this the expected efficiency of SO_2 absorption when firing coal would be a minimum of 69.4% instead of the proposed 36 percent for kiln 2.

A sulfur dioxide reduction of 69.4 percent is more representative of previous BACT determinations. In terms of pounds emitted per heat input, a 69.4 percent reduction equates to 1.18 lb/MMBtu which also better represents BACT. In addition, 1.18 lb/MMBtu is consistent with the New Source Performance Standard (NSPS) for fuel burning equipment of similar size. For coal fired industrial-commercial-institutional steam generating units with heat input capacities between 100 and 250 million Btu per hour the least stringent NSPS requires that SO_2 emissions not exceed 1.2 lb/MMBtu.

For nitrogen oxides the level of control proposed by the applicant also exceeds what has been previously established as BACT. Here again, the Department believes that there is evidence to suggest that cement kilns can meet a lower than proposed emission limitation.

Taking into consideration the applicant's proposed NOx emission rate of 169.3 lb/hr with the proposed clinker production rate of 25 tons per hour, the NOx emissions are equivalent to 6.77 pounds per ton of clinker produced. This level greatly exceeds the uncontrolled NOx emission factor of 2.8 lb/ton of clinker that is given in EPA AP-42 for both dry and wet process kilns.

The AP-42 emission factor, equivalent to 1.74 lb/ton of feed, is more representative of previous BACT determinations. In terms of heat input, the AP-42 emission factor equates to 0.43 lb/MMBtu. This emission level is within the range of previous BACT determinations, though it is on the stringent side.

By comparison, the least stringent NSPS for NOx from coal fired (except lignite) industrial-commercial-institutional steam generating units is 0.70 lb/MMBtu. This level, equivalent to a 2.84 lb/ton of feed for the Tarmac facility is representative of the least stringent BACT determination both in terms of emission per ton of feed and lb/MMBtu. As this is the case, this level (0.7 lb/MMBtu) does not appear to be unreasonable as BACT for the Tarmac facility.

Conclusion

Based on the information presented, the Department has determined that BACT for the Tarmac facility is equivalent to limiting the sulfur dioxide and nitrogen oxide emissions to the least stringent NSPS for coal fired industrial-commercial-institutional steam generating units. This decision is consistent with the requirements that all BACT determinations be at least as stringent as any applicable NSPS. Although kilns are not steam generating units, emission limitations for fuel burning equipment should be consistent where possible. As this is the case, an emission limitation based on the least stringent NSPS limitation for another type of coal fired equipment is judged to be reasonable as a "top-down" BACT determination. In fact, any emission limitation which would exceed the least stringent NSPS would be judged to be unrepresentative of today's "top-down" BACT procedure.

The Department has determined that these levels are consistent with previous BACT determinations for portland cement manufacturing facilities and the information available suggests that these levels are reasonable for the Tarmac facility. The BACT emission levels are thus established as follows:

Pollutant	Emission Limit	Equivalent Limit
SO_2	1.20 lb/MMBtu	7.80 lbs/ton of clinker produced
NOx	0.70 lb/MMBtu	4.55 lbs/ton of clinker produced
H_2SO_4 Mist	0.036 lb/MMBtu	0.23 lbs/ton of clinker produced

In accordance with the Department's Final Order issued on December 7, 1990, (DOAH Case No. 90-3852, OGC File No. 90-0954), appended hereto is Attachment A reflecting the amount and percentage of SO_2 increment consumed in Class I and Class II areas in conjunction with SO_2 emission rates of 195 lbs/hr and 275 lbs/hr, respectively.

Details of the Analysis May be Obtained by Contacting:

Barry Andrews, P.E., BACT Coordinator
Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended by:

C. H. Fancy, P.E., Chief
Bureau of Air Regulation

January 25, 1991
Date

Approved by:

Carol M. Browner, Secretary
Dept. of Environmental Regulation

February 25, 1991
Date

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TARMAC OF FLORIDA, INC.,

Petitioner

vs.

DOAH CASE NO. 90-3852
OGC FILE NO. 90-0954

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION,

Respondent.
_______________________________/

FINAL ORDER

On June 19, 1990, the State of Florida Department of Environmental Regulation ("Department") received a petition for administrative hearing from Petitioner, TARMAC OF FLORIDA, INC. The petition challenged the Department's decision to include specific conditions 3, 4, and 5 in Permit No. 13-169901 to convert their kiln no. 2 to coal firing at their facility in Medley in Dade County.

On September 28, 1990, the assigned Hearing Officer issued and Order Granting Consolidation of Edmund F. Benson v. Tarmac of Florida, Inc., & DER, OGC file no. 90-1364, DOAH file no. 90-5827 with the above-styled case. On November 21, 1990, after Petitioner failed to timely respond to the Order Granting Motion for More Definite Statement issued on September 26, 1990, the assigned Hearing Officer issued an Order which severed the Benson case from Tarmac of Florida, Inc. v. DER and closed that Division of Administrative Hearings file and relinquished jurisdiction back to the Department.

On December 3, 1990, after receiving a Stipulation for Dismissal, the assigned Hearing Officer issued an Order which closed the Division of Administrative Hearings file and relinquished jurisdiction back to the Department. (Exhibit 1) There being no further matters to consider,

IT IS ORDERED:

The petition is hereby dismissed and the Department's Southeast District Office is directed to issue Permit No. 13-169901 in accordance with the Stipulation. (Exhibit 2)

Any party to this Order has the right to seek judicial review of the Order pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; 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 days from the date this Order is filed with the clerk of the Department.

DONE AND ORDERED this 7 day of December, 1990, in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Dale Twachtmann

DALE TWACHTMANN
Secretary
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing FINAL ORDER has been furnished by U.S. Mail to James S. Alves, Esq., Hopping Boyd Green & Sams, P.O. Box 6526, Tallahassee, FL 32314, on this 10th day of December 1990.

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

Patricia E. Comer

Patricia E. Comer
Assistant General Counsel

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400
Telephone: (904) 488-4805

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TARMAC FLORIDA, INC., Petitioner,	)	
vs.	)	CASE NO. 90-3852
DEPARTMENT OF ENVIRONMENTAL REGULATION, Respondent.	)	

STIPULATION FOR DISMISSAL

Pursuant to Florida Administrative Code rule 22I-6.033, Petitioner Tarmac Florida, Inc. ("Tarmac" or "Petitioner") and Respondent State of Florida Department of Environmental Regulation ("Department" or "Respondent") jointly file this Stipulation for Dismissal and request the Hearing Officer enter an order incorporating same and dismissing this case in accordance therewith. The parties jointly agree:

1. This proceeding relates to Tarmac's application to the Department for an air pollution source construction permit authorizing conversion (to burn coal) of Kiln No. 2 at Tarmac's facility in Dade County. In its Petition for Administrative Proceedings, filed on June 19, 1990, Tarmac contested certain SO_2 and NO_x limitations applicable to Kiln No. 2 as set forth in the Intent to Issue Permit (PSD-FL-142) and accompanying documents that it received from the Department on April 4, 1990.

EXHIBIT 2

2. The parties have agreed to a mutually acceptable resolution of the issues raised in Tarmac's Petition. The terms of this resolution are set forth below in subparagraphs a., b., c., d., and e.

a. The Department will alter the specific conditions set forth in PSD-FL-142 as follows:

> 3. Sulfur dioxide emissions from kiln No. 2 shall not exceed ~~1.2 lbs/MMBtu heat input input from coal combustion,~~ 7.8 lbs/ton of clinker produced, 195.0 lbs/hr, 768.7 tons/yr.
>
> 4. Sulfuric acid mist emissions from kiln No. 2 shall not exceed ~~0.036 lbs/MMBtu heat input from coal combustion,~~ 0.23 lbs/ton of clinker produced, 5.86 lbs/hr, 23.06 tons/yr.
>
> 5. Nitrogen oxides emissions from kiln No. 2 shall not exceed ~~0.7 lbs/MMBtu heat input from coal combustion,~~ 4.55 lbs/ton of clinker produced, 113.8 lbs/hr, 448.4 tons/yr.
>
> * * *
>
> 11. Tarmac shall conduct a series of compliance tests for SO_2, H_2SO_4 mist, and NO_x emissions every two months for up to one year to allow representative sampling during different times of the year. The tests shall be performed in accordance with the compliance test methods specified in this permit. In the event that this series of tests results in SO_2 emissions in the range of 195 to 275 lbs/hr (up to 11 lbs/ton clinker, 1,084.1 TPY), NO_x emissions in the range of 113.8 to 169.3 lbs/hr (up to 6.77 lbs/ton clinker, 667.2 TPY), or H_2SO_4 mist emissions in the range of 5.86 to 8.25 lbs/hr (up to 0.33 lbs/ton clinker, 32.52 TPY), the Department, if requested by the Permittee, shall reevaluate BACT and consider upward adjustments of the emission limitations for the indicated constituents based on available data. During this testing and evaluation period, the Permittee shall make reasonable efforts to limit air emissions, and the

Department shall not initiate enforcement proceedings. Any upward adjustment of emission limitations pursuant to this paragraph shall be the subject of public notice in a local newspaper pursuant to Department rules. The Department's determination based on the data produced under this paragraph shall be a point of entry for purposes of Section 120.57, Florida Statutes.

b. Specific Condition No. 11, above, will be entirely new, and subsequent conditions shall be renumbererd accordingly.

c. The Department will append to the Final BACT Determination accompanying PSD-FL-142 data reflecting the amount and percentage of SO_2 increment consumed in Class I and Class II areas in conjunction with the emission rates of 195 lbs/hr and 275 lbs/hr, respectively. This data is attached hereto as Attachment A.

d. The expiration date of PSD-FL-142 shall be June 30, 1992.

e. The referenced air permit, PSD-FL-142, shall be issued by the Department in final form, in accordance with subparagraphs a., b., c., and d., by no later than December 12, 1990.

WHEREFORE, Petitioner and Respondent respectfully request entry of an order incorporating this Stipulation for Dismissal and dismissing this case.

Respectfully submitted this _____ day of November, 1990.

DEPARTMENT OF ENVIRONMENTAL REGULATION

Patricia E. Comer

Patricia E. Comer
Assistant General Counsel
Twin Towers Office Building
2600 Blair Stone Road, #654
Tallahassee, FL 32399-2400
(904) 488-9730

Attorney for Respondent

Date November 26, 1990

HOPPING BOYD GREEN & SAMS

____
James S. Alves
123 South Calhoun Street
Post Office Box 6526
Tallahassee, FL 32314
(904) 222-7500

Attorneys for Petitioner

Date ______________________

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TARMAC FLORIDA, INC., Petitioner,	
vs.	CASE NO. ________
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL REGULATION, Respondent.	

PETITION FOR FORMAL ADMINISTRATIVE PROCEEDINGS

Petitioner, Tarmac Florida, Inc. ("Tarmac" or "Petitioner"), by and through its undersigned counsel, hereby files this petition for formal administrative proceedings pursuant to Section 120.57(1) and Chapter 403, Florida Statutes, and Titles 17 and 28, Florida Administrative Code, in order to challenge certain construction permit conditions set forth in the Department of Environmental Regulation's ("DER", "Department" or "Respondent") March 29, 1990 Notice of Intent to Issue Permit. In support of this Petition, Tarmac states:

IDENTIFICATION OF PARTIES

1. The name, address, and telephone number of the Petitioner is Tarmac Florida, Inc., Post Office Box 2998, Hialeah, Florida, 33102, 305/823-8800.

2. The name and address of the Respondent is State of Florida, Department of Environmental Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

RESPONDENTS' FILE NUMBER AND COUNTY

3. DER has assigned File Nos. AC 13-169901 and PSD-FL-142 to this matter. This Petition relates to a DER air pollution source construction permit to alter the fuel type capability of Kiln No. 2 at Tarmac's facility in Dade County, Florida.

RECEIPT OF NOTICE OF AGENCY ACTION

4. Tarmac received DER's Intent to Issue Permit by U.S. Mail on or about April 4, 1990. The Department extended the time for initiating administrative proceedings to June 19, 1990.

SUBSTANTIAL INTERESTS AFFECTED

5. Tarmac operates a Portland cement manufacturing plant in Dade County that has been in existence for over twenty years. Tarmac has applied to DER for an air pollution source construction permit authorizing conversion of Kiln No. 2 at the facility to burn coal. Tarmac has a very significant investment in the ongoing and efficient operation of the facility, including Kiln No. 2. The proposed coal conversion is essential to Tarmac's ongoing viability in the domestic cement manufacturing industry, which

currently is threatened by foreign importation of cement products. Certain conditions contained in the DER construction permit for Kiln No. 2 are unreasonable, unnecessary, and unauthorized under Chapter 403, Florida Statutes. These conditions would without justification expose Tarmac to oppressive and infeasible operating costs. Therefore, the Intent to Issue Permit substantially and detrimentally impacts Tarmac.

DISPUTED ISSUES OF MATERIAL FACT

6. The disputed issues of material fact involve the sulfur dioxide ("SO_2") and nitrogen oxides ("NO_x") emission limitations proposed by DER as best available control technology ("BACT") in the construction permit. DER's BACT determination, as currently proposed, is arbitrary and capricious. Specific issues of material fact include whether DER, in formulating SO_2 and NO_x BACT limitations applicable to the Kiln No. 2 coal conversion:

a. Is ignoring site-specific emissions data;

b. Is misinterpreting site-specific emissions data;

c. Is improperly comparing different processes and industries to Tarmac's proposed process;

d. Is improperly and insufficiently accounting for economic considerations;

e. Is basing BACT emission limitations on factors not germane to the BACT process;

f. Is incorrect in determining that its proposed BACT limitations are achievable and economically feasible;

g. Is erroneously applying scientific principles to the circumstances at hand;

h. Is improperly applying applicable precedents in the formulation of BACT limitations;

i. Is acting in a manner that is not uniform and consistent with its previous actions on similar or analogous applications; and

j. Is capable of articulating facts and circumstances that justify the incipient agency policy embodied in the Intent to Issue Permit.

FACTS

7. Tarmac operates a Portland cement manufacturing plant in northwest Dade County, just east of the Turnpike Extension and south of U.S. 27. The Tarmac facility consists of three cement kilns, each of which is the subject of current air operation permit issued by DER. Kilns 1 and 2 are permitted to burn natural gas or No. 6 fuel oil, and each has a production capacity of 25.0 tons per hour (TPH) of clinker. Kiln 3 is a larger kiln that is permitted to

burn coal, natural gas, or No. 6 fuel oil and has a capacity of 87.5 TPH clinker.

8. On or about August 31, 1989, Tarmac submitted to DER an application for a construction permit that would authorize conversion of Kiln No. 2 to coal burning capability.

9. The proposed Kiln No. 2 coal conversion will increase emissions of various regulated air pollutants. The United States Environmental Protection Agency ("EPA") and DER have implemented regulations that require prevention of significant deterioration ("PSD") review in conjunction with modifications of existing sources that increase air emissions above specified threshold amounts. Tarmac's application is subject to PSD review. EPA's PSD regulations are found at 40 CFR §§51.166 and 52.21; the PSD program is administered through Florida's EPA-approved State Implementation Plan, which is comprised of applicable portions of Chapter 17-2, Florida Administrative Code. DER's PSD regulations are codified at Florida Administrative Code Rule 17-2.510. These regulations require application of BACT, a term that is defined by Rule 17-2.100(29) as follows:

> An emission limitation, including a visible emissions standard, based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems and techniques (including fuel

cleaning or treatment or innovative fuel combustion techniques) for control of each such pollutant.

10. Technical information and analysis required by the PSD regulations was set forth in Tarmac's application. Information pertaining to control technology review, and BACT, was set forth in Section 4.0 of the application.

11. Although DER has responsibility for making BACT determinations in Florida, EPA typically comments upon and participates in the process. DER historically adheres to EPA guidance. In December, 1978, EPA published <u>Guidelines for the Evaluation of BACT</u> to assist states in rendering BACT determinations. Late in 1987, EPA issued a memorandum advocating a so-called "top-down" approach to BACT determinations, reflecting a stringent shift in EPA policy that has proven to be controversial. In general, the top-down BACT approach requires that deliberations begin with the most stringent limitation that has been applied to the same source category; the applicant must propose to comply with this limitation unless there are specific facts warranting its rejection, such as site-specific technical or economic infeasibility. More recently, EPA made available a new "draft" top-down BACT guidance document in March, 1990.

12. In its construction permit application, Tarmac proposed that BACT for SO_2 is inherent removal in the kiln. Assuming a minimum removal efficiency of 36%, Tarmac proposed that the SO_2 emission limitation be set at the rate

of 400 lbs./hr. (16.0 lbs./ton of clinker). Moreover, Tarmac proposed that performance tests be undertaken after start-up of Kiln No. 2, and that the SO_2 limitation should thereafter be adjusted downward, as justified.

13. By letter dated October 4, 1989, DER informed Tarmac that EPA had requested additional information on Tarmac's application. More specifically, DER forwarded a draft letter from EPA indicating that PSD/BACT review was required for NO_x, and that Tarmac's analysis of proposed BACT for SO_2 emissions requires consideration of alternatives such as adding a baghouse or utilizing lower sulfur coal.

14. By letter dated November 13, 1989, Tarmac provided detailed responses to EPA's comments and concerns. Tarmac acknowledged that a BACT analysis is required for NO_x, and proposed a BACT limitation of 169.3 lbs./hr. (6.77 lbs./ton clinker). Moreover, Tarmac provided a detailed response to EPA's concerns regarding what constitutes appropriate BACT for SO_2 emissions. Tarmac provided cost figures demonstrating that low sulfur coal is not an economically feasible alternative. Tarmac also provided technical information demonstrating that the potential alternative of adding a baghouse to Kiln No. 2 would not significantly reduce SO_2 emissions and would not be economically feasible. Finally, Tarmac showed that predicting the

inherent SO_2 removal that will occur in Kiln No. 2 is extremely problematic, and reiterated its willingness to accept the lowest limit demonstrably achievable as ultimately gleaned from post-coal conversion operations. -

15. EPA issued another letter commenting upon the BACT analysis for the Tarmac coal conversion on December 13, 1990. In this letter, EPA requested additional data on inherent SO_2 removal and on the economic feasibility of utilizing low sulfur coal.

16. By letter dated January 15, 1990, Tarmac provided additional analysis in response to EPA's concerns. In this letter, Tarmac provided detailed information demonstrating that low sulfur coal is not an economically feasible option for Kiln No. 2. With respect to SO_2 removal, Tarmac explained why data from Kiln No. 3 are of limited usefulness for purposes of predicting emissions from Kiln No. 2, and concluded:

> Tarmac does not believe that SO_2 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 what 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_2 removal is the cement kiln itself (i.e., no add-on control equipment). As

such, the cement kiln will without a doubt remove SO_2 and act as an SO_2 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.

17. Tarmac representatives conferred with EPA officials on January 26, 1990. EPA concurred, based upon information provided by Tarmac, that 1.75 percent (monthly average)/2.0 percent (maximum) sulfur coal is acceptable as BACT for Kiln No. 2. Also, EPA concurred in Tarmac's proposal for a downward adjustment of the proposed initial 400 lbs./hr. SO_2 BACT limitation based upon a series of post-coal conversion emissions tests.

18. By letter dated March 20, 1990, EPA forwarded to DER a letter confirming that Tarmac's explanation of its proposed BACT limitations sufficiently addressed its concerns, and stating that it has no objection to Tarmac's proposal.

19. Tarmac received DER's Intent to Issue Permit on April 4, 1990. In the accompanying Technical Evaluation and Preliminary Determination, and construction permit, DER stated that BACT for SO_2 would be 1.2 lbs./MMBTU (195 lbs./hr.), and that BACT for NO_x would be 0.70 lbs./MMBTU (113.8 lbs./hr.). In setting these limitations, DER ignored and misinterpreted site-specific air emissions data,

arbitrarily compared different industrial operations to Tarmac's operations, refused to consider adequately economic factors, and rejected without explanation Tarmac's proposal for a series of tests resulting in a downward adjustment of its proposed BACT limitation.

20. By letter to DER dated May 23, 1990, Tarmac volunteered to undertake changes in its process whereby the initial SO_2 emission limitation (subject to downward adjustment) for Kiln No. 2 would be 321 lbs./hr., or approximately 20% lower than the proposal acceptable to EPA. DER rejected this proposed limitation.

FACTS REQUIRING MODIFICATION OR REVERSAL OF THE DEPARTMENT'S ACTION

21. Facts requiring modification or reversal of the Department's BACT determination are as follows:

a. For purposes of establishing BACT limitations, dry process cement kilns cannot legitimately be compared with wet process cement kilns, such as Tarmac's;

b. NSPS for fossil fuel steam generators are not appropriate for comparison to Portland cement plants because of fundamental differences in these industries;

c. DER must properly consider the following site-specific factors in the Tarmac BACT determination: wet process plant; kiln size and capacity; raw feed sulfur content; coal sulfur content; existing precipitator for particulate control; and proper interpretation of historic test data from other kilns at the plant;

d. Previous BACT determinations and test data from other wet process kilns (which is very limited) cannot be reflexively applied to Tarmac Kiln No. 2 without considering site-specific distinctions;

e. EPA has approved in writing Tarmac's plan for a one year testing period to confirm an acceptable BACT emission limitation, with Tarmac's proposed emission limitations as a starting point for this determination;

f. DER has ignored site-specific emissions data;

g. DER has misinterpreted site-specific emissions data;

h. DER has improperly compared different processes and industries to Tarmac's operations;

i. DER has improperly and insufficiently accounted for economic considerations;

j. DER's proposed BACT determination is based upon factors not germane to the BACT process;

k. DER's proposed BACT limitations are neither achievable nor economically feasible;

l. DER has erroneously applied scientific principles to the circumstances at hand;

m. DER's BACT determination contravenes applicable precedents;

n. DER has not acted in a manner that is uniform and consistent with its previous actions on similar or analogous applications;

o. DER cannot articulate facts and circumstances that justify the incipient policy embodied in the Intent to Issue Permit and related documents; and

p. Tarmac's EPA-approved proposal is reasonable and comports with applicable regulations.

LAWS ENTITLING PETITIONER TO RELIEF

22. The laws entitling Tarmac to relief in this action include the Clean Air Act (42 U.S.C. §§7401, et seq.); 40 CFR §§51.166 and 52.21; Chapters 120 and 403, Florida Statutes; Titles 17, 22I and 28, Florida Administrative Code; and the United States and State of Florida Constitutions.

RELIEF SOUGHT

23. Tarmac requests that DER determine BACT for Kiln No. 2 in accordance with Tarmac's EPA-approved proposal, and establish an emission limitation for SO_2 of 321 lbs./hr. and for NO_x of 169.3 lbs./hr., with the understanding that data would be collected during initial operations under the construction permit, and that these limitations, accordingly, would be subject to downward adjustment to the maximum extent feasible.

Respectfully submitted this 19th day of June, 1990.

James S. Alves

Wade L. Hopping
James S. Alves
HOPPING BOYD GREEN & SAMS
Post office Box. 6526
Tallahassee, FL 32314
(904) 222-7500

Attorneys for Tarmac
Florida, Inc.

TARMACPET:cla

Tarmac

TARMAC FLORIDA, INC.

P.O. Box 2998
Hialeah, Florida 33012

AUG 13 1990

DER - BAQM

August 9, 1990

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

RE: Proposed Modification - Kiln No. 2 Coal Conversion
DER File No. AC13-169901

Dear Mr. Fancy:

Please find enclosed a copy of the affidavit of publication for the *Notice of Intent to Issue Permit* for the above referenced project. Should you have any questions please call me at (305)823-8800.

Sincerely,

Scott Quaas
Environmental Specialist

cc: J. Alves - Hopping Boyd Green & Sams
J. Reynolds
J. Goldman, SE Dist
P. Hong, DERM
M. [illegible], EPA
C. Shaver, NPS

The Miami Herald

PUBLISHED DAILY
MIAMI — DADE — FLORIDA

STATE OF FLORIDA
COUNTY OF DADE:

Before the undersigned authority personally appeared

OLGA L. ARCIA

who on oath says that he/she is

CUSTODIAN OF RECORDS

of The Miami Herald, a daily newspaper published at Miami in Dade County, Florida; that the attached copy of advertisement was published in said newspaper in the issues of

AUGUST 7, 1990

Affiant further says that the said The Miami Herald is a newspaper published at Miami, in the said Dade County, Florida and that the said newspaper has heretofore been continuously published in said Dade County, Florida, each day and has been entered as second class mail matter at the post office in Miami, in said Dade 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, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Olga L. Arcia

Sworn to and subscribed before me this 7th

day of August A.D. 1990

My commission expires Elyse Benton

NOTARY PUBLIC STATE OF FLORIDA
MY COMMISSION EXP. MAY 15,1991
BONDED THRU GENERAL INS. UND.

State of Florida
Department of
Environmental
Regulation
Notice of Intent to Issue

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Termac Florida, Inc., 11000 NW 121 Way, Medley, Florida, 33012 to convert kiln No. 2 to coal firing at their facility in Dade County, Florida. A determination of Best Available Control Technology (BACT) was required. The proposed project is subject to Prevention of Significant Deterioration (PSD) regulations. Significant net increases in emissions of sulfur dioxide, nitrogen oxides, and sulfuric acid mist will result from this project. The Class I nitrogen dioxide PSD increment consumed is 0.02 micrograms per cubic meter (1 percent of allowable increment of 2.5 micrograms per cubic meter, annual average). The Class I sulfur dioxide PSD increment consumed is 18.5 vs. 25 allowable 3-hour average, 4.1 vs. 5 allowable 24-hour average, an 0.6 vs. 2 allowable annual average, in micrograms per cubic meter, respectively. Class II nitrogen dioxide PSD increment consumption is 0.5 vs. 25 allowable annual average, in micrograms per cubic meter; Class II sulfur dioxide PSD increment consumption is 182.1 vs. 512 allowable 3-hour average, 55.1 vs. 91 allowable 24-hour average, and 5.1 us. 20 allowable annual average in micrograms per cubic meter, respectively. These emission increases are not expected to cause or contribute to a violation of any ambient air quality standard. The Department is issuing this intent to issue for the reasons stated in the Technical Evaluation and Priliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) with 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The application is available for public inspection during business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of
Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida
32399-2400

Department of
Environmental Regulation
Southeast District
1900 S. Congress Avenue,
Suite A
West Palm Beach, Florida
33406

Dade County Dept. of
Environmental
Resources Management
801 S.W. 3rd Avenue,
2nd Floor
Miami, Florida 33130

Any person may send written comments on the proposed action to Mr. Bill Thomas at the Department's Tallahassee address. All comments mailed within 30 days of the publication of this notice will be considered in the Department's final determination. Furthermore, a public hearing can be requested by any person. Such requests must be submitted within 30 days of this notice.

HOPPING BOYD GREEN & SAMS
ATTORNEYS AND COUNSELORS
123 SOUTH CALHOUN STREET
POST OFFICE BOX 6526
TALLAHASSEE, FLORIDA 32314
(904) 222-7500
FAX (904) 224-8551

June 11, 1990

BY HAND-DELIVERY

Mr. Clair Fancy, P.E., Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
Room 306F, Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Tarmac Kiln No. 2 Conversion
DER File No. AC13-169901

Dear Clair:

On May 22, 1990, representatives of the Department and Tarmac met in your office to discuss outstanding areas of disagreement regarding the Department's proposed BACT determination for the above-referenced project. The Department stated that it would take Tarmac's points under advisement and respond early in June. My impression was that the Department agreed that the NO_x limitation needed to be adjusted, and that there may be room for movement on the SO_2 limitation, albeit not to the degree that Tarmac requested.

Shortly after our meeting, and after a follow-up telephone conference with David Schwartz, I filed a request for extension of the time to challenge the Department's BACT determination to June 19, 1990 (copy attached). Meanwhile, Al Townsend of Tarmac sent a letter to you (copy attached) substantially backing off of Tarmac's original requested BACT limitations, and seeking a compromise resolution.

The June 19 deadline is quickly approaching, and I still have not seen an official reply from the Department in response to Tarmac's proposed compromise. If at all possible, I would greatly appreciate hearing from the Department on this by no later than June 15.

I sincerely hope that the Department will work with Tarmac to arrive at a mutually acceptable solution to the issue at hand. The folks at Tarmac, certainly, have provided valid technical data and scientific information in support of their position, and, after undertaking some soul searching, have exhibited good faith efforts towards arriving at an amicable resolution. I trust that the Department, too, will strive to reach a principled and reasonable compromise.

Very truly yours,

Jim

James S. Alves

/lsd

Enclosures

cc: (w/enclosures)
Steve Smallwood
Barry Andrews
David Schwartz

HOPPING BOYD GREEN & SAMS

ATTORNEYS AND COUNSELORS
123 SOUTH CALHOUN STREET
POST OFFICE BOX 6526
TALLAHASSEE, FLORIDA 32314
(904) 222-7500
FAX (904) 224-8551

June 1, 1990

BY HAND DELIVERY

Dale H. Twachtmann, Secretary
c/o David Schwartz, Esquire
Office of General Counsel
Florida Department of Environmental
Regulation
2600 Blair Stone Road, Room 654
Tallahassee, Florida 32399-2400

Re: Tarmac
Kiln No. 2 Coal Conversion
DER File No. AC13-169901
PSD-FL-142

Dear Secretary Twachtmann:

On April 4, 1990, Tarmac received the Department's Notice of Intent to Issue Permit for the above-referenced facility. Tarmac timely requested that the Department extend the period for challenging certain permit conditions. By order dated May 4, 1990, the Department extended the deadline to June 4, 1990.

I am writing on behalf of Tarmac to request an extension of fifteen (15) days, to and including June 19, 1990, in which to file a petition for administrative proceedings regarding the conditions set forth in the Notice of Intent to Issue Permit. This request is made pursuant to Florida Administrative Code Rule 17-103.070, which provides that a timely request for extension of time shall toll the running of the time period in which to file an appropriate petition. As good cause for granting the requested extension of time for filing, Tarmac shows the following:

Dale H. Twachtmann, Secretary
June 1, 1990
Page 2

1. Tarmac has conferred on several occasions with Department officials in an attempt to resolve the outstanding areas of disagreement.

2. The most recent meeting occurred on May 22, 1990. The District officials stated that they would take Tarmac's comments under advisement and respond in early June.

3. This request is filed as a protective measure to avoid waiver of Tarmac's right to challenge conditions contained in the Notice of Intent to Issue Permit. Granting this request will facilitate the possibility of an acceptable resolution of this matter without the mutual inconvenience of administrative proceedings.

4. I hereby certify that I have spoken with David Schwartz, Assistant General Counsel for the Department, and that he informed me he has no objection to this request.

Accordingly, I respectfully request that you extend the time, to and including June 19, 1990, for filing a petition for administrative proceedings in regard to the Department's Notice of Intent to Issue Permit.

Sincerely,

James S. Alves

TarmacExt:gbb

United States Department of the Interior

National Park Service
SOUTHEAST REGIONAL OFFICE
75 Spring Street, S. W.
Atlanta, Georgia, 30303

RECEIVED
JUN 05
DER - BAQM

IN REPLY REFER TO:

N3615 (475)

MAY 30 1990

Mr. Bill Thomas
Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Thomas:

Thank you for sending us a copy of Tarmac Florida Inc.'s (Tarmac) permit application and your technical review document regarding Tarmac's proposal to modify its cement manufacturing facility in Medley, Dade County, Florida. The Tarmac facility is located approximately 30 km northeast of Everglades National Park (EVER), a class I air quality area administered by the National Park Service. We appreciate your continued cooperation in notifying us of proposed projects that may impact the air quality and related resources of our areas.

Tarmac proposes to convert kiln No. 2 from gas/oil firing to coal firing. The proposed project would result in significant increases in emissions of sulfur dioxide (SO_2), nitrogen oxides (NO_x), sulfuric acid mist (H_2SO_4), lead (Pb), and beryllium (Be). Consequently, PSD review is required for these five pollutants. Our comments on the best available control technology (BACT), air quality, and air quality related values (AQRVs) analyses with respect to the proposed project's potential impacts on EVER are discussed below. We ask that you consider our comments before you make a final determination on the proposed project.

We agree with Tarmac that the existing electrostatic precipitator represents BACT to minimize emissions of Pb and Be. For SO_2 and NO_x, we do not agree that the rates proposed by Tarmac represent BACT. Tarmac has proposed a SO_2 rate of 400 lb/hr (16 lb/ton of clinker produced). This rate is based on a 36 percent inherent removal efficiency associated with the limestone feed into the kiln and the particulate control device. As you point out in your BACT analysis, past BACT determinations for coal fired kilns have ranged from a low of

20 percent to a high of 90 percent. However, the 20 percent determination was made in 1981 and is not representative of today's "top down" BACT policy.

Tarmac's major argument in support of the proposed 400 lb/hr rate is its willingness to lower the allowable limit if performance test data support a lower level. Such an approach to setting an emission limit does not meet the intent of the BACT analysis. A BACT analysis is a preconstruction review and should be based on the best data available at the time of the review. It should not reflect an arbitrarily high emission limit with the promise to revise the limit downward if future test data so indicate.

Tarmac indicated that testing on kiln No. 3 shows that the inherent SO_2 removal efficiency for this kiln averages 75 percent. Although kiln No. 3 is larger than Kiln No. 2, both kilns are processing the same limestone feed. Therefore, we would expect the inherent SO_2 removal efficiencies of the two kilns to be somewhat similar. Also, for kiln No. 3, the SO_2 absorption efficiency decreased by 24 percent when coal was fired instead of residual oil. When firing residual oil in kiln No. 2, the SO_2 removal efficiency was 91.3 percent. We agree that it is reasonable to assume that the differential efficiency decrease for firing coal instead of oil should be similar for both kilns. Therefore, we agree that a SO_2 removal efficiency of 69.4 percent and a resulting SO_2 limit of 195 lbs/hr represent BACT for the proposed project.

Agreement

Similarly for NO_x, Tarmac's proposed rate (4.2 lb/ton feed) is higher than past BACT determinations (1.6 - 2.9 lb/ton). We agree with you that a NO_x emission rate of 2.84 lb/ton better reflects BACT for the proposed project.

Agreement

Tarmac used the ISCST dispersion model to predict potential SO_2 and NO_2 impacts at EVER. Surface and upper air meteorological data (1982-1986) from Miami and West Palm Beach, Florida, respectively, were deemed to be representative of the project area and were used as input to the model. Tarmac's air quality analysis shows that the expected SO_2 impacts at EVER would be 18.5, 4.7, and 0.6 ug/m^3 for the 3-hour, 24-hour, and annual averaging times, respectively. This represents a 74, 94, and 30 percent consumption of the allowable SO_2 class I increment for the respective averaging times. The maximum NO_2 class I impact was predicted to be 0.02 ug/m^3 (annual average).

Although the impacts at EVER would be considerably less if the lower emissions proposed by your office were modeled, Tarmac's air quality analysis appears to be incomplete with respect to the emissions inventory used to predict PSD increment consumption. Tarmac indicates in its permit application that the maximum increment consumption values are due to the effects of two increment consuming sources located in Dade County: Tarmac Florida (cement plant) and Dade County Resource Recovery

(MSW incinerator). If the emissions inventory included only these two sources in Dade County, then it may be inadequate because it is possible that other increment consuming sources located outside of Dade County may impact EVER.

An emissions inventory used to assess potential impacts on a class I area should consist of all increment consuming emissions within the impact area of the proposed source and those outside the impact area that are within 50 km and/or between the proposed source and the class I area. We ask that you carefully scrutinize Tarmac's emissions inventory and ensure that all appropriate increment consuming sources are modeled.

DONE

A cumulative impact analysis should also be made of all permitted and existing sources within 50 km of the facility's impact area, along with any sources between the proposed source and the park, that could potentially impact the class I area (this is especially important for annual impact determinations). This, along with representative ambient air monitoring data, will yield a more accurate assessment of potential <u>total</u> cumulative impacts in EVER.

Tarmac performed a Level-1 visibility screening analysis based on the new visibility screening analysis model-- VISCREEN -- described in the Environmental Protection Agency's <u>Workbook for Plume Visual Impact Screening and Analysis</u> (September 1988). The results of this analysis show that the proposed project passes the Level-1 screening test. Therefore, it is unlikely that the proposed emissions would cause plume impacts in EVER. Nevertheless, the potential of the source to contribute to the regional haze visibility problem in EVER still exists. Regional haze is a problem that impairs visibility in the park and the surrounding region. Visibility in the eastern U.S. has degraded steadily since the early 1950's, with the most dramatic changes occurring in the spring and summer months (Husar et al., 1981). In many areas in the East, sulfates are responsible for much of the haze (e.g., recent studies carried out at Shenandoah National Park have shown that sulfates are responsible for nearly 70 percent of reduced visibility, while organics contribute up to 30 percent of the problem (Malm et al., 1987)).

Within 100 km of an urban center, a powerplant, or other industrial facilities, haze is generally a mixture of gases and secondary aerosols. Gaseous "precursor" emissions from a source are converted through very complex reactions into secondary aerosols. Sulfur oxides convert into sulfuric acid and ammonium sulfate, nitrogen oxides convert to nitric acid and ammonium nitrate, and hydrocarbons become organic aerosols (Malm et al., 1989). In most cases, we do not yet have the data and analytical techniques needed to estimate the contribution of an individual source to regional haze. However, monitoring and modeling studies that are being conducted presently may provide a means of assessing the contribution of individual sources to regional haze. In the meantime, we encourage the Florida DER to take all steps possible to reach national and State visibility goals by limiting pollutants, such as SO_2, NO_2 and VOCs that contribute to visibility degradation not only in class I areas but in the whole region.

In summary, we agree that the SO_2 and NO_x emission rates proposed in your draft permit reflect BACT. Also, because Tarmac's air quality analysis shows that the allowable class I SO_2 increment (24-hr average) will be virtually consumed, and since there is some question as to the completeness of the emissions inventory used in the analysis, we ask that you carefully scrutinize Tarmac's emissions inventory and ensure that all appropriate increment consuming sources are modeled.

If you have any questions regarding the above comments, please contact John Bunyak of our Air Quality Division in Denver at (303) 969-2071.

Sincerely,

[signature]

EOR Robert M. Baker
Regional Director
Southeast Region

cc: J. Reynolds
R. Andrews
T. Finn
L. [illegible], SE Dist.
P. [illegible], DERM
B. Miller, EPA

RECEIVED

MAY 29 1990

DER - BAQM

TARMAC FLORIDA, INC.

P.O. Box 2998
Hialeah, Florida 33012

May 23, 1990

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

RE: Proposed Modification - Kiln 2 Coal Conversion
DER File No. AC13-169901; PSD-FL-142

Dear Mr. Fancy:

I would like to thank you and your staff for taking the time out of your busy schedules to meet with us once again. Today I met with our cement production staff one more time to see if anything further could be done to reduce the SO_2 emission limit requested in the referenced application. After much sole searching and discussions Tarmac feels that an initial permitted SO_2 limit of 321 lb/hr would be feasible. We would propose the same testing program which E.P.A. has accepted and adjust the emissions limits accordingly. This change is based on the following assumptions:

Original Application:

1 - The sulfur content of the coal is 2% sulfur with a maximum heat input per ton of clinker of 6.5 MMBTU. This gives potential SO_2 emissions from the fuel of 520 lb/hr.

(13000 lb/hr coal) x (2% S content) x (32/15 S to SO_2 conversion) = 520 lb/hr

2 - The raw kiln feed has a sulfate content as SO_3 of 0.16%. With a feed rate of 81000 lb/hr on a dry basis this gives potential SO_2 emissions from the feed of 103.7 lb/hr.

(81000 lb/hr feed) x (0.16% SO_3 content) x (64/80 SO_3 to SO_2 conversion) = 103.7 lb/hr

3 - The absorption of SO_2 in the kiln is projected to be 36 per cent. Based on this absorption the SO_2 emission rate as stated in the application is 400 lb/hr.

(520 lb/hr from coal) + (103.7 lb/hr from feed) = 623.7 lb/hr potential
(623.7 lb/hr potential) - (36% absorption) = 399.2 lb/hr SO_2 emissions

<u>Proposed SO_2 Limit Revision</u>:

1 - In our agreement with EPA the sulfur content would be a rolling average of 1.75% with a maximum of 2.0%. This reduces the potential SO_2 emissions from the fuel to 455 lb/hr.

(13000 lb/hr coal) x (1.75% S content) x (32/16 S to SO_2 conversion) = 455 lb/hr

2 - The cement production staff have come up with a method of reducing our energy requirements (i.e. heat input). This would be accomplished by redesigning the chain system in the kiln to recover more heat and in such a way as to not cause any air flow problems or back drafts in the kiln. They feel that with this redesign that the maximum heat input requirement per ton of clinker could then be reduced to 6.0 MMBTU. This would reduce the coal input by 1000 lb/hr which would reduce the potential SO_2 emissions into the kiln by 35 lb/hr.

(1000 lb/hr coal) x (1.75% S coal) x (32/16 S to SO_2 conversion) = <35 lb/hr>

3 - One final fine tuning of our projected SO_2 emissions is to use an average sulfate content of our raw kiln feed over the last five years instead of the highest sulfate content as used in the original application. The average raw kiln feed sulfate content as SO_3 for the past five years is 0.126% versus 0.16% in the original application. With a feed rate of 81000 lb/hr on a dry basis this gives potential SO_2 emissions from the feed of 81.6 lb/hr.

(81000 lb/hr feed) x (0.126% SO_3 content) x (64/80 SO_3 to SO_2 conversion) = 81.6 lb/hr

4 - Applying these factors and utilizing the projected SO_2 absorption in the kiln of 36%, the revised SO_2 emission rate is 321 lb/hr.

(455 lb/hr from coal) - (35 lb/hr reduced heat input) + (81.6 lb/hr from feed) = 501.6 lb/hr
(501.6 lb/hr potential) - (36% absorption) = 321.0 lb/hr SO_2 emissions

I am hopeful this revised <u>starting point</u>, or initial 321.0 lb/hr limit for SO_2 emissions along with the 169.3 lb/hr limit for NO_x will be acceptable in conjunction with Tarmac's proposal to conduct a 1-year testing program. The testing program will allow adequate data to be collected upon which a true BACT limit can then be established.

BEST AVAILABLE COPY

Mr. Clair Fancy, P.E.
Bureau of Air Regulation
Fla. Dept. of Environmental Regulation
May 23, 1990

-Page 3-

I again thank you and your staff for your time on this matter and entreat your consideration and balanced decision. Should you have any questions or request further information please do not hesitate to call me at (305)823-8800.

Sincerely,

Albert W. Townsend

Albert W. Townsend
Manager, Real Estate & Environmental

cc: D. Buff
D. Bailey
S. Quaas
J. Alves
J. Reynolds
[illegible]
M. [illegible]
J. [illegible], SE Dist.
[illegible], DERM
B. Miller, EPA
M. [illegible], NPS

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APR 24 1990
DER

April 19, 1990

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:

This correspondence is to summarize the outcome of our meeting on April 17, at your offices in Tallahassee, to discuss the above referenced permit application. The discussion centered on FDER's BACT determination, as set forth in the draft permit, and the proposed SO_2/NO_x emission limits for Kiln 2. Tarmac's major concerns, as expressed to you in the meeting, are as follows:

1. Dry process cement kilns cannot be compared with wet process cement kilns, such as Tarmac's;

2. NSPS for fossil fuel steam generators are not appropriate for comparison to portland cement plants because of the very different nature of the cement manufacturing process;

3. FDER must properly consider site-specific factors in their BACT determination- wet process plant, kiln size and capacity, raw feed sulfur content, coal sulfur content, existing precipitator for particulate control, and proper interpretation of historic test data from the kilns at the plant;

4. Past BACT determinations and test data from other wet process kilns (which is very limited) cannot be directly applied to Tarmac Kiln 2, because of the site-specific nature of SO_2/NO_x emissions from cement kilns;

5. EPA Region IV has approved in writing Tarmac's plan for a 1-year testing period to determine an acceptable BACT emission limit, with the applicant's proposed emission limits as the starting point for this determination; and

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KBN ENGINEERING AND APPLIED SCIENCES, INC.
1034 Northwest 57th Street Gainesville, Florida 32605 904/331-9000 FAX: 904/332-4189

6. Competition for PSD Class I increments may exist in the future due to new cogenerators locating in the area. An arbitrarily low emission limit for Tarmac, coupled with other new plants in the area, might preclude Tarmac from raising their emission limits in the future due to limited PSD increment availability.

As we understand it, your staff will be reviewing the new information we submitted within the next three weeks, and any decision to revise the draft BACT will be made within 30 days of our meeting. Please call if you have any questions on this matter.

Sincerely,

David A. Buff

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

DAB/dpy

cc: Bruce Miller, EPA
Al Townsend, Tarmac Florida
Barry Andrews, FDER
J. Reynolds
M. Fenn
I. Goldman, SE Dist.
P. Wong, DERM
C. Shaver, NPS
CHF/JKP

Tarmac

TARMAC FLORIDA, INC.

P.C. Box 2998
Hialeah, Florida 33012

Expires May 18
now 6/~~#~~ 15
verbally by 6/4

VIA HAND DELIVERY

April 16, 1990

Mr. David Schwartz
Office of General Counsel
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Kiln No. 2 Coal Conversion
DER File No. AC 13-169901
PSD-FL-142

Dear Mr. Schwartz:

Tarmac received the *Notice Of Intent To Issue Permit* for the above referenced facility on April 4, 1990. Tarmac must take exception to Specific Condition 3., 4., and 5. and requests the fourteen (14) day time limit for filing a petition for an administrative determination (hearing) under Section 120.57, Florida Statutes be waived for an additional thirty (30) days.

The singular concern of Tarmac is that the SO_2 and NO_x emission limits proposed by the Department are not achievable in Kiln No. 2. The proposed emission limits are from the BACT analysis contained in the *Technical Evaluation and Preliminary Determination* for the referenced facility. There are site-specific technical considerations which render the proposed emission rates as not achievable and economic considerations preclude the use of a different type of kiln or different process. The additional time will allow Tarmac to discuss with the Department the site-specific aspects and data for this project allong with the BACT determination procedure.

I look forward to providing any additional information you or the Department may need to reach a resolve to this matter. Should you have any questions please call me at (305)823-8800.

Sincerely,

Scott Quaas
Environmental Specialist

cc: C. Fancy - FDER, Tallahassee

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

4APT/AEB

APR 13 1990

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. (PSD-FL-142)
Kiln No. 2 Coal Conversion

Dear Mr. Fancy:

We have received a copy of your March 29, 1990, prevention of significant deterioration (PSD) Technical Evaluation and Preliminary Determination for the above referenced project. As discussed between Mr. John Reynolds of your staff and Mark Armentrout of my staff on April 4, 1990, we are offering the following comments.

The draft permit does not address PM_{10} emissions. We suggest that the final permit contain a PM_{10} emission limit for the kiln and a test method for determining compliance.

The draft permit does not include any specific provisions regarding the control of fugitive emissions from the coal handling operations and haul roads. Tarmac was able to avoid applicability to the PSD regulations for particulate matter based on certain assumptions for controlling these fugitives. Therefore, these assumptions must be reflected in the final permit.

The final permit needs to contain an emission limit and test method for determining carbon monoxide emissions from the kiln.

Thank you for the opportunity to review this PSD package. If you have any questions concerning this letter, please contact Mark Armentrout of my staff at (404) 347-2904.

Sincerely yours,

Jewell A. Harper, Chief
Air Enforcement Branch
Air, Pesticides and Toxics
Management Division

cc: Mr. David Buff, KBN
Mr. Scott Quaas, Tarmac Florida

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APR 13 1990

DER - BAQM

April 12, 1990

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

Re: Tarmac Florida, Inc., Kiln 2 Coal Conversion AC13-169901; PSD-FL-142

Dear Mr. Fancy:

Attach are comments to the Technical Evaluation and Preliminary Determination for the above-referenced application. These comments are submitted on behalf of Tarmac Florida in response to the published Public Notice. I look forward to meeting with you and your staff on April 17 to discuss these comments and our concerns.

Sincerely,

David A Buff/LCB

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

DAB/mah

Attachments

cc: Al Townsend, Tarmac
Bruce Miller, EPA
Patrick Wong, DERM
Steve Smallwood, FDER
Barry Andrews, FDER

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KBN ENGINEERING AND APPLIED SCIENCES, INC.
1034 Northwest 57th Street Gainesville, Florida 32605 904/331-9000 FAX: 904/332-4189

TECHNICAL COMMENTS
TO THE
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION
TARMAC FLORIDA, INC.
AC13-169901

The Florida Department of Environmental Regulation (FDER) has issued the Technical Evaluation and Preliminary Determination and proposed Prevention of Significant Deterioration (PSD) permit for the conversion of Kiln 2 at Tarmac Florida to coal firing. The FDER's Best Available Control Technology (BACT) Determination is also contained in the preliminary determination.

Provided herein are technical comments and additional information on the preliminary BACT determination. This response is organized according to the BACT determination issued by FDER.

BACT DETERMINATION REQUESTED BY THE APPLICANT

The applicant's proposed BACT emission rate as stated by FDER for nitrogen oxides (NO_x) [8.02 pounds per ton (lb/ton) clinker] is incorrect. The correct figure should be 6.77 lb/ton clinker.

It is also incorrect that Tarmac has proposed an sulfur dioxide (SO_2) emission level of 400 pounds per hour (lb/hr) or 16.0 lb/ton clinker as BACT, as inferred by FDER. Tarmac has clearly stated in the application, as well as in numerous conversations with FDER staff, that the stated emission level will be used only as the starting point in determining what BACT should actually be. A comprehensive testing program has been proposed to determine an appropriate emission level (BACT) for Kiln 2 because no actual operating data for Kiln 2 burning coal is available, Kiln 2 is very different than Kiln 3, and SO_2 emissions from coal-fired kilns are very kiln specific (depends on absorption in kiln, sulfur in raw feed, and operating conditions within the kiln). The results from this testing can be utilized by FDER to set the BACT limit. This BACT strategy was approved by EPA Region IV in January 1990.

BACT DETERMINATION PROCEDURE

This section briefly outlines FDER's and U.S. Environmental Protection Agency's (EPA's) BACT determination procedure and current "top-down" approach. The applicant agrees with this approach, but several areas in FDER's BACT determination are not consistent with these regulations and policies.

EPA has issued draft policy guidance concerning the top-down BACT approach. These are contained in a draft document entitled "Top-Down Best Available Control Technology: A Summary" (May 25, 1989) and an EPA memo containing "Background Statement on the Environmental Protection Agency's Top-Down Policy" (June 13, 1989). The following relevant quotations from these documents are presented:

> In summary, all available control technologies are ranked, and the most stringent alternative is considered initially in the BACT analysis. However, when supported by a complete and objective review, technologies that can be demonstrated to be infeasible, unreasonable, or otherwise not achievable considering source-specific energy, economic, environmental, or technological reasons can be set aside.
>
> The top-down policy does not establish a national BACT standard. The statute provides that technical considerations may, alone or in conjunction with energy, environmental, or economic factors, render a given control technology or associated emission limitation not "achievable" in a given PSD case. It is precisely the purpose of the BACT analysis to weigh these factors in determining whether an "available" technology or emission limit is "achievable" in the given case. Adoption of a top-down methodology does not change or alter this requirement.
>
> Rejection of a control technology by a reviewing agency must have a rationale arrived at after full consideration of data determined in a consistent and sound manner. Such decisions may not be arbitrary, capricious, or contrary to law.

In the BACT determination for Tarmac Florida Kiln 2 coal conversion, FDER has not followed this policy guidance by:

1. Ignoring and improperly interpreting the applicant's site-specific emissions data;

2. Arbitrarily comparing completely different processes and industries to Tarmac's proposed process; and
3. Failing to provide a complete and objective review of available data and ignoring the site-specific factors set forth in the application, resulting in a flawed BACT determination.

Each of these will be discussed in greater detail in the following sections.

BACT ANALYSIS FOR SO_2

FDER presents a summary of previous BACT determinations for coal-fired cement kilns. This summary contains only the least stringent and most stringent percent SO_2 reduction and the lowest and highest emission rate in terms of pounds per million British thermal units (lb/MM Btu) contained in any previous BACT determination. No description of the type of cement kiln (i.e., wet, dry, or preheater/precalciner/kiln system), the sulfur content of the fuel, the clinker production rate, sulfur content of the raw feed, or other site-specific factors that were the basis of the decisions is presented. This analysis does not constitute a complete and objective review, nor does it represent a sound rationale, as required by the BACT guidelines.

A complete listing of all BACT determinations for cement plants, as contained in the BACT Clearinghouse documents, is contained Table 1. The list is arranged chronologically and segregated according to dry and wet process kilns. The list shows that almost all cement plants requiring BACT review were the dry process type.

Review of this information reveals that the 90 percent SO_2 reduction efficiency cited by FDER as the most stringent was based upon the Monolith Cement Co. (California) BACT determination. This is a wet process kiln which burns a coal/coke combination with a maximum of 1.5 percent sulfur. Further investigation of this limit revealed that the applicant actually proposed a range of efficiency of between 50 percent and 90 percent,

Table 1. Summary of BACT Determinations for Portland Cement Kilns - SO2 Emission

Company Name	State	Date of Permit	Source +	Fuel, sulfur content, %	Process	Capacity	Clinker Production	SO2 Emission Limit lb/hr	lb/MMBtu	lb/ton cl.	% Reduction	Comments
						Dry Process Kilns						
Kaiser Cement & Gypsum Corp.	CA	26-Dec-78	PH/PC/Kiln/Mill	Coal, <1%	Dry	1.60 MMTPY	104 TPH	481		4.63		Baghouse alkali dust
Calif. Portland Cement Co.	CA	12-Jan-79	PC/Kiln	Coal	Dry	1 MMTPY	114 TPH	616		5.40	70%	Absorption by alkaline
Lonestar Industries Inc.*	TX	19-Feb-80	PC/Kiln/Mill	Coal	Dry	1 MMTPY	114 TPH	960		8.42	80%	Baghouse alkali dust
Texas LeHigh Cement Co.	TX	16-May-80	PC/Kiln/Mill	Coal	Dry	2,750 TPD	115 TPH	416		3.62	86%	Baghouse alkali dust
Creole Corp.	CA	20-May-80	PC/Kiln/Mill	Coal	Dry	1.10 MMTPY	67 TPH	344		5.13	85%	SO2 limit to be revised
Lonestar Portland Cement *	UT	16-Jan-81	PC/Kiln	Coal, low	Dry	510,000 TPY	71 TPH	64.5		0.91	85%	
Dixie Cement Co. *	TN	10-Sep-81	PH/PC/Kiln	Coal	Dry	800,000 TPY	99 TPH	4.16		0.04	85%	Limestone injection
Southwestern Portland Cement	TX	05-Nov-81	Kiln #3	Coal, mod.	Dry	2,500 TPD	104 TPH	134	0.49	1.30		Low S coal/partial scrubbing
Southwestern Portland Cement	TX	05-Nov-81	Kiln #1	Coal, low	Dry		71 TPH	209	1.12	2.94		No control equipment
Southwestern Portland Cement	TX	05-Nov-81	Kiln #2	Coal	Dry		62 TPH	86	0.52	1.40		Partial liq. scrub.
Lonestar Industries Inc.	WA	25-Jan-82	PC/Kiln/Mill	Coal	Dry	750,000 TPY	100 TPH	275		2.75		Precalciner/baghouse
Las Vegas Portland Cement *	NV	01-Feb-82	Kiln	Coal, <.9%	Dry	6,000 TPD	125 TPH	260		2.08	80%	2hr ave., low S coal
Florida Crushed Stone	FL	27-Mar-84	PH/PC/Kiln	Coal, <.8%	Dry	600,000 TPY	124 TPH	74		0.60		Integrated power plant
Nevada Cement Co. *	NV	05-Mar-85	PH/PC/Kiln	Coal	Dry		42 TPH	16		0.38	90%	Multistage susp. preheater
Lone Star Industries	CA	29-Jul-86	PH/PC/Kiln	Coal	Dry		100 TPH	250		2.50		40-50% SO2 control expected
Florida Mining & Material	FL	26-Dec-88	PH/Kiln/Mill	Coal, <1%	Dry		73.5 TPH	20		0.28	96%	<1 Wt.%S coal, design
						Wet Process Kilns						
Southwestern Portland Cement	TX	26-Feb-81	Rotary Kiln	Coal	Wet	775 TPD	32 TPH	513	2.41	16.00	20%	Alkali in raw matl. rx w/ S
Monolith Portland Cement Co.	CA	23-Dec-81	Rotary Kiln	Coal, <1.5%	Wet	500,000 TPY	62 TPH	300		4.48	50 to 75%	Baghouse alkali cement dust
Lonestar Florida Pennsuco	FL	28-Dec-84	Kiln #3	Coal, <2%	Wet		87.5 TPH	400		4.60		<2 Wt.% S coal (max. value)
Lonestar Florida Pennsuco*	FL	28-Dec-84	Kiln #2	Coal, <2%	Wet		25 TPH	125		5.00		<2 Wt.% S coal (max. value)
Lonestar Florida Pennsuco*	FL	28-Dec-84	Kiln #1	Coal, <2%	Wet		25 TPH	125		5.00		<2 Wt.% S coal (max. value)

* Facility was never built

\+ PH = Preheater
PC = Precalciner

because it was not known what the kiln would actually achieve. EPA's BACT determination on this project actually states between 50 percent and 75 percent removal efficiency is expected (excerpts of the determination are attached). The 50 percent minimum removal efficiency is not very different from the 36 percent stated by Tarmac as the starting point for its BACT determination. More importantly, the 300 lb/hr SO_2 emission limit set for the Monolith kiln was based on actual source test data from an identical kiln located at the facility. Thus, site-specific data were used to set the emission limit for Monolith.

The most stringent BACT limit set in terms of lb/MM Btu heat input, cited by FDER as 0.488 lb/MM Btu, is based upon Southwest Portland Cement (Texas). Further investigation reveals that this is a dry process kiln.

There is a fundamental difference between the dry process and the wet process used at Tarmac. The dry process is more energy efficient than the wet process, therefore requiring less fuel (on the order of 50 percent less fuel). This translates directly into lower SO_2 emissions. In addition, most of the dry process kilns incorporate a preheater or precalciner, and many pass the kiln gases through the raw mill. This translates into significantly more contact time between the raw feed and the SO_2 in the exhaust gases, allowing much better absorption of the SO_2. FDER ignores this fundamental difference between the wet and dry processes, thereby grossly exaggerating the inherent SO_2 removal capabilities of Tarmac Kiln 2.

The fact that Tarmac Kiln 2 is a wet process kiln demonstrates that FDER fails to consider the site-specific considerations of this project. The entire Tarmac facility is an existing cement plant based upon the wet process. Kiln 2 is part of the existing plant, and, therefore, must also utilize the wet process. If Tarmac was building a new kiln, they would undoubtedly build a dry process kiln, because of the energy efficiencies. However, this is not the case, and ignoring this site-specific aspect is contrary to BACT regulations and policy.

If only wet process kilns are considered from previous BACT determinations, only the Monolith and a Southwest Portland Cement BACT's remain (other than BACT's for the Tarmac facility itself). The Southwest determination is for a wet process kiln, and the BACT limit set is identical to Tarmac's proposed limits--16 lb/ton clinker. SO_2 reduction efficiency was estimated at only 20 percent, below the minimum stated by Tarmac for Kiln 2.

There is no discussion in the FDER's BACT determination on the effect of sulfur in the raw feed upon SO_2 emissions. Sulfur in the raw feed can be expected to translate directly into potential SO_2 emissions. Tarmac's raw feed could contain higher sulfur levels than those at other plants having BACT determinations, resulting in higher SO_2 emissions. However, such information is not presented or considered by FDER. Tarmac has shown in its application the maximum expected sulfur content of the raw feed and the potential SO_2 emissions resulting from the raw feed. However, FDER has given no consideration to this site-specific factor in determining the BACT emission limit.

FDER bases their BACT determination, in part, on the contention that Kiln 2 should be able to achieve a 69 percent SO_2 reduction efficiency when burning coal. This conclusion is based on SO_2 emission tests conducted on oil for Kilns 2 and 3 and on coal for Kiln 3. FDER rationale for this conclusion is based on an incorrect calculation that is not supported by the engineering data. One source test on Kiln 3 when burning oil showed a 98.7 percent SO_2 reduction efficiency, and several stack tests showed an average of 75 percent reduction when this kiln was burning coal. Kiln 2 was also tested one time burning oil, and showed a 91.3 percent SO_2 reduction. Based on these data, FDER concludes that Kiln 2 should be able to achieve a 69 percent SO_2 reduction from the following calculation:

$$\frac{98.7 \text{ percent}}{91.3 \text{ percent}} = \frac{75 \text{ percent}}{x} \qquad x = 69 \text{ percent}$$

This is an incorrect calculation and is not based on engineering principles. Emissions are a function not of the efficiency, but one minus the efficiency. When burning oil, Kiln 2 displays SO_2 emissions that are 7.5 times that of Kiln 3 when it is burning oil:

Kiln 2 1 - 0.913 = 0.097 = 9.7 percent of potential SO_2 is emitted
Kiln 3 1 - 0.987 = 0.013 = 1.3 percent of potential SO_2 is emitted

Why then should Kiln 2 not display 7.5 times the SO_2 emissions of Kiln 3 when burning coal? In fact, Tarmac is requesting an initial emission limit for Kiln 2 that is only 3.5 times greater than that for Kiln 3 (on a lb/ton basis). Although it is expected that Kiln 2 will achieve greater than the minimum 36 percent efficiency stated by Tarmac, the 69 percent efficiency stated by FDER to be achievable is not supported by the engineering data.

The 69 percent efficiency for Kiln 2 stated by FDER is virtually the same as the 75 percent efficiency demonstrated by Kiln 3 (31 percent of the potential SO_2 emitted versus 25 percent of the SO_2 emitted). This conclusion ignores the applicant's clear documentation that the shorter length of Kiln 2 versus Kiln 3 and different operating conditions within the kilns could result in a significantly lower SO_2 emission reduction than that achieved by Kiln 3. The 36 percent efficiency stated by Tarmac as a starting point for BACT is a reasonable level given these uncertainties. These are site-specific factors which FDER has failed to adequately weigh in setting their BACT emission limit.

In addition, the SO_2 emission reduction efficiencies for Kilns 2 and 3 when burning oil are based on only one source test on each kiln. This affects the confidence of this rationalization.

In the BACT determination, FDER improperly compares federal New Source Performance Standards (NSPS) for fossil-fuel-fired steam-generating units. These NSPS are for a completely different process and completely different industry, and have no bearing upon SO_2 emissions from cement kilns. SO_2 emissions from fossil-fuel steam-generating units are controlled by add-on control equipment, which can be adjusted to obtain a high SO_2 removal efficiency. In contrast, SO_2 control in a cement kiln is inherent in the process, and the removal efficiency is dependent upon the kiln and its operating parameters. These operating parameters are constrained within certain limits to maintain clinker quality. The 1.2 lb SO_2/MM Btu maximum limit under NSPS can easily be met by fossil fuel steam generators burning the highest sulfur coal because the NSPS also requires 90 percent SO_2 removal efficiency (through the use of add-on scrubbers). As a result, the 1.2 lb/MM Btu limit referenced by FDER does not truly account for the sulfur content of the coal Tarmac will burn. Further, in making this comparison, FDER has ignored the fact that the raw feed to the kiln contains sulfur, and this sulfur is a potential source of SO_2 emissions, just like the sulfur in the coal. Again, site-specific factors have not been recognized.

FDER has also not recognized the potential relationship between SO_2 and NO_x emissions in setting the BACT limit for SO_2. Extensive testing and operation on Kiln 3 has shown there is a distinct inverse relationship between these two pollutants. However, FDER has set a much lower NO_x limit for Kiln 2 than the emission limit for Kiln 3, and the engineering data indicate that in order to meet such a limit, SO_2 emissions from Kiln 2 will increase. FDER's BACT determination is flawed further by ignoring this site-specific data and by basing their BACT limit on totally different dry process kilns, located at other sites.

Lastly, FDER has completely ignored Tarmac's proposal to conduct a 1-year testing program to collect adequate data upon which a true BACT limit can be established. The 400 lb/hr (16 lb/ton) limit and 36 percent removal efficiency proposed by Tarmac is not suggested to be BACT for Kiln 2. This has been made very clear by Tarmac. It is only proposed as a <u>starting point</u>, or an initial limit, pending the results of the test program. The following are the primary reasons for this proposal:

1. Experience with the conversion of Kiln 3 to coal has shown that the SO_2 emissions and removal efficiency are dependent upon the kiln and its operation, and that generally NO_x emissions increase as SO_2 emissions decrease. These emissions and their relationship

to operating parameters can be determined only through testing, unless an identical kiln at the same plant has already been tested.

2. Kiln 2 is much shorter than Kiln 3, and, therefore, the expected SO_2 removal efficiency for Kiln 2 is expected to be less. However, the efficiency achievable is not known and can only be determined through source testing on Kiln 2.
3. The initial BACT limits for Kiln 3 were set without adequate test data, and this led to exceedances of the emission limits and enforcement action by FDER. Tarmac does not wish to repeat this situation.

BACT ANALYSIS FOR NITROGEN OXIDES

As for SO_2, FDER presents a summary of previous NO_x BACT determinations for coal-fired cement kilns. This summary contains only the least stringent and most stringent emission rates in terms of lb/ton feed and lb/MM Btu contained in any previous BACT determination. No description of the type of cement kiln (i.e., wet, dry, or preheater/precalciner/kiln system), the clinker production rate, or other site-specific factors that were the basis of the decisions is presented. This analysis incorrectly compares dry process cement kilns to Tarmac's wet process kiln and does not consider site-specific data and factors related to Kiln 2.

A complete listing of all NO_x BACT determinations for cement plants is contained Table 2. The list shows that almost all cement plants requiring BACT review were of the dry process type. There are fundamental differences between the dry process and the wet process in regards to NO_x emissions. The dry process is more energy efficient than the wet process, therefore requiring less fuel (on the order of 50 percent less fuel). This translates into lower fuel-bound nitrogen for dry kilns and, hence, lower NO_x emissions. Secondly, dry process kilns with preheaters and/or precalciners have two or more points in the kiln system where energy is released, as opposed to only one release point in a wet process kiln. As a

Table 2. Summary of BACT Determinations for Portland Cement Kilns – NOx Emission

Company Name	State	Date of Permit	Source +	Fuel, sulfur content, %	Process	Capacity	Clinker Production	NOx Emission Limit			Comments
								lb/hr	lb/MMBtu	lb/ton cl.	
					Dry Process Kilns						
Kaiser Cement & Gypsum Corp.	CA	26–Dec–78	PH/PC/Kiln/Mill	Coal, <1%	Dry	1.60 MMTPY	104 TPH	1158		11.13	Reduced fuel usage, low temp.
Calif. Portland Cement Co.	CA	12–Jan–79	PC/Kiln	Coal	Dry	1 MMTPY	114 TPH	None		None	Reduced fuel usage, low furnace temp.
Lonestar Industries Inc.*	TX	19–Feb–80	PH/Kiln/Mill	Coal	Dry	1 MMTPY	114 TPH	360		3.16	Precalciner process design
Texas Lehigh Cement Co.	TX	16–May–80	PC/Kiln/Mill	Coal	Dry	2,750 TPD	115 TPH	240		2.09	Flash calciner
Creole Corp.	CA	20–May–80	PC/Kiln/Mill	Coal	Dry	1.10 MMTPY	67 TPH	213		3.18	Reduced temp. in precalcining furnace
Lonestar Portland Cement *	UT	16–Jan–81	PC/Kiln	Coal, low	Dry	510,000 TPY	71 TPH	236.6		3.33	
Dixie Cement Co. *	TN	10–Sep–81	PH/PC/Kiln	Coal	Dry	800,000 TPY	99 TPH	110		1.11	Dry process
Southwestern Portland Cement	TX	05–Nov–81	Kiln #3	Coal, mod.	Dry	2,500 TPD	104 TPH	88	0.32	0.85	Kiln design
Lonestar Industries Inc.	WA	25–Jan–82	PC/Kiln/Mill	Coal	Dry	750,000 TPY	100 TPH	300		3.00	Process design
Las Vegas Portland Cement *	NV	01–Feb–82	Kiln	Coal, <.9%	Dry	6,000 TPD	125 TPH	281		3.95	
Florida Crushed Stone	FL	27–Mar–84	PH/PC/Kiln	Coal, <.8%	Dry	600,000 TPY	124 TPH	360		2.90	Dry feed, design
Lone Star Industries	CA	29–Jul–86	PH/PC/Kiln	Coal	Dry		100 TPH	250		2.50	Alkali slurry, injection system
Florida Mining & Material	FL	26–Dec–86	PH/Kiln/Mill	Coal, <1%	Dry		73.5 TPH	320		4.35	
					Wet Process Kiln						
Monolith Portland Cement Co.	CA	23–Dec–81	Rotary Kiln	Coal, <1.5%	Wet	5 MTPY	67 TPH	260		3.88	Coal–fired, wet process

* Facility was never built

\+ PH = Preheater
PC = Precalciner

result, the combustion flame in the wet process kiln is more intense than the flames in the dry process kiln. The more intense wet process flame inherently produces higher NO_x emissions. FDER ignores this fundamental difference between the wet and dry processes, thereby flawing the BACT determination.

As in the case of SO_2, FDER improperly compares federal NSPS for fossil-fuel-fired steam-generating units to cement kiln emission limits. These NSPS are for a completely different process and completely different industry, and have no bearing upon NO_x emissions from cement kilns. A major difference between steam generators and cement kilns is that high temperature can be controlled much more effectively, since this does not adversely affect steam generation. However, in a wet process cement kiln, high temperature is critical to the final product. Even so, in making this comparison, FDER fails to recognize that the NSPS specifically sets different emission limits for different types of steam-generating units (i.e., pulverized coal, spreader stoker, fluidized bed). FDER does not differentiate between wet and dry process kilns, or other differences between fossil fuel steam generators and cement kilns which should be considered in their BACT evaluation.

FDER has totally ignored the site-specific test data available from Kiln 3 for coal burning. Tarmac has requested an NO_x emission limit for Kiln 2 that is the same as the limit on Kiln 3 (6.77 lb/ton clinker). Extensive source testing on Kiln 3 when burning coal has shown that this emission level has been exceeded or approached in the past. A summary of all previous NO_x emission tests on Kiln 3 when burning coal is presented in Table 3. The averages of all of these tests are 4.2 lb/ton feed and 6.4 lb/ton clinker, with maximums up to 6.4 lb/ton feed and 10.0 lb/ton clinker. Why does FDER believe that a much lower NO_x emission level can be achieved in Kiln 2? The proposed BACT emission limit is not supported by the site-specific data.

Table 3. NOx Emission Tests, Tarmac Kiln No. 3 Burning Coal

Test Date	Kiln Feed (TPH)	Production Rate (TPH)	Coal Feed Rate (TPH)	Heat Input * Rate (MMBtu/hr)	Heat/Clinker Ratio (MMBtu/ton)	NOx Emission		
						lb/hr	lb/ton feed	lb/ton clinker
Apr-82	138.30	85.6	16.5	412.5	4.82	405	2.9	4.7
	138.30	85.6	16.5	412.5	4.82	512	3.7	6.0
	138.30	85.6	16.5	412.5	4.82	695	5.0	8.1
May-82	127.59	79.0	13.9	347.5	4.40	792	6.2	10.0
	127.59	79.0	13.5	337.5	4.27	520	4.1	6.6
	127.59	79.0	14.4	360.0	4.56	464	3.6	5.9
	127.59	79.0	14.4	360.0	4.56	438	3.4	5.5
	127.59	79.0	14.4	360.0	4.56	218	1.7	2.8
	127.59	79.0	15.5	387.5	4.91	346	2.7	4.4
16-May-85	133.50	87.5	14.9	372.5	4.26	643	4.8	7.3
	132.80	87.5	14.6	365.0	4.17	854	6.4	9.8
	132.70	87.4	14.7	367.5	4.20	750	5.7	8.6
24-May-85	132.80	87.2	14.8	370.0	4.24	732	5.5	8.4
	132.50	87.3	14.5	362.5	4.15	809	6.1	9.3
	132.30	87.7	14.5	362.5	4.13	768	5.8	8.8
31-May-85	132.80	87.6	14.6	365.0	4.17	647	4.9	7.4
	132.80	87.6	14.6	365.0	4.17	618	4.7	7.1
	132.80	87.6	14.6	365.0	4.17	779	5.9	8.9
Aug-85	133.00	86.7	15.2	380.0	4.38	549	4.1	6.3
	133.00	86.7	15.2	380.0	4.38	593	4.5	6.8
	133.00	86.7	15.0	375.0	4.33	602	4.5	6.9
Dec-86	133.50	85.3	16.2	405.0	4.75	678	5.1	7.9
	133.50	85.3	15.9	397.5	4.66	671	5.0	7.9
	133.50	85.3	15.9	397.5	4.66	624	4.7	7.3
Apr-87	133.30	85.9	16.3	407.5	4.74	378	2.8	4.4
	133.30	85.9	15.9	397.5	4.63	438	3.3	5.1
	133.30	85.9	16.0	400.0	4.66	436	3.3	5.1
Dec-87	133.10	87.4	17.5	437.5	5.01	447	3.4	5.1
	133.10	87.4	17.6	440.0	5.03	534	4.0	6.1
	133.10	87.4	17.8	445.0	5.09	532	4.0	6.1
Jul-88	133.50	85.1	18.2	455.0	5.35	484	3.6	5.7
	133.50	85.1	18.1	452.5	5.32	411	3.1	4.8
	133.50	85.1	17.9	447.5	5.26	360	2.7	4.2
Aug-88	132.90	86.4	18.9	472.5	5.47	444	3.3	5.1
	132.90	86.4	18.9	472.5	5.47	488	3.7	5.7
	132.90	86.4	18.7	467.5	5.41	491	3.7	5.7
May-89	133.00	87.5	16.7	417.5	4.77	855	6.4	9.8
	133.00	87.5	16.7	417.5	4.77	717	5.4	8.2
	133.00	87.5	16.7	417.5	4.77	521	3.9	6.0
Aug-89	140.25	92.1	18.3	457.3	4.97	381	2.7	4.1
	140.25	92.1	18.3	457.3	4.97	261	1.9	2.8
	140.25	92.1	18.3	457.3	4.97	333	2.4	3.6
					Maximum =	855	6.4	10.0
					Minimum =	218	1.7	2.8
					Average =	553	4.2	6.4

* Assuming a coal heating value of 12,500 Btu/hr

FDER refers to the most stringent BACT limits for cement kilns of 1.6 lb/ton feed and 0.32 lb/MM Btu. Investigation reveals that these limits were for Lonestar (Utah) and Southwest Portland (Texas), respectively. Both of these determinations were for dry process kilns, which is not the same process as Tarmac's wet process kiln.

FDER has also not recognized the potential relationship between SO_2 and NO_x emissions in setting the BACT limit for NO_x. Extensive testing and operation on Kiln 3 has shown there is a distinct inverse relationship between these two pollutants. However, FDER has set a much lower NO_x limit for Kiln 2 than the BACT limit for Kiln 3; the engineering data indicate that to meet this limit, SO_2 emissions will increase. FDER's BACT determination is further flawed by ignoring this site-specific data.

Lastly, FDER has completely ignored Tarmac's proposal to conduct a 1-year testing program to collect adequate data upon which a true BACT limit can be established. The 169.3 lb/hr (6.77 lb/ton feed) is not suggested to be BACT for Kiln 2. This has been made very clear by Tarmac. It is only proposed as a <u>starting point</u>, or an initial limit, pending the results of the test program. The primary reasons for this were discussed for SO_2.

<u>SUMMARY</u>

To summarize, Tarmac strongly believes that the SO_2 and NO_x emission limits proposed by FDER are not achievable in Kiln 2. There are site-specific technical considerations alone which render the proposed emission rates as not achievable. Economic considerations preclude the use of a different type of kiln or different process. However, FDER has elected to ignore the site-specific aspects and data for this project and has imposed limits for totally different processes and projects. This is contrary to BACT guidelines, which require the BACT analysis to have a rationale arrived at after full consideration of data determined in a sound and consistent manner. Such decisions cannot be arbitrary, capricious, or contrary to law.

Table 1. Summary of BACT Determinations for Portland Cement Kilns - SO2 Emission

Company Name	State	Date of Permit	Source +	Fuel, sulfur content, %	Process	Capacity	Clinker Production	SO2 Emission Limit lb/hr	lb/MMBtu	lb/ton cl.	% Reduction	Comments
Dry Process Kilns												
Kaiser Cement & Gypsum Corp.	CA	26-Dec-78	PH/PC/Kiln/Mill	Coal, <1%	Dry	1.60 MMTPY	104 TPH	481		4.63		Baghouse alkali dust
Calif. Portland Cement Co.	CA	12-Jan-79	PC/Kiln	Coal	Dry	1 MMTPY	114 TPH	616		5.40	70%	Absorption by alkaline
Lonestar Industries Inc.*	TX	19-Feb-80	PC/Kiln/Mill	Coal	Dry	1 MMTPY	114 TPH	960		8.42	80%	Baghouse alkali dust
Texas LeHigh Cement Co.	TX	16-May-80	PC/Kiln/Mill	Coal	Dry	2,750 TPD	116 TPH	416		3.62	86%	Baghouse alkali dust
Creole Corp.	CA	20-May-80	PC/Kiln/Mill	Coal	Dry	1.10 MMTPY	67 TPH	344		5.13	85%	SO2 limit to be revised
Lonestar Portland Cement *	UT	16-Jan-81	PC/Kiln	Coal, low	Dry	510,000 TPY	71 TPH	64.5		0.91	85%	
Dixie Cement Co. *	TN	10-Sep-81	PH/PC/Kiln	Coal	Dry	800,000 TPY	99 TPH	4.16		0.04	85%	Limestone injection
Southwestern Portland Cement	TX	05-Nov-81	Kiln #3	Coal, mod.	Dry	2,500 TPD	104 TPH	134	0.49	1.30		Low S coal/partial scrubbing
Southwestern Portland Cement	TX	05-Nov-81	Kiln #1	Coal, low	Dry		71 TPH	209	1.12	2.94		No control equipment
Southwestern Portland Cement	TX	05-Nov-81	Kiln #2	Coal	Dry		62 TPH	86	0.62	1.40		Partial liq. scrub.
Lonestar Industries Inc.	WA	25-Jan-82	PC/Kiln/Mill	Coal	Dry	750,000 TPY	100 TPH	275		2.75		Precalciner/baghouse
Las Vegas Portland Cement *	NV	01-Feb-82	Kiln	Coal, <.9%	Dry	6,000 TPD	125 TPH	260		2.08	80%	2hr ave., low S coal
Florida Crushed Stone	FL	27-Mar-84	PH/PC/Kiln	Coal, <.8%	Dry	600,000 TPY	124 TPH	74		0.60		Integrated power plant
Nevada Cement Co. *	NV	05-Mar-85	PH/PC/Kiln	Coal	Dry		42 TPH	16		0.38	90%	Multistage susp. preheater
Lone Star Industries	CA	29-Jul-86	PH/PC/Kiln	Coal	Dry		100 TPH	250		2.50		40-50% SO2 control expected
Florida Mining & Material	FL	26-Dec-88	PH/Kiln/Mill	Coal, <1%	Dry		73.5 TPH	20		0.28	96%	<1 Wt.%S coal, design
Wet Process Kilns												
Southwestern Portland Cement	TX	26-Feb-81	Rotary Kiln	Coal	Wet	775 TPD	32 TPH	513	2.41	16.00	20%	Alkali in raw matl. rx w/ S
Monolith Portland Cement Co.	CA	23-Dec-81	Rotary Kiln	Coal, <1.5%	Wet	500,000 TPY	62 TPH	300		4.48	50 to 75%	Baghouse alkali cement dust
Lonestar Florida Pennsuco	FL	28-Dec-84	Kiln #3	Coal, <2%	Wet		87.5 TPH	400		4.60		<2 Wt.% S coal (max. value)
Lonestar Florida Pennsuco*	FL	28-Dec-84	Kiln #2	Coal, <2%	Wet		25 TPH	125		5.00		<2 Wt.% S coal (max. value)
Lonestar Florida Pennsuco*	FL	28-Dec-84	Kiln #1	Coal, <2%	Wet		25 TPH	125		5.00		<2 Wt.% S coal (max. value)

SO2

* Facility was never built

+ PH = Preheater
PC = Precalciner

BEST AVAILABLE COPY

Table 2. Summary of BACT Determinations for Portland Cement Kilns – NOx Emission

Company Name	State	Date of Permit	Source +	Fuel, sulfur content, %	Process	Capacity	Clinker Production	NOx Emission Limit lb/hr	lb/MMBtu	lb/ton cl.	Comments
						Dry Process Kilns					
Kaiser Cement & Gypsum Corp.	CA	26-Dec-78	PH/PC/Kiln/Mill	Coal, <1%	Dry	1.60 MMTPY	104 TPH	1158		11.13	Reduced fuel usage, low temp.
Calif. Portland Cement Co.	CA	12-Jan-79	PC/Kiln	Coal	Dry	1 MMTPY	114 TPH	None		None	Reduced fuel usage, low furnace temp.
Lonestar Industries Inc.*	TX	19-Feb-80	PH/Kiln/Mill	Coal	Dry	1 MMTPY	114 TPH	360		3.16	Precalciner process design
Texas Lehigh Cement Co.	TX	16-May-80	PC/Kiln/Mill	Coal	Dry	2,750 TPD	115 TPH	240		? 2.09	Flash calciner
Creole Corp.	CA	20-May-80	PC/Kiln/Mill	Coal	Dry	1.10 MMTPY	67 TPH	213		3.18	Reduced temp. in precalcining furnace
Lonestar Portland Cement *	UT	16-Jan-81	PC/Kiln	Coal, low	Dry	510,000 TPY	71 TPH	236.6		3.33	
Dixie Cement Co. *	TN	10-Sep-81	PH/PC/Kiln	Coal	Dry	800,000 TPY	99 TPH	110		? 1.11	Dry process never built
Southwestern Portland Cement	TX	05-Nov-81	Kiln #3	Coal, mod.	Dry	2,500 TPD	104 TPH	88	0.32	0.85	Kiln design
Lonestar Industries Inc.	WA	25-Jan-82	PC/Kiln/Mill	Coal	Dry	750,000 TPY	100 TPH	300		3.00	Process design
Las Vegas Portland Cement *	NV	01-Feb-82	Kiln	Coal, <.9%	Dry	6,000 TPD	125 TPH	281		3.95	never built
Florida Crushed Stone	FL	27-Mar-84	PH/PC/Kiln	Coal, <.8%	Dry	600,000 TPY	124 TPH	360		2.90	Dry feed, design
Lone Star Industries	CA	29-Jul-86	PH/PC/Kiln	Coal	Dry		100 TPH	250		2.50	Alkali slurry, injection system
Florida Mining & Material	FL	26-Dec-88	PH/Kiln/Mill	Coal, <1%	Dry		71.6 73.5 TPH	320		4.35	
1993 amendment								250		3.14	
						Wet Process Kiln					
Monolith Portland Cement Co.	CA	23-Dec-81	Rotary Kiln	Coal, <1.5%	Wet	5 MTPY	67 TPH	260		3.88	Coal-fired, wet process

* Facility was never built

+ PH = Preheater
PC = Precalciner

Denied Carson

10

364 MMBTU/hr

clinker 104,400 × 1158 lb = 11.13 lb/ton

11.6 lb NOx

= 0.54 lb/ton

NO

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

TO: Bill Thomas, P.E., Bureau of Air Regulation

FROM: Stephanie Brooks, P.E., DER-SEFD Stephanie Brooks, P.E.

DATE: April 10, 1990

SUBJECT: Proposed Permit for Tarmac Kiln 2

Specific Condition 3. does not reference Kiln 2 like all other Specific Conditions that are related to emission limitations do. No other comments about this permit from the air section.

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Bob Martinez, Governor   Dale Twachtmann, Secretary   John Shearer, Assistant Secretary

March 29, 1990

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Scott Quaas
Environmental Specialist
Tarmac Florida, Inc.
P. O. Box 2998
Hialeah, Florida 33012

Dear Mr. Quaas:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permit for Tarmac Florida, Inc., to convert kiln No. 2 to coal firing at their facility in Medley, Dade County, Florida.

Please submit any written comments you wish to have considered concerning the Department's proposed action to Mr. Bill Thomas of the Bureau of Air Regulation.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/JR/plm

Attachments

c: I. Goldman, SE District
D. Buff, P.E.
M. Armentrout, EPA
E. Anderson, DCDERM

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of
Application for Permit by:

Tarmac Florida, Inc.
P. O. Box 2998
Hialeah, Florida 33012

DER File No. AC 13-169901
PSD-FL-142

INTENT TO ISSUE

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit (copy attached) for the proposed project as detailed in the application specified above. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Tarmac Florida, Inc., applied on November 14, 1989, to the Department of Environmental Regulation for a permit to convert their kiln No. 2 to coal firing at their facility in Medley, Dade County, Florida.

The Department has permitting jurisdiction under Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 17-2 and 17-4. The project is not exempt from permitting procedures. The Department has determined that an air construction permit is required for the proposed work.

Pursuant to Section 403.815, F.S. and DER Rule 17-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permit. The notice shall be published one time only within 30 days, in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "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. The applicant shall provide proof of publication to the Department, at the address specified within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

The Department will issue the permit with the attached conditions unless a petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application(s) have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office in General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

C. H. Fancy
C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

Copies furnished to:

I. Goldman, SE District
D. Buff, P.E.
M. Armentrout, EPA
E. Anderson, DCDERM

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF INTENT TO ISSUE and all copies were mailed before the close of business on 3-30-90.

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to §120.52(9), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Kim Ober 3-30-90
Clerk Date

State of Florida
Department of Environmental Regulation
Notice of Intent to Issue

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Tarmac Florida, Inc., 11000 NW 121 Way, Medley, Florida 33012, to convert kiln No. 2 to coal firing at their facility in Dade County, Florida. A determination of Best Available Control Technology (BACT) was required. The proposed project is subject to Prevention of Significant Deterioration (PSD) regulations. Significant net increases in emissions of sulfur dioxide, nitrogen oxides, and sulfuric acid mist will result from this project. The Class I nitrogen dioxide PSD increment consumed is 0.02 micrograms per cubic meter (1 percent of allowable increment of 2.5 micrograms per cubic meter, annual average). The Class I sulfur dioxide PSD increment consumed is 18.5 vs. 25 allowable 3-hour average, 4.1 vs. 5 allowable 24-hour average, and 0.6 vs. 2 allowable annual average, in micrograms per cubic meter, respectively. Class II nitrogen dioxide PSD increment consumption is 0.5 vs. 25 allowable annual average, in micrograms per cubic meter. Class II sulfur dioxide PSD increment consumption is 162.1 vs. 512 allowable 3-hour average, 55.1 vs. 91 allowable 24-hour average, and 5.1 us. 20 allowable annual average in micrograms per cubic meter, respectively. These emission increases are not expected to cause or contribute to a violation of any ambient air quality standard. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The application is available for public inspection during business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of Environmental Regulation
Southeast District Office
1900 S. Congress Ave., Suite A
West Palm Beach, Florida 33406

Dade County Department of Environmental
Resources Management
801 S.W. 3rd Avenue, 2nd Floor
Miami, Florida 33130

Any person may send written comments on the proposed action to Mr. Bill Thomas at the Department's Tallahassee address. All comments mailed within 30 days of the publication of this notice will be considered in the Department's final determination. Furthermore, a public hearing can be requested by any person. Such requests must be submitted within 30 days of this notice.

I. Application

A. Applicant

Tarmac Florida, Inc.
P. O. Box 2998
Hialeah, Florida 33012

B. Request

The Department received a complete application on November 14, 1989, for a permit to convert kiln No. 2 to coal firing at the applicant's portland cement manufacturing facility in Medley, Dade County, Florida.

C. Classification/Location

The applicant's portland cement manufacturing facility (SIC Code 3241) is located south of the intersection of U.S. Highway 27 and State Road 821 near Medley, Florida, with latitude of 25°52'30"N and longitude of 80°22'30"W. The UTM coordinates of the site are: Zone 17, 562.8 km E and 2861.7 km N.

II. Project Description/Emissions

It is proposed to convert kiln No. 2 from burning natural gas or No. 6 fuel oil to firing coal. In 1980 the applicant applied for and received a federal PSD permit for the coal conversion of kiln No. 2 but, for various reasons, the coal conversion was not carried out. In 1984 the applicant obtained a revision of the emission limits in that permit. Now, the applicant wants to proceed with the coal conversion and has requested a substantial increase in the sulfur dioxide (SO_2) emission limits specified in the 1984 PSD permit revision. The applicant claims that the former SO_2 limits were not attainable and that this has been confirmed through extensive experience with burning coal in kiln No. 3.

Modifications to be accomplished by this project include installation of a new coal mill with totally enclosed conveyor transfer points, a new kiln chain system and a direct-fired coal burner. The project will utilize the existing kiln feed system, clinker cooler, clinker cooler electrostatic precipitator, dust insufflation system, and kiln electrostatic precipitator. The existing production capacity of 25 tons of clinker per hour will not be increased as a result of this project.

Emission changes from this modification are summarized in the following table:

Pollutant	Baseline Emissions (TPY)	Proposed Allowable Emissions (lb/hr)	(TPY)	Net Increase (TPY)	Significant Emissions (TPY)
PM(TSP)	42.48	14.40	56.76	18.58	25
SO_2	14.10	195.00	768.70	754.60	40
NO_x	396.90	113.80	448.40	51.50	40
VOC	73.7	28.8	113.5	39.8	40
H_2SO_4 Mist	0.42	5.86	23.06	22.64	7

III. Rule Applicability

The construction permit application is subject to review under Chapter 403, Florida Statutes, and Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4. The facility is located in an area classified as attainment for each of the regulated air pollutants except ozone for which the area is classified as nonattainment. The proposed modification is subject to the preconstruction review requirements of F.A.C. Rule 17-2.500, Prevention of Significant Deterioration (PSD). Certain of the proposed increases in emissions exceed significant levels set forth in Table 500-2 of F.A.C. Rule 17-2.500. Preconstruction review must include a determination of best available control technology (BACT), good-engineering practice stack height, ambient impact analysis, impact on soils, vegetation, and visibility. F.A.C. Rules 17-2.600(7) and Table 610-1, Process Weight Table, would apply except that the applicant has proposed a more stringent limit for particulate matter (TSP) emissions. Particulate matter emissions would have been limited by the federal new source performance standard for kiln gases set forth in 40 CFR 60, Subpart F, Standards of Performance for Portland Cement plants, except that the applicant states there will be no increase in actual particulate matter emissions from this modification. There are no specific limits for VOC emissions from coal combustion under the Reasonably Available Control Technology (RACT) rule (F.A.C. Rule 17-2.650). However, since the facility is located in an ozone nonattainment area and the emissions increase is 99.5 percent of the significant level (essentially significant), VOC emissions will be limited at the level estimated by the applicant. A Lowest Achievable Emission

Rate (LAER) determination would have been required had the estimated VOC emissions equalled or exceeded the significant level. Sulfur dioxide, nitrogen oxides, and sulfuric acid mist emissions will be limited by the BACT determination for those pollutants. ~~No limits are specified in the proposed permit for PM10, CO, lead or beryllium emissions due to their minimal ambient impacts discussed in the next section~~.

IV. Air Quality Impact Analysis

A. Introduction

The proposed conversion of Kiln 2 from burning natural gas to coal at the Tarmac plant, located in northwest Dade County, will cause increased emissions, in PSD-significant amounts, of five pollutants: nitrogen dioxide (NO2), sulfur dioxide (SO2), lead (Pb), beryllium (Be) and sulfuric acid mist.

The air quality impact analysis required by the PSD regulations for NO2, SO2, Pb, Be and sulfuric acid mist include:

* An analysis of existing air quality;
* A PSD increment analysis (NO2 and SO2 only);
* An Ambient Air Quality Standards (AAQS) analysis;
* An analysis of impacts on soils, vegetation, and visibility and of growth-related air quality impacts; and
* A "Good Engineering Practice" (GEP) stack height determination.

The analysis of existing air quality generally relies on preconstruction monitoring data collected with EPA-approved methods. The AAQS analysis depends on the air quality dispersion modeling carried out in accordance with EPA guidelines.

Based on the required analyses, the Department has reasonable assurance that the proposed modification to the Kiln 2 at the Tarmac facility, as described in this report and subject to the conditions of approval proposed herein, will not cause or contribute to a violation of any ambient air quality standard or PSD increment. A discussion of the modeling methodology and required analysis follows.

B. Modeling Methodology

The EPA-approved Industrial Source Complex Short-Term (ISCST) dispersion model was used in the air quality impact analysis. The applicant used the EPA recommended regulatory options in each modeling scenario.

The modeling used a radial receptor grid with the center of the grid coinciding with the center of the Tarmac facility's Kiln 2. Radials were spaced at 10 degree increments from 10 to 360 degrees. In order to avoid simulating downwash for directions in which the potential for downwash does not exist, the modeling analysis was separated into two cases. For those directions in which downwash potentially can occur for all three kiln stacks (i.e., 110 degrees through 150 degrees; 280 degrees through 300 degrees; and 310 degrees through 330 degrees) receptors were placed accordingly and building dimensions were input into the model for Kilns 1, 2, and 3. In a separate modeling analysis, receptors were located in those directions in which downwash will not occur for the stack for Kilns 1 and 2. The receptors were located along the radials at distances of 100, 300, 500, 800, 1100, 1500, 2000, and 2500 meters. Impacts on plant property were eliminated from consideration.

Discrete receptors were used to determine the air quality impacts at the boundary of the Everglades National Park (PSD Class I area).

Meteorological data used in the modeling consisted of five years (1982-1986) of hourly surface data taken at Miami. Mixing heights used in the modeling were based on upper air data from West Palm Beach.

Table 1 lists the significant and net emission rates for the proposed conversion. To provide a conservative estimate of ambient impact, the applicant's proposed maximum emissions were used in the dispersion model. Table 2 lists the stack parameters and emission rates for the proposed conversion of Kiln 2 and the existing emission rates for Kilns 1 and 3.

Table 1. Significant and Net Emission Rates (Tons per Year)

Pollutant	Significant Emission Rate	Existing Emissions	Applicant's Proposed Maximum Emissions	Net Emissions	Applicable Pollutant (Yes/No)
CO	100	1281.6	1379.7	98.1	No
NO2	40	396.9	667.4	270.5	Yes
SO2	40	14.1	1576.8	1562.7	Yes
PM	25	42.5	61.1	18.6	No
PM10	15	36.1	50.9	14.8	No
VOC	40	73.7	113.5	39.8	No
Lead	0.6	8.4	9.9	1.5	Yes
Be	0.0004	0.168	0.197	0.029	Yes
Sulfuric Acid Mst	7	0.4	47.3	46.9	Yes

Table 2. Stack Parameters for Proposed and Existing SO_2 Sources.

Source	Emission Rate (g/s)	Height (m)	Exit Temp (K)	Exit Vel (m/s)	Diameter (m)
Proposed					
Kiln 2	50.4	61	422	9.1	2.44
Existing					
Kiln 1	5.7	61	465	12.8	2.44
Kiln 3	50.4	61	450	11.0	4.57

The NO_2 emission rate for Kiln 2 is 6.4 g/s.

C. Analysis of Existing Air Quality

Preconstruction ambient air quality monitoring is required for all pollutants subject to PSD review. In general, one year of quality assured data using an EPA reference, or the equivalent monitor must be submitted. Sometimes less than one year of data, but no less than four months, may be accepted when Departmental approval is given.

An exemption to the monitoring requirement can be obtained if the maximum air quality impact, as determined by air quality modeling, is less than a pollutant-specific "de minimus" concentration. In addition, if current monitoring data exists and these data are representative of the proposed source area, then at the discretion of the Department these data may be used.

The predicted ambient impact of the net emission increase for those pollutants subject to PSD review are listed in Table 3. Sulfuric acid mist is not listed because there is no de minimus level for this pollutant. However, an estimate of sulfuric acid mist ground-level concentrations can be obtained from modeling performed on SO_2. Sulfuric acid mist is emitted at a rate of three percent of SO_2. Therefore, a maximum concentration of 1.8 ug/m3 is predicted for sulfuric acid mist. This value is much less than the acceptable ambient concentration of 4.76 ug/m3, as defined by the Department. Consequently, monitoring for this pollutant is not required.

The predicted maximum impact for NO_2 and lead is less than their respective de minimus impact levels. Therefore, no additional monitoring was required for NO_2 and lead. While the modeled impact for Be is greater than its de minimus value, it is much below the Department's guideline acceptable ambient concentration of 0.0025 ug/m3 annual average. The predicted maximum impact for SO_2 is greater than the appropriate de minimus value. The applicant obtained ambient SO_2 monitoring data from the Department for a monitoring station located within 3 km of the Tarmac facility. The monitor (Site 0860-019) is located at the intersection of SR 821 and US 27. The data were obtained from the monitor for the period August 1987 through October 1988.

The highest measured 3-hour SO_2 concentration was 15 ug/m3, and the highest measured 24-hour concentration was 8 ug/m3. The annual mean recorded at this site was 3 ug/m3. For the purposes of application these monitored values are considered to be the "background" concentration for SO_2 in this area.

Table 3. Maximum Air Quality Impacts for Comparison to the Significant Impact and De Minimus Ambient Levels.

Pollutant	Avg. Time	Predicted Impact (ug/m3)	Sign. Impact Level (ug/m3)	De Minimus Level (ug/m3)
NO_2	Annual	0.5	1.0	14.0
SO_2	3-hour	182.6	25.0	N/A
	24-hour	61.0	5.0	13.0
	Annual	4.1	1.0	N/A
Pb	3-Month	0.014	N/A	0.1
Be	24-hour	0.001	N/A	0.0005

D. PSD Increment Analysis (NO_2 and SO_2)

1. Class I Area

A Class I area increment analysis is required because the facility is located within 100 km of the Everglades National Park, a designated Class I area. Modeling results indicate the maximum NO_2 PSD Class I increment consumed is 0.02 ug/m3, which is less than one percent of the allowable PSD NO_2 increment of 2.5 ug/m3, annual average.

Modeling results indicate the maximum SO_2 increment consumed is 18.5 ug/m3 for a three-hour average, 4.7 ug/m3 for a 24-hour average and 0.6 ug/m3 for an annual average. These predicted impacts are below the allowable increment values of 25, 5, 2 ug/m3, respectively.

2. Class II Area

The Tarmac facility is located in a Class II area. This area is also designated as an attainment area for NO_2 and SO_2. Therefore, a PSD increment analysis is required to show compliance with the Class II NO_2 and SO_2 increments.

The PSD increment represents the amount that new sources in an area may increase ambient ground-level concentrations of a pollutant. At no time, however, can the increased loading of a pollutant cause or contribute to a violation of the ambient air quality standard.

Atmospheric dispersion modeling, as previously described, was performed to quantify the amount of PSD increment consumed. The results of this modeling indicate that the predicted NO2 impact is below the significant impact level (Table 3). The modeling results indicate the maximum NO2 Class II increment consumed is 0.5 ug/m3, which is two percent of the allowable PSD NO2 increment of 25 ug/m3, annual average.

Modeling results indicate the maximum SO2 increment consumed is 162.1 ug/m3 for a three-hour average, 55.1 ug/m3 for a 24-hour average and 5.1 ug/m3 for an annual average. These predicted impacts are below the allowable increment values of 512, 91 and 20 ug/m3, respectively.

E. AAQS Analysis

Given existing air quality in the area of the Tarmac facility, emissions from the proposed conversion are not expected to cause or contribute to a violation of an AAQS. The results of the AAQS analysis are summarized in Table 4.

Of the pollutants subject to review, only NO2, SO2 and lead have an AAQS. Dispersion modeling was performed as detailed earlier for the proposed modification. The results indicate that, except for SO2 and lead, the maximum impacts of these pollutants were less than the significant impact levels defined in Rule 17-2.100 (170), FAC. As such, no modeling of other sources was necessary for NO2. The total NO2 impact was determined from the impact of Kiln 2 added to a background concentration of 31 ug/m3 (the highest annual average in Dade County in 1988). The maximum calendar quarterly average for lead was estimated to be 0.014 ug/m3. When combined with a background concentration of 0.1 ug/m3 (the highest quarterly average in Dade County in 1988), this results in a total concentration of 0.114 ug/m3 which is well below the lead AAQS. The total SO2 impacts were determined from the impacts of the modeled sources added to the background concentration.

The total impact on ambient air is obtained by adding a "background" concentration to the maximum modeled concentration. This "background" concentration takes into account all sources of a particular pollutant that are not explicitly modeled. The "background" concentrations for SO2 are discussed in the Analysis of Existing Air Quality section.

Table 4. Ambient Air Quality Impact

Pollutant and Averaging Time	Maximum Impact of Proposed Project (ug/m3)	Predicted Total Impact (ug/m3)	Florida AAQS (ug/m3)
NO2 (Annual)	0.5	31.5	60
SO2 (3-hour)	239.4	254.4	1300
SO2 (24-hour)	65.1	73.1	260
SO2 (Annual)	10.7	13.7	60
Lead (3-Month)	0.014	0.114	1.5

The predicted SO_2 impacts, as detailed in Table 4, are well below the Dade County AAQS's of 350 ug/m3 (3-hour), 110 ug/m3 (24-hour) and 25 ug/m3 (Annual).

VI. Additional Impacts Analysis

1. Impacts on Soils and Vegetation

The maximum ground-level concentration predicted to occur for SO_2 as a result of the proposed project, including a background concentration, will be below the applicable AAQS including the national secondary standard developed to protect public welfare-related values. As such, this project is not expected to have a harmful impact on soils and vegetation.

2. Impact on Visibility

Impacts upon visibility in the PSD Class I area (Everglades National Park) were predicted with the EPA Level-1 visibility screening model. The predicted impacts upon visibility are below the Level-1 screening criteria for the visibility parameters. As a result, virtually no impacts upon visibility are predicted.

3. Growth-Related Air Quality Impacts

The proposed modification is not expected to significantly change employment, population, housing or commercial/industrial development in the area to the extent that an air quality impact will result.

4. GEP Stack Height Determination

Good Engineering Practice (GEP) stack height means the greater of: (1) 65 meters or (2) the maximum nearby building height plus 1.5 times the building height or width, whichever is less. The existing stack for Kiln 2 is 61.0 m in height and, therefore, does not exceed the GEP stack height (65 m).

V. Conclusion

Based on the information provided by Tarmac Florida, Inc., the Department has reasonable assurance that the proposed kiln No. 2 coal conversion project, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapter 17-2 of the Florida Administrative Code.

W. Thomas
3/30/90

Best Available Control Technology (BACT) Determination
Tarmac Florida, Inc.
Dade County

The applicant proposes to convert an existing natural gas/No. 6 fuel oil kiln to coal firing at their portland cement manufacturing plant in northwest Dade County. The kiln (No. 2) is one of three cement kilns at the facility. Each of the kilns was permitted to convert to coal in 1984, however kiln No. 2 was never converted. In addition, it is expected that the permit limit that was established for sulfur dioxide is not adequate based on experience with burning coal in kiln No. 3.

The applicant has indicated the maximum net total annual tonnage of regulated air pollutants emitted from the fuel conversion project based on 197,100 tons per year clinker production to be as follows:

Pollutant	Max. Net Increase in Emissions (TPY)	PSD Significant Emission Rate (TPY)
TSP	18.6	25
PM_{10}	14.8	15
SO_2	1,563	40
NOx	270.5	40
CO	98.1	100
VOC	39.8	40
Pb	1.46	0.6
H_2SO_4 Mist	46.9	7
Be	0.03	0.0004

Rule 17-2.500(2)(f)(3) of the Florida Administrative Code (F.A.C.) requires a BACT review for all regulated pollutants emitted in an amount equal to or greater than the significant emission rates listed in the previous table.

BACT Determination Requested by the Applicant

Pollutant	Determination
SO_2	16.0 lb/ton of clinker
H_2SO_4 Mist	0.48 lb/ton of clinker
NOx	8.02 lb/ton of clinker

Date of Receipt of a BACT Application

September 5, 1989

Review Group Members

This determination was based upon comments received from the applicant and the Permitting and Standards Section.

BACT Determination Procedure

In accordance with Florida Administrative Code Chapter 17-2, Air Pollution, this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

(a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).

(b) All scientific, engineering, and technical material and other information available to the Department.

(c) The emission limiting standards or BACT determinations of any other state.

(d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

BACT Analysis

A review of the BACT/LAER clearinghouse for portland cement manufacturing facilities indicates a wide range of SO_2 limitations. The BACT determinations have been established in terms of percent reduction, mass emissions per ton of feed, per ton of product (clinker), and per unit of time (hour). In some cases determinations have been expressed in terms of pounds per million Btu heat input, or parts per million.

For percent SO_2 reduction BACT determinations have ranged from a low of 20 percent to a high of 90 percent for coal fired facilities.

For mass emissions as a function of heat input, previous BACT determinations from coal fired facilities range from 0.488 to 2.41 pounds per million Btu. Although the BACT/LAER Clearinghouse has several determinations which have been expressed in terms of throughput (lbs/ton), it is not clear as to whether or not the emissions rate given is based on raw materials, feed or clinker produced. As this is the case, these determinations will not be used in evaluating the proposed emission rate of 16 pounds per ton of clinker produced.

The applicant has proposed a SO_2 emission rate of 400 lbs/hr (16 lb/ton of clinker). This emission is based on an inherent removal efficiency of 36 percent, considering that the coal for firing the kiln will have a maximum sulfur content of 2.0 percent. Taking into consideration the kiln's maximum heat input of 162.5 MMBtu/hr, the proposed emission rate can also be equated to 2.46 lb/MMBtu.

The proposed SO_2 emission rate reduction can be compared to previous BACT determinations as follows:

Previous BACT Determinations

Basis	Least Stringent	Most Stringent	Applicant's Proposal
Percent SO_2 Reduction	20	90	36
lbs/MMBtu	2.41	0.488	2.46

A review of the SO_2 emission rate/reduction summary indicates that the applicant's proposal is not representative of what BACT should be in terms of pounds emitted per million Btu heat input and is marginal for percent SO_2 reduction. In fact, the least stringent BACT determinations (20% reduction and 2.41 lb/MMBtu) were established for a source which was permitted in 1981 and is not representative of today's "top down" BACT evaluations.

The sulfur dioxide emissions from coal fired portland cement production facilities can be reduced or controlled by restricting the coal's sulfur content, add on control equipment, and inherent removal attributed to the limestone feed which is dependent upon the kiln's design.

Several of the more stringent BACT determinations have been based on the use of low sulfur coal, with the lowest level indicated being 0.8 percent. In other cases the determinations have established that control be achieved by using lime injection and/or fabric filters as BACT, or have based BACT on the inherent SO_2 removal that is provided only by the limestone component of the feed to produce clinker. Each of these alternatives will be evaluated in greater detail below.

The applicant has proposed to use coal with a sulfur content not to exceed 1.75 percent on a monthly average with the maximum sulfur content not to exceed 2.0 percent. Given these maximums, a cost/benefit analysis of switching to a lower sulfur content coal can be conducted. The applicant has indicated that the cost of switching to coal with a sulfur content of 1.5 and 1.0 percent would be an additional $3.80 and $4.90 per ton of coal, respectively. Given the sulfur dioxide reductions that would be achieved using the lower sulfur coals the costs per ton of SO_2 controlled would be $1,784 and $983 for 1.5 and 1.0 percent sulfur coal, respectively. Each of these costs is below the New Source Performance Standard (NSPS) guideline of $2,000 per ton of SO_2 controlled that is used for establishing NSPS.

Several of the portland cement manufacturing facilities listed in the BACT/LAER Clearinghouse achieve part of the overall SO_2 control by using a baghouse as the particulate control device. The applicant stated that a baghouse would inherently provide greater removal (in the range of 20 to 45 percent) than the proposed ESP due to the filter cake formed on the bags. The clearinghouse lists some facilities in which the level of control has been additionally enhanced by incorporating lime/limestone injection.

The applicant has indicated that the additional removal which might be obtained from using a baghouse does not warrant the expense. In 1983 dollars, the cost of purchasing and operating a baghouse is estimated to be 1.9 million and 0.6 million, respectively. These costs are not justified since an efficient particulate control device (ESP) is already in place.

The BACT/LAER Clearinghouse lists facilities that provide SO_2 reductions up to 90 percent based on the inherent control that is provided only by the alkaline content of the cement dust and the particulate control device. The applicant stated that the proposed inherent SO_2 removal efficiency of 36 percent is based upon experience with burning coal in kiln No. 3. Testing of kiln No. 3 has shown an average SO_2 removal efficiency of approximately 75 percent. The applicant does not expect the same efficiency, however, for kiln No. 2 since kiln No. 2 is smaller, shorter, and less energy efficient. Being shorter, the applicant states that there would be less retention time of the gases in the kiln, thereby having less time for absorption into the clinker. In addition, the operating conditions (temperature, excess air, etc.) may be different in kiln No. 2 than kiln No. 3. As a result, the inherent SO_2 removal efficiency is expected to be less than that achieved in kiln No. 3 and is proposed to be 36 percent.

The applicant has indicated that the amount of sulfuric acid mist (H_2SO_4) emissions will be equivalent to approximately 3 percent of the SO_2 emissions. As this is the case, BACT for H_2SO_4 will be established at 3 percent of the BACT emission limit for SO_2.

Like SO_2, a review of the BACT/LAER Clearinghouse indicates a wide range of limitations for nitrogen oxides. For NOx, previous BACT determinations have been established in terms of pounds emitted per ton of feed, pounds per million Btu heat input and parts per million.

In terms of pounds per ton of feed, previous BACT determinations for NOx range from a low of 1.6 pounds to a high of 2.9 pounds. For BACTs that were expressed as pounds per million Btu heat input, the clearinghouse indicates a range of 0.32 to 0.7 lb/MMBtu.

The applicant has proposed a NOx emission rate of 169.3 lb/hr. Taking into consideration the kiln's raw material feed rate of 81,000 lb/hr and heat input of 162.5 MMBtu/hr, the proposed emission rate equates to 4.2 lb/ton of feed and 1.04 lb/MMBtu, respectively.

The proposed NOx emission rate can be compared to previous BACT determinations as follows:

Previous BACT Determinations

Basis	Least Stringent	Most Stringent	Applicant's Proposal
lbs/ton feed	2.9	1.6	4.2
lb/MMBtu	0.7	0.32	1.04

A review of the NOx emission rate summary indicates that the applicant's proposal is not representative of what BACT should be both in terms of pounds emitted per ton of feed and pounds emitted per million Btu heat input. Here again, the least stringent of these BACT determinations were established for sources which were permitted several years ago, and hence is not representative of today's "top down" BACT evaluation.

The emissions of nitrogen oxides result from the oxidation of nitrogen in the fuel (fuel NOx) as well as in incoming combustion air (thermal NOx). Based on these principles, the formation of NOx is dependent upon the type of fuel, its nitrogen content, and the combustion parameters of the kiln. Although cement kilns are limited as to what can be done to limit NOx emissions, previous BACT determinations indicate that most, if not all, facilities are controlling NOx emissions to levels which are lower than proposed by the applicant.

Environmental Impact Analysis

A review of the maximum ambient impacts associated with the coal conversion of kiln No. 2 indicates that the increase in SO_2 emissions will contribute significantly to the present background concentrations. Based on the applicant's proposal for BACT, the impacts associated with the increase in SO_2 emissions are estimated to be 162 ug/m^3, 3-hour; 54 ug/m^3, 24-hour; and 3.6 ug/m^3, annual average. These impacts are well in excess of the present background concentrations of 15 ug/m^3, 3-hour; 8 ug/m^3, 24-hour; and 3 ug/m^3, annual average.

Based on this impact review, the Department has determined that Tarmac's proposal to convert kiln No. 2 to coal firing has the potential to contribute substantially to the SO_2 concentration in that area. As this is the case, the Department believes that a BACT determination which would reduce the proposed SO_2 impacts is justified. Although BACT has also been required for NOx emissions, the maximum annual impact associated with the conversion of kiln No. 2 is below the significant impact level of 1.0 ug/m^3. As this is the case, the increase in NOx impact due to the proposal will not be a major factor in the BACT determination.

In addition to the increased emissions of criteria pollutants, the conversion to coal has the potential to generate hazardous air pollutants which are not associated with oil firing. These pollutants (zinc, phenol, and pyridine) should be controlled to some degree by the existing control equipment, and hence should not have an effect on the BACT determination. The conversion may also result in increases of other noncriteria pollutants. Here again, these increases would be minimal and would not affect the BACT determination.

Potential Sensitive Concerns

The applicant has indicated that any level of control which would result in higher costs to the facility such as switching to a lower sulfur content coal would affect the company's ability to be competitive with other cement suppliers. For example, the additional cost of switching to a coal with a 1.5 or 1.0 percent sulfur content would increase the cost of production by 8 and 9%, respectively. This would limit Tarmac's ability to be competitive with other cement manufacturers since Tarmac is currently just marginally competitive in this industry. In addition, Tarmac as well as other domestic cement producers, competitiveness is being currently strained by the importing of cement from Mexico.

Since 1983, Mexican producers have been importing gray portland cement and cement clinker into Arizona, New Mexico, Texas, and Florida. This cement, which has been alledgely sold at less than fair value and in some cases below production costs, has led to decreased sales by domestic producers, and resulted in the closure of 2 cement plants in Florida. As this is the case, any control measures that result in higher production costs would be economically burdensome to the applicant.

BACT Determination by DER

Discussion

Based on the information provided by the applicant and the studies conducted as part of the Department's review, the levels of control proposed by the applicant are not representative of BACT.

For sulfur dioxide the level of control proposed by the applicant (36% control and 2.46 lb/MMBtu) is only equivalent at best to the least stringent BACT determinations for other portland cement manufacturing facilities. Although the Department recognizes the economic hardship that could result from switching to a lower sulfur coal, there is evidence to suggest that a lower SO_2 emission rate can be achieved without switching.

In 1984 Tarmac applied for and received a modification of their 1980 federal Prevention of Significant Deterioration (PSD) permit to convert kiln Nos. 1, 2, and 3 to coal firing. An excerpt from the BACT determination for that PSD permit provides information on the expected level of control as follows:

"The applicant submitted test data while firing residual oil containing 2.38 percent sulfur to determine kiln product absorption of SO_2. The data indicated that 91.3% of the potential SO_2 was absorbed by the aggregate processed in kiln Nos. 1 and 2 and 98.7% in kiln No. 3. A BACT determination was made based upon the applicant's data.

After one of the kilns [kiln 3] had been converted to fire coal, the exhaust gases were tested for SO_2 content. The data indicated the absorption of SO_2 in the kiln product was 75 to 80 percent, not the reduction originally anticipated. The coal fired in the kiln during the test contained two percent sulfur."

This information indicates that for kiln No. 3 the efficiency of SO_2 absorption decreased by a maximum of 24 percent when coal was fired instead of residual oil. Although the data indicate that the efficiency of absorption was higher for kiln No. 3 (98.7% for kiln No. 3 compared to 91.3% for kiln Nos. 1 and 2) when firing residual oil, it is expected that the differential efficiency decrease for firing coal instead of residual oil should be similar for all three kilns. Based on this the expected efficiency of SO_2 absorption when firing coal would be a minimum of 69.4% instead of the proposed 36 percent for kiln 2.

A sulfur dioxide reduction of 69.4 percent is more representative of previous BACT determinations. In terms of pounds emitted per heat input, a 69.4 percent reduction equates to 1.18 lb/MMBtu which also better represents BACT. In addition, 1.18 lb/MMBtu is consistent with the New Source Performance Standard (NSPS) for fuel burning equipment of similar size. For coal fired industrial-commercial-institutional steam generating units with heat input capacities between 100 and 250 million Btu per hour the least stringent NSPS requires that SO_2 emissions not exceed 1.2 lb/MMBtu.

For nitrogen oxides the level of control proposed by the applicant also exceeds what has been previously established as BACT. Here again, the Department believes that there is evidence to suggest that cement kilns can meet a lower than proposed emission limitation.

Taking into consideration the applicant's proposed NOx emission rate of 169.3 lb/hr with the proposed clinker production rate of 25 tons per hour, the NOx emissions are equivalent to 6.77 pounds per ton of clinker produced. This level greatly exceeds the uncontrolled NOx emission factor of 2.8 lb/ton of clinker that is given in EPA AP-42 for both dry and wet process kilns.

The AP-42 emission factor, equivalent to 1.74 lb/ton of feed, is more representative of previous BACT determinations. In terms of heat input, the AP-42 emission factor equates to 0.43 lb/MMBtu. This emission level is within the range of precious BACT determinations, though it is on the stringent side.

By comparison, the least stringent NSPS for NOx from coal fired (except lignite) industrial-commercial-institutional steam generating units is 0.70 lb/MMBtu. This level, equivalent to a 2.84 lb/ton of feed for the Tarmac facility is representative of the least stringent BACT determination both in terms of emission per ton of feed and lb/MMBtu. As this is the case, this level (0.7 lb/MMBtu) does not appear to be unreasonable as BACT for the Tarmac facility.

Conclusion

Based on the information presented, the Department has determined that BACT for the Tarmac facility is equivalent to limiting the sulfur dioxide and nitrogen oxide emissions to the least stringent NSPS for coal fired industrial-commercial-institutional steam generating units. This decision is consistent with the requirements that all BACT determinations be at least as stringent as any applicable NSPS. Although kilns are not steam generating units, emission limitations for fuel burning equipment should be consistent where possible. As this is the case, an emission limitation based on the least stringent NSPS limitation for another type of coal fired equipment is judged to be reasonable as a "top-down" BACT determination. In fact, any emission limitation which would exceed the least stringent NSPS would be judged to be unrepresentative of today's "top-down" BACT procedure.

The Department has determined that these levels are consistent with previous BACT determinations for portland cement manufacturing facilities and the information available suggests that these levels are reasonable for the Tarmac facility. The BACT emission levels are thus established as follows:

Pollutant	Emission Limit	Equivalent Limit
SO_2	1.20 lb/MMBtu	7.80 lbs/ton of clinker produced
NOx	0.70 lb/MMBtu	4.55 lbs/ton of clinker produced
H_2SO_4 Mist	0.036 lb/MMBtu	0.23 lbs/ton of clinker produced

In accordance with the Department's Final Order issued on December 7, 1990, (DOAH Case No. 90-3852, OGC File No. 90-0954), appended hereto is Attachment A reflecting the amount and percentage of SO_2 increment consumed in Class I and Class II areas in conjunction with SO_2 emission rates of 195 lbs/hr and 275 lbs/hr, respectively.

Details of the Analysis May be Obtained by Contacting:

Barry Andrews, P.E., BACT Coordinator
Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended by:

C. H. Fancy, P.E., Chief
Bureau of Air Regulation

January 25, 1991
Date

Approved by:

Carol M. Browner, Secretary
Dept. of Environmental Regulation

February 25, 1991
Date

BEST AVAILABLE COPY

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

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

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DER - BAQM

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4APTMD-APB-cdw

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

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

KBN

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FEB 5 1990

DER - BAQM

Fla. Mining & Mat'ls
Brooksville - 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

89025A1/2

KBN ENGINEERING AND APPLIED SCIENCES, INC.
1034 Northwest 57th Street Gainesville, Florida 32605 904/331-9000 FAX: 904/332-4189

KBN

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 SO_2 Limit of 400 lb/hr**

EPA is willing to accept the proposed maximum hourly SO_2 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 SO_2 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 SO_2 emissions, than K3.

b. An additional major unknown is the SO_2 removal efficiency within K2. Testing of K3 has shown an average SO_2 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, SO_2 absorption

KBN

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 SO_2 emissions limit for K2 (not to exceed 400 lb/hr), and to quantify the actual SO_2 removal efficiency of the kiln. The test plan Tarmac proposes is as follows:

EPA wanted 9 tests 3 each. Tarmac will do more

1. Conduct a series of six compliance tests for SO_2 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 SO_2 emission limit based on statistical parameters (i.e., SO_2 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 SO_2 limit for K2 will then be revised as appropriate.

4. **BACT for SO_2**

EPA agrees

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.

KBN

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/10^{12} Btu (industrial boiler)

Radionuclides - 170 pCi/10^6 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.

This summarizes the agreements and conclusions reached on the Tarmac PSD permit application. Once again, I would like to thank you and your staff for the cooperation in reviewing this application. Your cooperation in expediting this application is appreciated.

Sincerely,

David A. Buff

David A. Buff, ME, PE
Principal Engineer

DAB:dk

cc: Mark Armentrout
Wayne Aronson
Al Townsend
Scott Quaas
John Reynolds
Barry Andrews

Table 6. Revised PSD/Nonattainment Source Applicability Analysis

Pollutant	Baseline Emissions (TPY)	Future Maximum Emissions (lb/hr)	Future Maximum Emissions (lb/ton)	Future Maximum Emissions (TPY)[a]	Net Increase (TPY)	PSD Significant Emission (TPY)
PM(TSP):						
Kiln 2	42.48	14.40	0.5760	56.76		
Fugitive	0	--		4.30		
Total	42.48			61.06	18.58	25
PM10:						
Kiln 2	36.1	12.24	0.4896	48.25		
Fugitive	0	--		2.64		
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_2SO_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

[a]Based on maximum of 197,100 tons clinker per year.
[b]Significant 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

KBN

January 22, 1990
89025

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:

Please find enclosed the article entitled "Antidumping Petition On Behalf Of Az-Nm-Tx-Fl Producers of Gray Portland Cement". This article was inadvertently left out of KBN's response letter dated January 15, 1990, concerning the above referenced permit application.

Sincerely,

David A. Buff

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

cc: Bruce Miller, EPA

DAB/mla

cc: J. Reynolds
B. Andrews
M. Linn
J. Goldman, SE Dist.
P. Hong, DERM
C. Shaver, NPS
CHF/JKP/BT

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JAN 24 1990

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KBN ENGINEERING AND APPLIED SCIENCES, INC.
1034 Northwest 57th Street Gainesville, Florida 32605 904/331-9000 FAX: 904/332-4189

<u>ANTIDUMPING PETITION ON BEHALF OF THE AD HOC COMMITTEE OF AZ-NM-TX-FL PRODUCERS OF GRAY PORTLAND CEMENT</u>

EXPLANATORY NOTE

This brochure consists of two parts. Part 1 contains the cover page and the "Executive Summary" portions (with emphasis supplied) of an antidumping petition that was filed on September 26, 1989 with the United States International Trade Commission and with the International Trade Administration of the United States Department of Commerce by certain domestic cement producers against cement producers in Mexico.

Part 2 contains seven graphs that depict the devastating impact during recent periods of dumped cement from Mexico upon producers in Florida, Texas, New Mexico and Arizona.

Copies of the Petition may be obtained without charge from Joseph W. Dorn, Kilpatrick & Cody, 2501 M Street, N.W., Suite 500, Washington, D.C. 20037, telephone number 202/463-2525.

Before The

INTERNATIONAL TRADE ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE

And The

UNITED STATES INTERNATIONAL TRADE COMMISSION

Washington D.C.

In The Matter Of: GRAY PORTLAND CEMENT AND CLINKER FROM MEXICO	Total Pages: Investigation Proprietary Business Information For Which Petitioner Seeks Proprietary Treatment Has Been Deleted From Exhibit 8. This Information May Be Released Under APO Privileged Information Also Has Been Deleted From Exhibit 12. This Information May Not Be Released Under APO.

ANTIDUMPING PETITION ON BEHALF OF THE AD HOC COMMITTEE OF AZ-NM-TX-FL PRODUCERS OF GRAY PORTLAND CEMENT

Economic Consultants:
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(202) 833-5254

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Martin M. McNerney
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2501 M Street, N.W.
Washington, D.C. 20037
(202) 463-2500

Attorneys for Petitioner

September 26, 1989

EXECUTIVE SUMMARY

1. OVERVIEW

Since 1983, Mexican producers have been dumping gray portland cement and cement clinker into Arizona, New Mexico, Texas, and Florida. Import volumes have been significant and increasing, and import unit values have been low and decreasing. Because gray portland cement is a fungible commodity, and because demand does not vary appreciably with price, less than fair value ("LTFV") imports have displaced domestic production ton for ton. Moreover, because cement production involves high fixed costs relative to variable costs, and because LTFV imports and domestic cement are excellent substitutes, U.S. producers have had to both lower prices and to refrain from price increases in order to avoid further losses of volume to Mexican producers.

In the Arizona-New Mexico-Texas Region, LTFV imports have continued to increase in the contraction phase of the construction/cement cycle, hammering domestic producers when they are most vulnerable. In the Florida Region, LTFV imports have prevented domestic producers from restoring prices to levels achieved in the preceding expansion phase of the Florida construction/cement cycle, notwithstanding a remarkable 44 percent increase in consumption from 1983 to 1989. As a result, in both the Florida Region, where demand is booming, and also in the AZ-NM-TX Region, where demand is depressed, domestic producers' return on assets in this capital intensive, cyclical industry has been abysmal. LTFV imports are causing and threatening to cause a gradual, involuntary liquidation of cement assets, as domestic producers realize inadequate returns on their investment. The injury to date is serious and the threat of additional injury is real and imminent, as Mexican producers continue to expand grossly underutilized capacity and to invest in import terminals, clinker grinding facilities, and ready-mixed concrete operations in the regional markets at issue.

2. SCOPE OF PETITION

- Antidumping petition against gray portland cement and cement clinker from Mexico.

- Filed on behalf of two independent regional industries--Arizona-New Mexico-Texas ("the AZ-NM-TX Region") and Florida ("the Florida Region").

3. DUMPING MARGIN

- The dumping margin is conservatively estimated at **96-111 percent**.

- According to the President of the Construction Materials Section of the National Chamber of Commerce of Monterrey, **the same cement sold in Mexico is being sold at half the price in the United States.**

4. PREDATORY PRICING BY MEXICAN PRODUCERS

- Not only are Mexican producers selling cement and clinker at LTFV under U.S. antidumping law, they are also pricing cement and clinker exports into the two regions at **less than their cost of production.**

- Unit Customs values of Mexican cement ($24-25 per ton) are well below the Mexican production costs recently reported by the Commission in its Investment Barriers Investigation ($27-35 per ton).

MEXICAN IMPORTS INTO AZ-NM-TX ARE SIGNIFICANT AND INCREASING

- From 1983 to 1988, **imports** from Mexico into the AZ-NM-TX Region more than **tripled**, notwithstanding the fact that **demand decreased 20 percent**.

- From 1983 to 1988, imports from Mexico into the AZ-NM-TX Region increased relative to consumption, from 3.1 percent to 14.0 percent.

- From 1983-1985 to 1986-1988, **average annual imports doubled**, and import penetration jumped from 4.9 percent to 11.9 percent of consumption.

6. MEXICAN IMPORTS INTO FLORIDA ARE SIGNIFICANT AND INCREASING

- From 1983 to 1988, imports from Mexico into Florida **increased more than six-fold.**

- From 1983 to 1988, import penetration increased from 5.1 percent to 22.4 percent of consumption.

- From 1983-1985 to 1986-1988, **average annual imports increased 113.3 percent**, as import penetration increased from 12.1 percent to 22.0 percent of consumption.

7. CEMENT PRODUCERS ARE VULNERABLE TO LTFV IMPORTS

- Gray portland cement ("cement") is a fungible bulk commodity.

- Because domestic cement and LTFV imports are excellent substitutes, domestic and LTFV import suppliers compete on the basis of price.

- Because a small price change for such a homogeneous product can induce large shifts in market shares, even a small dumping margin will result in a large loss of volume for domestic producers if they do not meet the lower import price.

- Cement is a capital intensive production process characterized by high fixed costs relative to variable costs.

- Trade barriers allow Mexican producers to exercise price discrimination and pursue different pricing strategies for their home and export markets. Mexican producers can price much more aggressively in the U.S. market since they only need to cover their variable costs and they do not need to be concerned over retaliatory pricing. The low variable cost structure of cement production gives Mexican producers significantly more latitude than domestic producers to decrease prices in order to capture market share.

- Because of the economic incentive to maintain capacity utilization to minimize fixed costs per unit of production, domestic producers must match lower prices of LTFV imports to avoid loss of market share.

- Because demand for cement is derived from demand for construction, and because cement represents a negligible share of the cost of construction, the demand for cement does not vary appreciably with price. Accordingly, the lower prices of LTFV imports do not create any additional demand for cement. Rather, LTFV imports displace domestic production ton for ton.

- Because cement producers have high fixed costs relative to variable costs, sales lost to LTFV imports not only reduce revenue, they also substantially increase per unit production costs and decrease earnings on remaining sales.

8. THE CONDITION OF THE DOMESTIC PRODUCERS IN THE TWO REGIONS IS UNHEALTHY AND DECLINING

- Based on Bureau of Mines data aggregated for the two regions, from 1983 to 1988 utilization of clinker capacity dropped from 83 percent to 73 percent, the quantity of portland cement shipped by AZ-NM-TX-FL producers decreased 14 percent, the value of cement shipped decreased 27 percent, and the average value per ton shipped dropped 15 percent.

- Since 1983, 7 cement plants have closed in AZ-NM-TX and 2 cement plants have closed in Florida.

- Based on petitioner's prefiling survey of cement plants in the two regions, the average unit shipment value (FOB plant) of all cement products decreased 22 percent from 1983 to 1988.

- Aggregate operating income in the two regions declined from $60 million in 1985 to an operating loss of over $6 million in 1988.

- Relative to sales, operating income dropped from 16 percent in 1985 to a negative 2 percent in 1988.

- Aggregate cash flow in the two regions dropped from a positive $76 million in 1985 to a negative $14 million in 1988.

- Moreover, the regional producers' return on assets has been abysmal. In 1988, **returns on the whole were negative, and not one producer in either region had an operating income to asset ratio that exceeded the risk free rate of return of a U.S. Treasury bond.**

- **As Congress indicated in the legislative history to the 1988 Trade Act, an industry is materially injured if imports prevent the realization of a return on investment sufficient to justify capital investment to maintain and expand capacity.** A higher rate of return on investment is required to cover the risks associated with capital intensive, cyclical industries, such as the industry producing gray portland cement.

- The fact that even the most cost efficient producer in the two regions cannot achieve an adequate return on investment in the face of unfairly priced imports underscores the material injury being suffered by these regional producers.

9. <u>LTFV IMPORTS FROM MEXICO THREATEN ADDITIONAL MATERIAL INJURY</u>

- Cement capacity in Mexico is underutilized and increasing.

- Mexican producers have targeted the AZ-NM-TX-FL markets as the dumping ground for excess and growing capacity.

- CEMEX, the largest cement producer in North America, **controls over 70 percent of Mexican cement capacity.**

- CEMEX is aggressively buying up import terminals, clinker grinding facilities, and ready-mixed concrete operations in the AZ-NM-TX region in order to ensure a growing share of the regional market.

10. <u>CONCLUSION</u>

- Mexican producers have been dumping gray portland cement into Arizona, New Mexico, Texas, and Florida since 1983.

- The estimated dumping margin is 96-111 percent.

- **LTFV imports from Mexico have displaced domestic production of** gray portland cement, **have decreased capacity utilization** and thereby increased per unit costs of production, **have depressed prices**, and **have materially depressed operating income.**

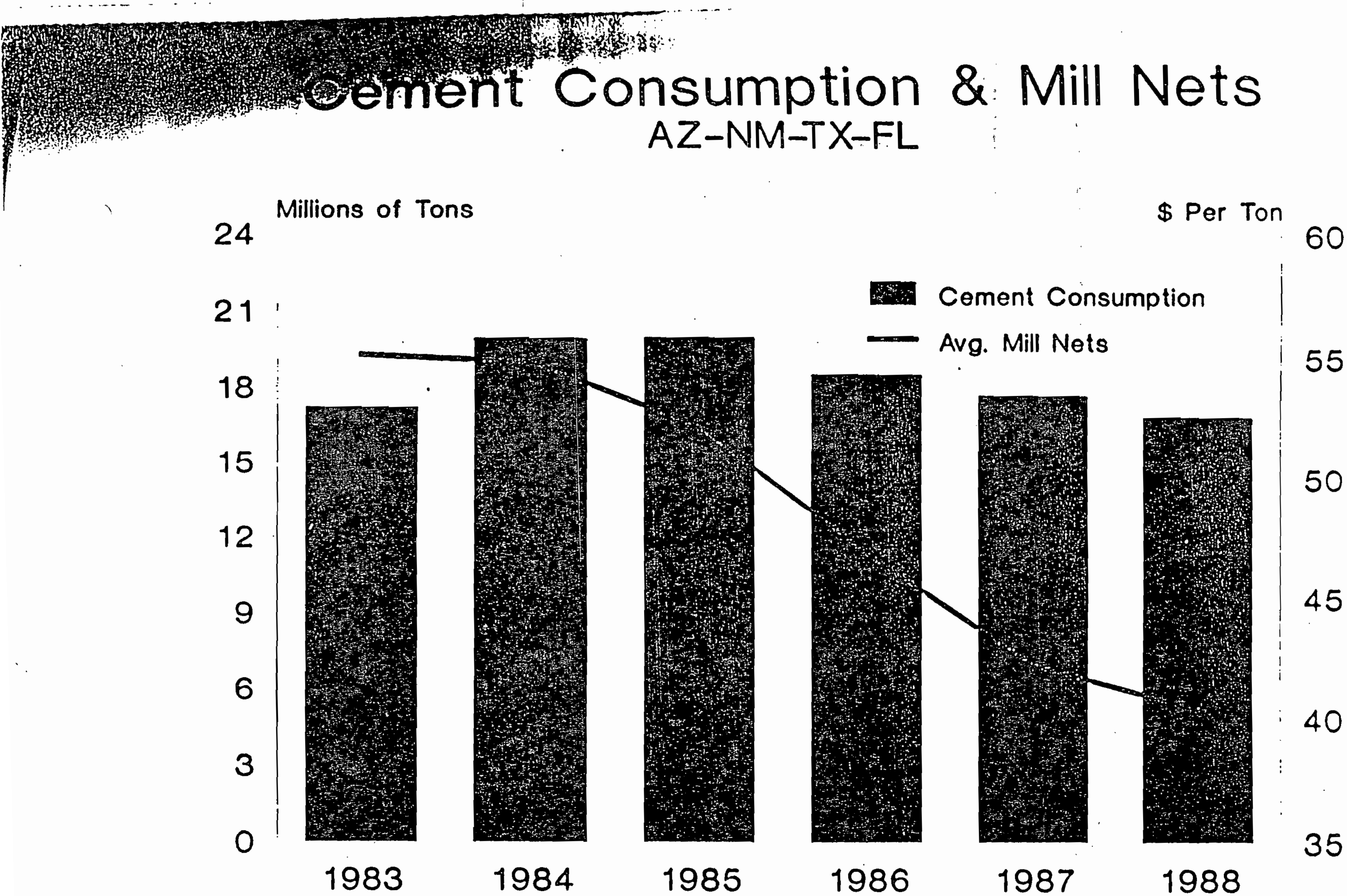
- LTFV imports from Mexico have made it impossible for even the most cost efficient producer to achieve an adequate rate of return on cement assets.

- LTFV imports have **materially injured** domestic producers both in the AZ-NM-TX Region and also the Florida Region.

- **The threat of additional injury is real and imminent,** as the Mexican producers continue to build export-oriented capacity aimed at the regional markets at issue.

- Petitioner does not seek to choke off imports or **deter fair import competition.**

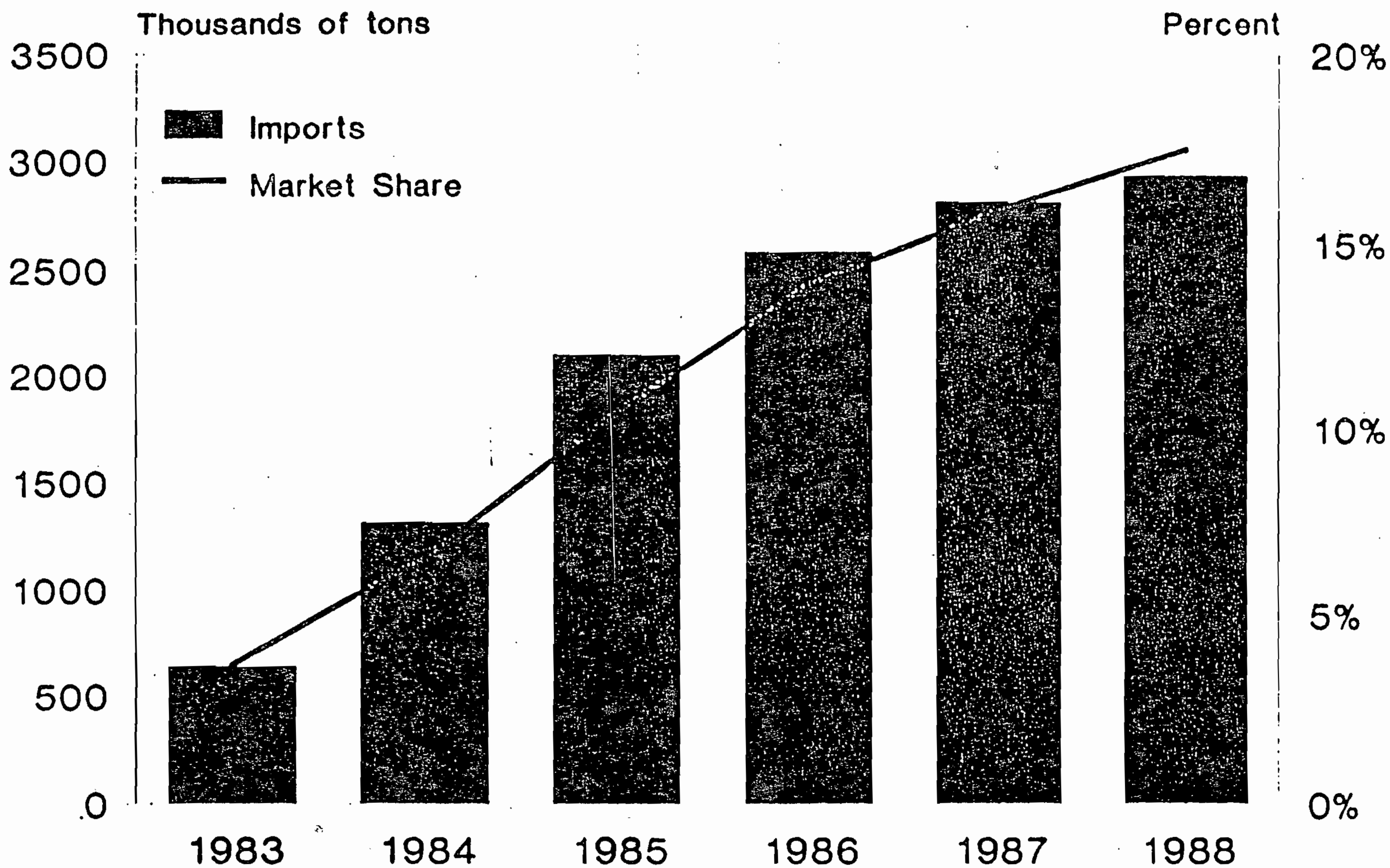
- Petitioner merely seeks **the enforcement of U.S. law** and an end to **illegal dumping.**



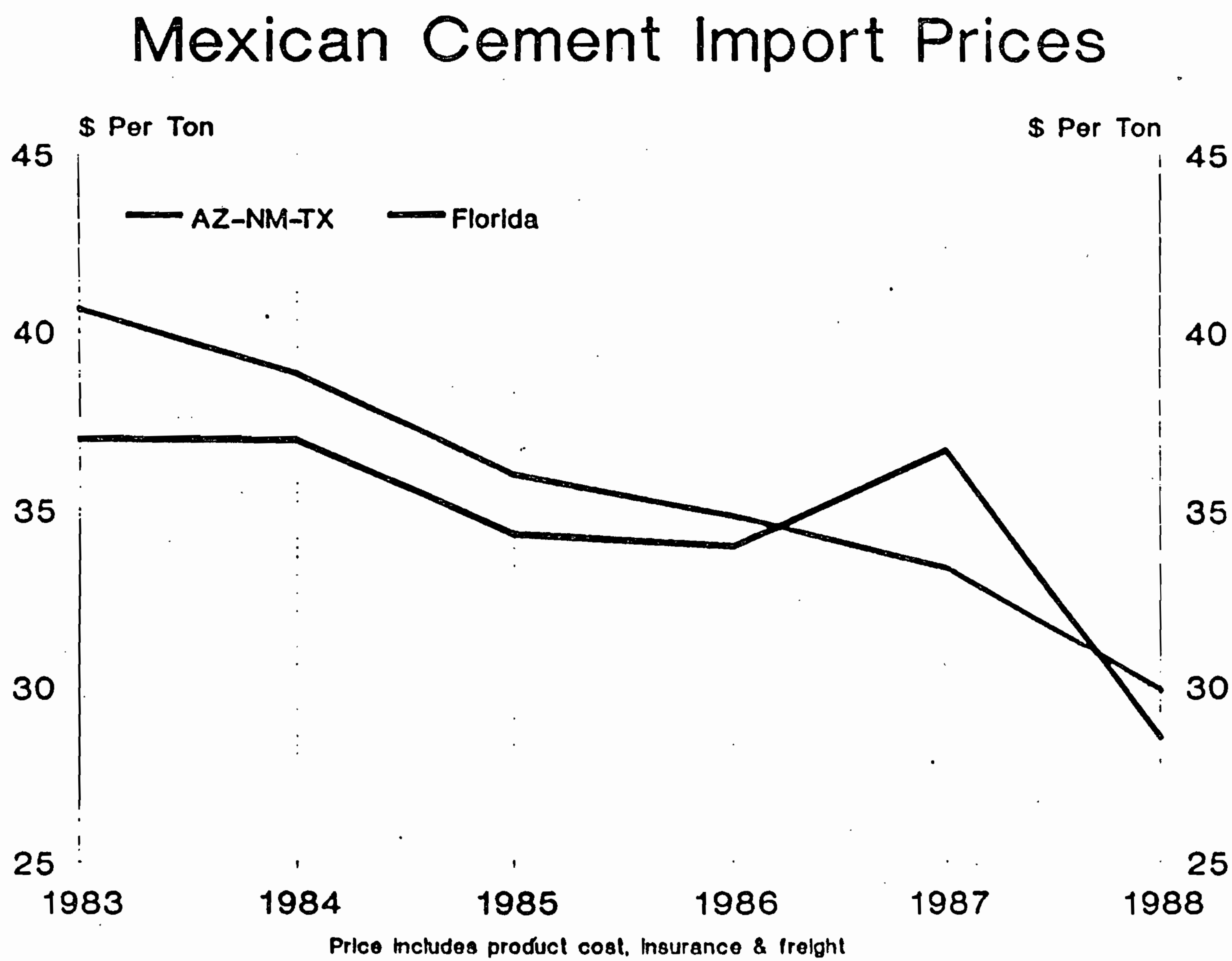
Cement Consumption & Mill Nets
AZ-NM-TX-FL
Millions of Tons
$ Per Ton
24
21
18
15
12
9
6
3
0
60
55
50
45
40
35
Cement Consumption
Avg. Mill Nets
1983
1984
1985
1986
1987
1988

GRAPH A

Mexican Import Penetration
AZ-NM-TX-FL



GRAPH B

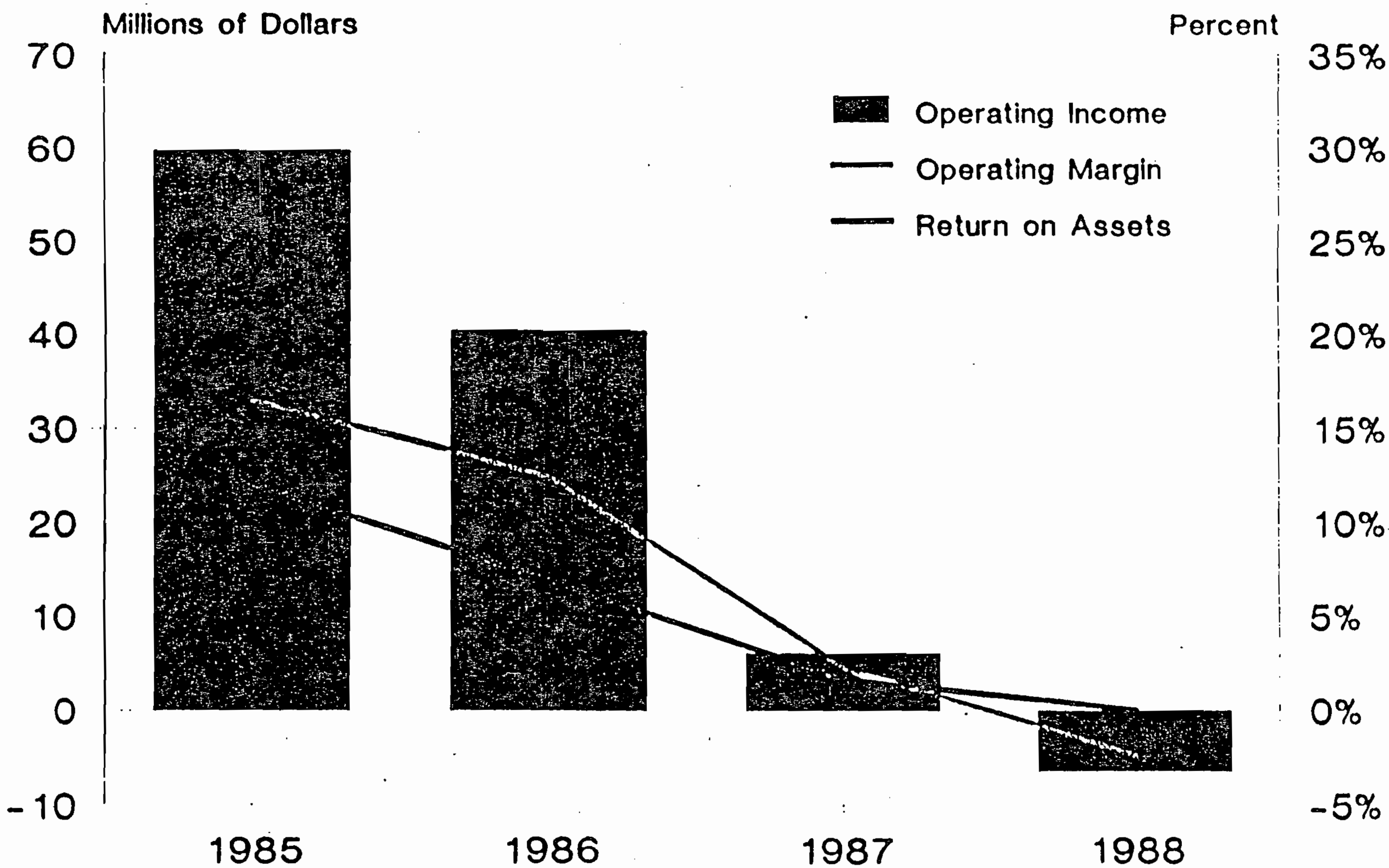


Mexican Cement Import Prices
$ Per Ton
$ Per Ton
AZ-NM-TX
Florida
45
40
35
30
25
45
40
35
30
25
1983
1984
1985
1986
1987
1988
Price includes product cost, insurance & freight

GRAPH C

Condition of the Domestic Producers

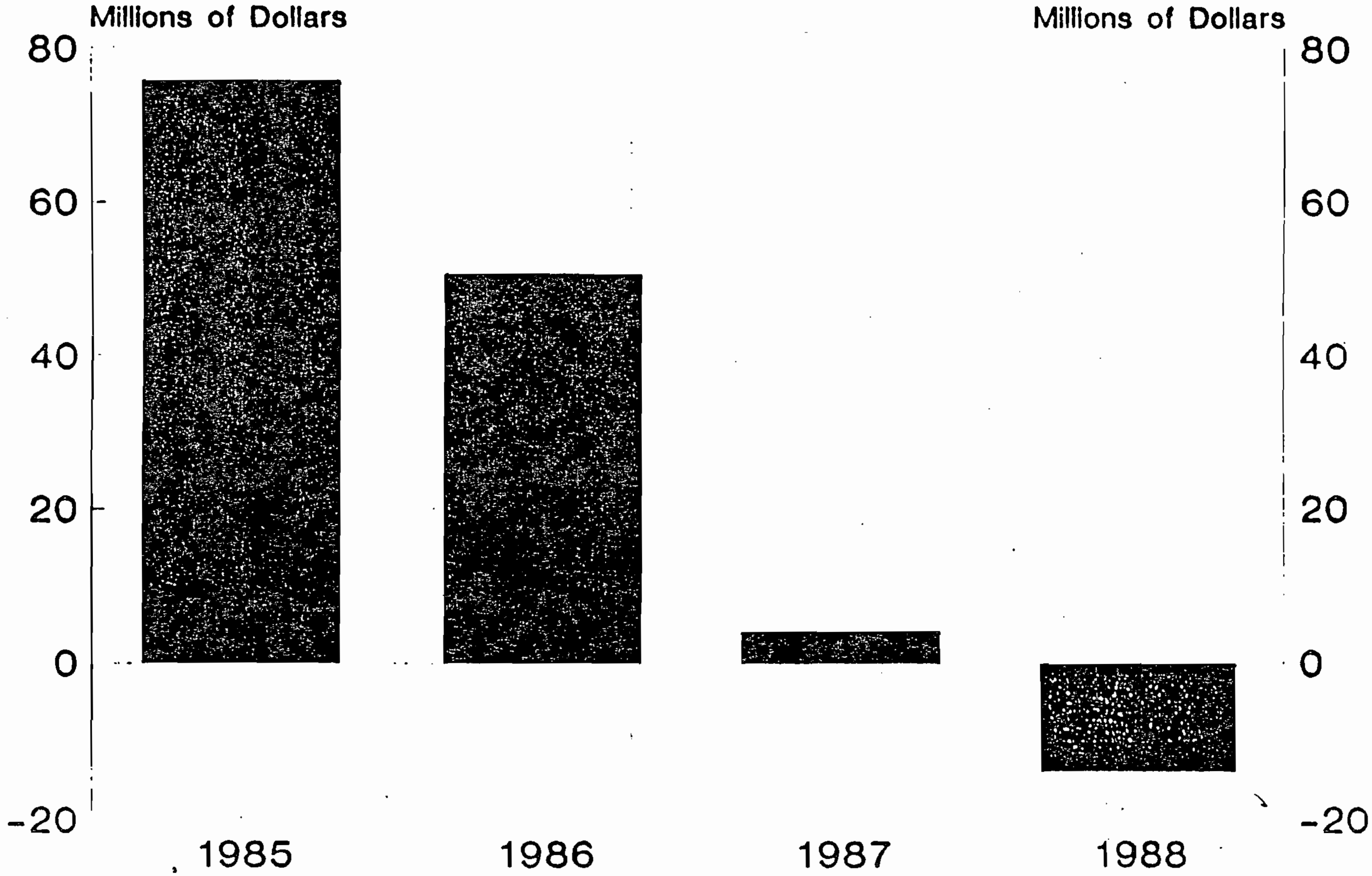
AZ-NM-TX-FL



GRAPH D

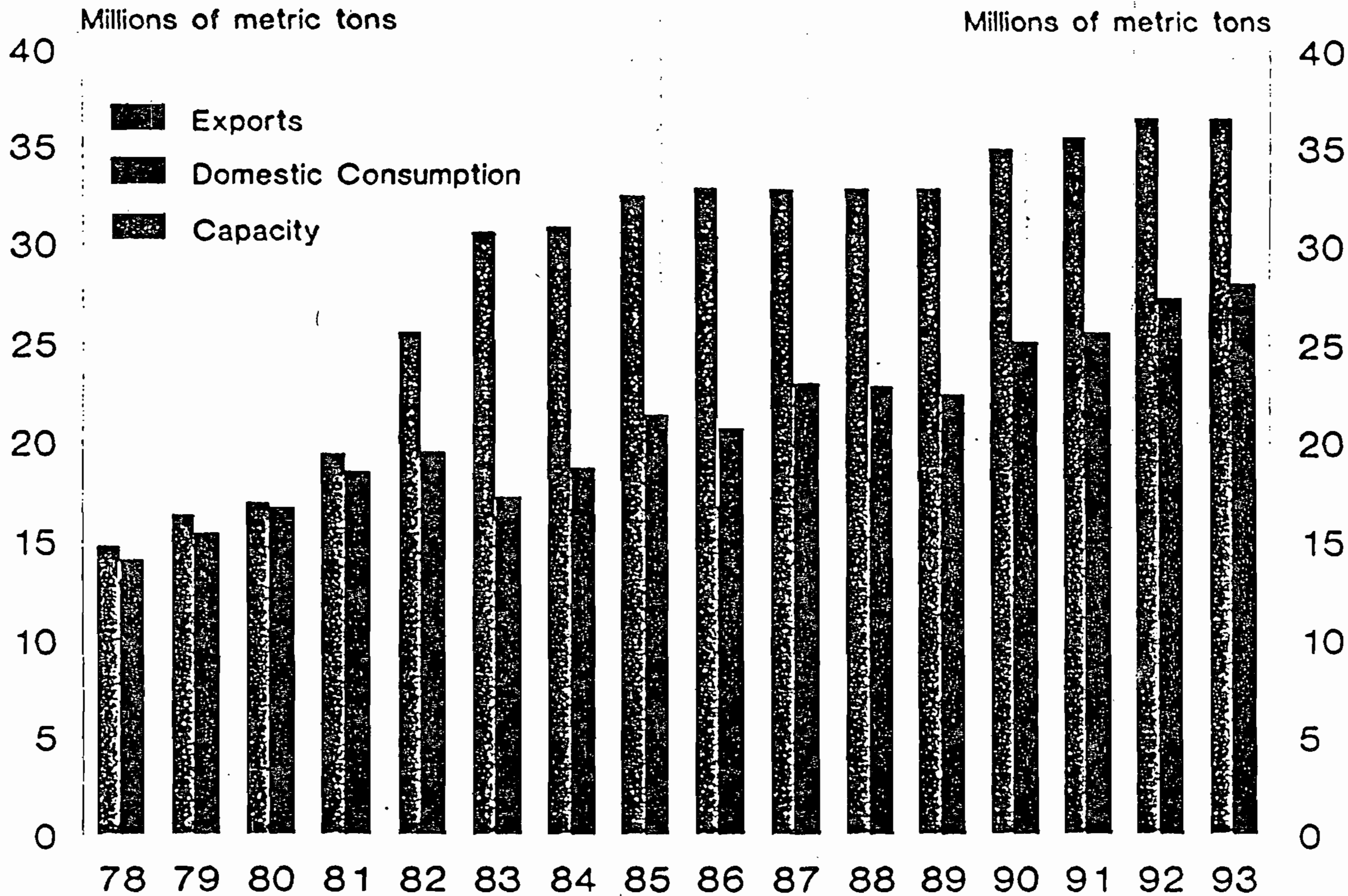
Domestic Producers Cash Flow

AZ-NM-TX-FL



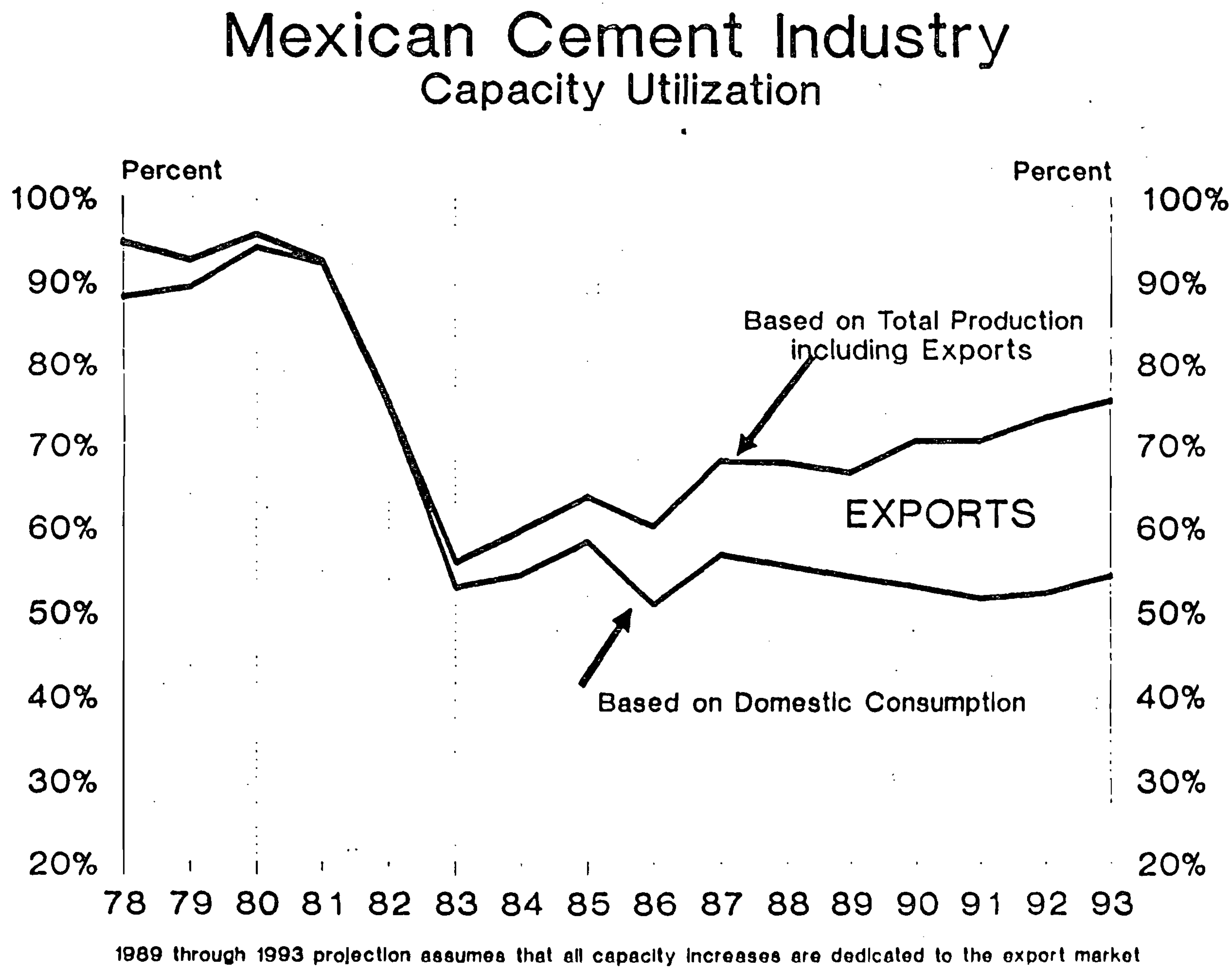
GRAPH E

Mexican Cement Industry



1989 through 1993 projection assumes that all capacity increases are dedicated to the export market

GRAPH F


Mexican Cement Industry
Capacity Utilization
Percent
Percent
100%
90%
80%
70%
60%
50%
40%
30%
20%
Based on Total Production including Exports
EXPORTS
Based on Domestic Consumption
78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93
1989 through 1993 projection assumes that all capacity increases are dedicated to the export market

GRAPH G

JR

KBN

RECEIVED
JAN 18 1990
DER-BAQM

January 15, 1990
89025

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.
1034 Northwest 57th Street Gainesville, Florida 32605 904/331-9000 FAX: 904/332-4189

Actual SO2 emissions were calculated in a similar fashion, based upon SO2 source tests conducted on Kiln 1 in 1979 (see Table 3). No SO2 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 PM10 emissions to 12.2 lb/hr and 48.25 TPY. This results in PM increases of 14.8 TPY for PM10 and 18.6 TPY for PM(TSP), both of which are below the PSD significant emission rate. It is emphasized that Tarmac expects <u>no increase</u> 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.

The future requested SO_2, NO_x, 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_2 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_2 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 $\mu g/m^3$ annual average, and 61 $\mu g/m^3$ 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 $\mu g/m^3$. The maximum calendar quarter average Pb impact would therefore have to be less than four times the annual average, or less than 0.014 $\mu g/m^3$. This impact would be less than the PSD de minimis monitoring concentration of 0.1 $\mu g/m^3$, calendar quarter average.

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 SO2

The first concern EPA expresses in regards to the BACT for SO2 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 SO2 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 SO2 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 SO2 emissions compared to Kiln 3.

EPA conducted a review of the NSPS for Portland® cement plants in 1985. The review document states that data and mass balance calculations indicate that 35 to 75 percent of the SO2 emissions are removed in the production process (i.e., kiln plus control device). Tarmac's stated minimum SO2 removal of 36 percent is therefore consistent with this past industry experience.

Tarmac does not believe that SO2 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 SO2 removal is the cement kiln itself (i.e., no add-on control equipment). As such, the cement kiln will without a doubt remove SO2 and act as an SO2 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 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:

	CEMENT (1000 tons)		IMPORTS
YEAR	Total	Imports	(% of total)
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 SO2 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 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.

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,

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. Finn
I. Goldman, SE Dist
P. Wong, 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+ Emissions (lb/hr)	Production (tons/hr)	Factor (lb/ton)	PM(TSP) Emissions (TPY)	PM10 Emissions** (TPY)
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+	NOx Emissions 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+	SO2 Emissions 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
		Prod. Rate (tons/hr)	ACFM	%H2O	Temp. (Deg.F)	CO+ (ppm)	CO (lb/hr)	lb/ton	tons/yr
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 emssions 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

Revised Feb 5 memo

Table 6. Revised PSD/Nonattainment Source Applicability Analysis

Pollutant	Baseline Emissions (TPY)	Future Maximum Emissions (lb/hr)	(lb/ton)	(TPY)*	Net Increase (TPY)	PSD Significant Emission (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

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BEST AVAILABLE COPY

Tarmac

TARMAC FLORIDA, INC.

****

FACSIMILE

****

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 FLORIDA, INC.

P.O. Box 2998
Hialeah, Florida 33012

WAIVER OF 90 DAY TIME LIMIT
UNDER SECTIONS 120.60(2) AND 403.0867 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, Florid 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.

John

KBN

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DEC 26 1989
DER - BAQM

December 21, 1989

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 2 Coal Conversion
PSD-FL-142; AC13-169901

Dear Mr. Fancy:

Mr. Barry Andrews of your staff has verbally requested additional information regarding the BACT analysis for the above referenced permit application. Barry requested that two items be addressed for the SO_2 BACT analysis. These items were:

1. Lower sulfur coal will provide a benefit since it is higher in heating value, thereby requiring less coal usage. This would translate into less SO_2 emissions and cost savings from coal purchases.

2. The effect of using lower sulfur coal on sulfuric acid emissions.

In regards to the first item, Barry has assumed that the heating value of coal is inversely related to the sulfur content; i.e., as sulfur content decreases heating value increases. This would imply additional benefits of less coal usage, lower coal costs, and lower SO_2 emissions. Barry stated that these additional benefits of lower sulfur coal should be addressed in the BACT analysis.

To investigate Barry's concerns, Tarmac has analyzed their coal analysis data for the period January 1987 through December 1989. Tarmac took weekly coal samples during this period. As part of the coal analysis, sulfur content and heating value are measured.

KBN ENGINEERING AND APPLIED SCIENCES, INC.
1034 Northwest 57th Street Gainesville, Florida 32605 904/331-9000 FAX: 904/332-4189

Presented in the attached figure is a plot of coal sulfur content versus coal heating value. As indicated, there is essentially no correlation between sulfur content and heating value. In fact, some of the lowest heating values occur with the lowest sulfur contents. This occurs because heating value is affected by other parameters as well, such as moisture and ash contents. As a result, there is no basis for concluding that lower sulfur coal will be higher in heating value. Therefore, it is not proper to assume this for the BACT analysis.

In regards to sulfuric acid mist, reduction in coal sulfur content will presumably result in proportionately less sulfuric acid mist emissions. In the application, sulfuric acid mist emissions were estimated as 3% of the SO_2 emissions. For various sulfur content coals utilized in K2, the sulfuric acid mist emissions would be as follows:

2.0% S coal - 12.0 lb/hr., 52.6 TPY
1.5% S coal - 9.5 lb/hr., 41.6 TPY
1.0% S coal - 7.0 lb/hr., 30.7 TPY

Thank you for the opportunity to submit this information. Please call if you have any questions.

Sincerely,

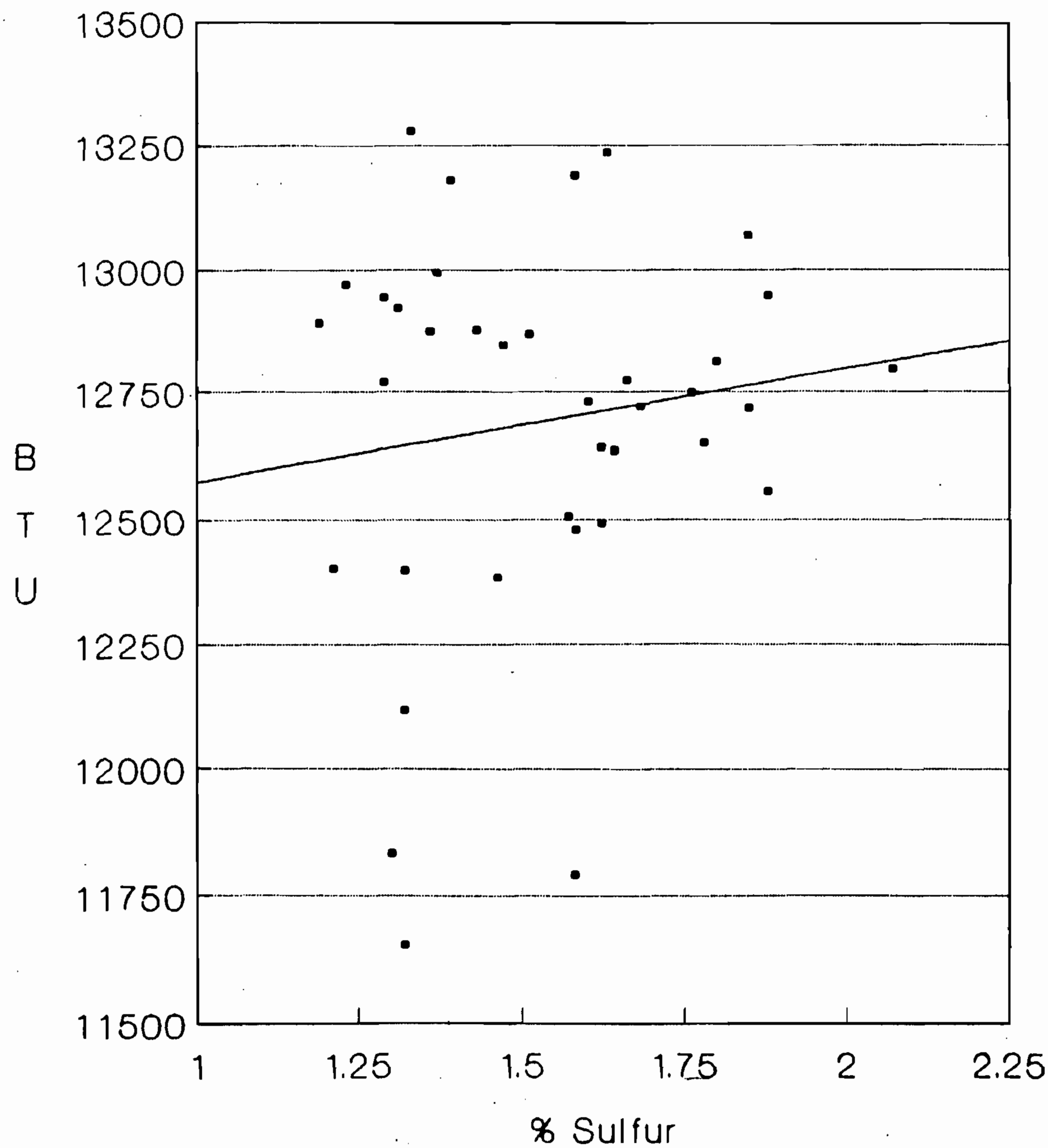
David A. Buff

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

cc: Al Townsend

Tarmac

COAL (as fired)
BTU vs % Sulfur



Weekly Average (Jan. 1987-Dec. 1989)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

DEC 13 1989

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DEC 18 1989
DER - BAQM

4APT-APB-cdw

Mr. Clair 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. (PSD-FL-142)

Dear Mr. Fancy:

We have received the November 13, 1989, letter and enclosures thereto from Mr. David A. Buff of KBN Engineering and Applied Sciences, Inc., transmitted to us by your Agency. As you are aware, this submittal by KBM was intended to address EPA's concerns with the application for Tarmac's proposed kiln 2 coal conversion project.

Applicability Determination

In reviewing this submittal, it is obvious to us that certain very basic concepts of the Prevention of Significant Deterioration (PSD) rules continue to be misapplied by KBN. In our October 18, 1989 letter to Ms. Patricia Adams of your agency, we raised several concerns with the applicant's determination of historical baseline emissions for several pollutants. In the applicant's November 13, 1989, response to these comments, KBN has dismissed our concerns as being inconsistent with the PSD rules.

KBN has agreed that baseline emissions for determining the amount of potential emissions increases as a result of the kiln modification should be based on actual historical emissions. However, their calculations for determining these actual emissions are based on fictitious allowable operating hours and production rates. This in no way represents actual emissions. KBN has used these allowable operating hours and production rates in the calculations based on their statement that "an increase in the operating hours or in the production rate of a source does not constitute a physical change in the source or change in the method of operation." The issue here is not whether the kiln, prior to coal conversion, can operate at its allowable production and operational limits without triggering PSD, but the physical modifications to the kiln to accommodate the conversion to coal. This coal conversion is the change which has triggered possible applicability to PSD. Because a physical change

Agree

will be occurring, applicability to PSD is determined by calculating the net emissions increase of the change. A "net emissions increase" is defined as:

> "the amount by which the sum of the following exceeds zero: Any increase in actual emissions from a particular physical change or change in method of operation at a stationary source; and Any other increases and decreases in actual emissions at the source that are contemporaneous with the particular change and are otherwise creditable."

Major modifications are, therefore, determined by examining changes in actual emission levels. Actual emissions are defined as:

> "the actual rate of emissions of a pollutant from an emissions unit, as determined in accordance with sub-paragraph (ii)-(iv) below
>
> (ii) In general, actual emissions as of a particular date shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. The Administrator shall allow the use of a different time period upon a determination that it is more representative of normal source operation. Actual emissions shall be calculated using the units actual operating hours, production rates and types of materials processed, stored, or combusted during the selected time period.
>
> (iii) The Administrator may presume that source specific allowable emissions for the unit are equivalent to the actual emissions of the unit.
>
> (iv) For any emissions unit which has not begun normal operations on the particular date, actual emissions shall equal the potential to emit of the unit on that date."

EPA is confusing "actual emissions" (as of any particular date) with "baseline emissions" (as of baseline date - [illegible])

Any increase occurring after the baseline date is not included in baseline emissions and must affect PSD increment (max. allowable increase)

Although the regulations provide a presumption for the use of allowable emissions when source specific limits are established, the preamble at 45 FR 52718 (August 7, 1980) states that:

> "The presumption that Federally enforceable source specific requirements correctly reflect actual operating conditions should be rejected by EPA or a State, if reliable evidence is available which shows that actual emissions differ from the level established in the SIP or permit."

It is clear from the above discussion of the PSD rules that actual operating hours, production rates, etc., must be used in determining a net emissions increase. Since this data was not included in KBN's submittal, the application should be considered incomplete.

We also are concerned about KBN's choice of the representative time period in determining historic actual emissions. We would agree that the year 1982 could be eliminated since the kiln was shut down. The remaining years, however, appear normal and we see no reason to not use the 1980-1981 two year period for determining baseline emissions.

BACT Determination for SO_2

We disagree with the applicant's BACT determination for SO_2 in a number of respects. It is understandable that SO_2 emission reductions observed from kiln 3 would not necessarily be identical to the future reductions on kiln 2. To choose an emission limit for kiln 2 that is 247% higher than the allowable SO_2 emission limit for kiln 3 based on this uncertainty does not, however, comply with the "top-down" BACT approach. If the SO_2 removal inherent in kilns 2 and 3 are similar when burning oil or gas, why would it not be expected that the SO_2 removals when burning coal would be similar? Regarding the use of lower sulfur coal, we find the estimated cost of between $983-$1,784 per ton of SO_2 removed to be reasonable. The 730 ton per year reduction in SO_2 by utilizing 1% sulfur coal is a significant reduction in annual emissions. Futhermore, although the amount of data contained in the BACT/LAER Clearinghouse is limited for this source type, coal of 1% sulfur (annual average) has been required as BACT from as early as 1978. KBN's conclusory statements about the competitive nature of the open market for their product should be supported by showing that no PSD cement plants were required to use low sulfur coal and/or oil/gas as fuel. This information, coupled with an examination of the fuels from non-PSD cement kilns, would support KBN's statements.

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

Sincerely yours,

Bruce P. Miller

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

copied: J. Reynolds
C. Andrews
M. Linn

J. Goldman, SE Dist
P. Wong, DERM
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METROPOLITAN DADE COUNTY, FLORIDA

METRO-DADE

METRO-DADE CENTER

ENVIRONMENTAL RESOURCES MANAGEMENT
SUITE 1310
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MIAMI, FLORIDA 33128-1971
(305) 375-3376

November 17, 1989

Clair Fancy, P.E.
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 33299

RE: Tarmac Florida, Inc., Proposed Modification Kiln 2 Coal Conversion,
PSD FL-142, AC13-169901

Dear Mr. Fancy:

We have reviewed the subject application submitted by Tarmac Florida, Inc., for the conversion of Kiln #2 to coal fuel. We offer the following comments:

DERM fully supports EPA's position on this application as outlined in Bruce Miller's October 18, 1989 letter to Patricia Adams of your office. Of major significance is the position stated that baseline emissions needs to be recalculated using a two year average of actual emissions. Also, the increase in fugitive emissions from additional stockpiling and handling of coal fuel should be accounted for in the calculations, specifically in relation to potential impact on the nearby Class I area.

In regards to Sulphur Dioxide emissions, Dade County standards are as follows:

1. Ambient Air Quality Standards
   a. Annual Arithmetic Mean
      25 micrograms per cubic meter

   b. Twenty-four Hour Concentration
      110 micrograms per cubic meter

   c. Three-Hour Concentration
      350 micrograms per cubic meter

2. Emission Standards
   Stationary combustion source solid fuel with two-hundred-fifty million or less BTU per hour heat input 1.5 pound per million BTU heat input.

SO_2

This application should demonstrate the sources ability to meet these standards.

We look forward to receiving a copy of the amended application for further review.

Sincerely,

Ewart Anderson

Ewart L. Anderson, P.E.
Air Permitting Engineer
Environmental Monitoring Division

cc: J. Reynolds
B. Andrews
M. [illegible]
J. [illegible], EPA
C. [illegible], NPS
J. [illegible], SE Dist
BT

ELA/aas

KBN

November 13, 1989

RECEIVED
NOV 14 1989
DER - BAQM

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

Re: Proposed Modification--Kiln 2 Coal Conversion
PSD-FL-142 - AC13-169901

Dear Mr. Fancy:

This correspondence provides responses to the Department's completeness letter dated October 4, 1989, concerning the above-referenced permit application. Each topic described in the EPA's draft comment letter dated October 3, 1989 is addressed in the attached response. In addition, the Department's comment concerning an air quality analysis for the Biscayne National Monument is addressed. Two sets of supportive computer printouts and computer disks are included.

If you have any questions concerning this submittal, please call Mr. David A. Buff, P.E., at 904-331-9000. I appreciate your cooperation in reviewing this important permit application.

Sincerely,

David A. Buff

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

DAB:dk

cc: Scott Quass
Al Townsend

KBN ENGINEERING AND APPLIED SCIENCES, INC.
1034 Northwest 57th Street Gainesville, Florida 32605 904/331-9000 FAX: 904/332-4189

89025C1-RSP
10/27/89

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NOV 14 1989
DER - BAQM

TARMAC
KILN 2 COAL CONVERSION
RESPONSES TO FDER/EPA COMMENTS
NOVEMBER 1989

Prepared for:

Tarmac Florida, Inc.
Hialeah, Florida

Prepared by:

KBN Engineering and Applied Sciences, Inc.
Gainesville, Florida

November 8, 1989
89025B1

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1.0 APPLICABILITY DETERMINATION

The U.S. Environmental Protection Agency (EPA) raises several points in commenting on the determination of PSD source applicability and, in particular, on the determination of baseline emissions for Prevention of Significant Deterioration (PSD) new source review applicability. In response, a few general statements are appropriate before discussing each specific pollutant.

EPA contends in its comments that PSD baseline emissions should be based on actual historical emissions. The applicant is in agreement with this comment, except in regards to hours of operation and production rates. In the case of Tarmac, Kiln 2 is the "source" being modified. According to EPA and Florida Department of Environmental Regulation (FDER) PSD regulations, an increase in the operating hours or in the production rate of a source does not constitute a physical change in the source or change in the method of operation of a source (unless prohibited by a federally enforceable permit condition) [Rule 17-2.100(119)]. Therefore, increases in the hours of operation or in the production rate of a source do not constitute "modification" of that source, unless the permit restrictions are exceeded. Thus, a source's annual production rate and operating hours may fluctuate from year to year, depending on market conditions, without triggering PSD review. The PSD regulations are not intended to penalize a source merely because it did not operate at its full permitted capacity.

Does it matter as long as actual emissions are used and permit conditions are not exceeded?

Conversion to Coal is the modification (change in method of operation)

Tarmac is not requesting any increase in the permitted hours of operation [8,760 hours per year (hr/yr)] or in the permitted production rate [25 tons per hour (TPH)] for Kiln 2. Based upon the exemption in the regulations, actual hours of operation and production rates were not considered in the PSD applicability determination for Tarmac. PSD baseline and future emissions after conversion to coal were based upon the maximum permitted operating hours (8,760) and the maximum production rate for the kiln of 25 TPH.

But for emissions, can use Allowable only if source was not in operation by baseline date 12/27/77.

17-2500(2)(e) "Emissions Increases" uses actuals to establish offsets & net increases i.e. baseline's can not be determined on allowables unless constr began prior to 1/6/75 and operation not begun before 12/27/77.

Tarmac is not requesting offset credit for shutting down a source. When a source is shutdown, it is acknowledged that emission reduction credit would be based on the actual emissions as determined by source operating records. Tarmac is only requesting that it not be penalized for operating a source at lower than capacity, consistent with the exemption in the PSD regulations.

1.1 PARTICULATE MATTER

It is acknowledged that the PSD baseline for PM/PM10 emissions should be based on the actual emissions from Kiln 2. The burning of natural gas or fuel oil has no effect on PM emissions from the kiln; therefore, fuel usage is not relevant to this determination. Since hours of operation and production rate do not enter into this determination, as discussed previously, only the actual emissions in lb/hr representative of the baseline period are required to determine baseline emissions.

To establish the baseline PM emissions for Kiln 2, historic test data for the kiln from 1978 through 1982 (when the kiln shutdown) were reviewed. The test data are summarized in Appendix A, Table A-1. Although PSD rules generally require the most recent 2-year operating period for determining actual emissions, the Department may allow a different time period if it is considered more representative of normal source operation. For Kiln 2, the year 1980 is considered to be more representative for the following reasons.

"most recent" 2 yr period is used for contemp. emission red. (offsets) not baseline emissions (1977)

1. More PM stack tests were conducted during this year than during any other year. These tests were conducted at different times and, therefore, are considered more representative of yearly emissions.
2. The average of all PM stack tests during 1980 was 16.0 lb/hr. There is another year (1978) in which the measured PM emissions were higher (18.4 lb/hr). There are also five stack tests out of the total of 18 tests which resulted in PM emissions higher than 16.0 lb/hr.

Based on these considerations, the baseline PM emission rate is determined to be 16.0 lb/hr. It is further noted that actual PM emissions over the course of a year are likely to be higher than reflected by the stack tests. This is because the compliance tests are run under the best operating conditions (i.e., kiln and ESP are all operating at optimum). However, there is no way to establish what the actual emission rate for the year was, other than the compliance tests.

Based upon a baseline PM emission rate of 16.0 lb/hr for Kiln 2 and 8,760 hr/yr permitted operation, baseline emissions are 70.08 TPY. Baseline PM10 emissions are then 85 percent of PM emissions (refer to page 2-3 of the permit application), or 13.60 lb/hr and 59.57 TPY.

Tarmac is willing to limit future maximum PM emissions from Kiln 2 to 19.3 lb/hr or 84.53 TPY. Future maximum PM10 emissions, based upon the 85 percent factor, will then be limited to 16.4 lb/hr and 71.85 TPY. The proposed new PM limit is much less than the allowable rate of 31.0 lb/hr for Kiln 2, which was based on the process weight table.

Increased fugitive emissions from the existing coal-handling equipment and new coal mill were addressed in the permit application (refer to pages 2-7 and 3-12, Table 3-3, and Appendix B). It is noted that the new coal mill will produce no new emissions, since the exhaust gases are injected into the kiln. In order to further reduce future PM emissions from the coal-handling operation, Tarmac will use a water truck in the coal pile area. Permit Condition The water truck will be used on an as-needed basis to minimize fugitive dust emissions due to vehicular traffic associated with the handling of coal for Kiln 2. The fugitive dust emission estimates presented in the permit application did not consider any fugitive dust control measures. The watering of the coal pile is estimated to result in a 75 percent control efficiency for vehicular traffic, based upon Reference 1, which shows that up to 90 percent control of unpaved roads can be achieved by watering.

The revised fugitive dust emissions for Kiln 2 coal handling are shown in the revised Tables B-1 and B-3 (see Appendix B). As shown, the revised total PM emissions are 4.30 TPY, and the revised PM10 emissions are 2.64 TPY. The resulting PSD applicability is presented below:

	PM	PM10
Baseline (TPY)		
Kiln 2	70.08	59.57
Future (TPY)		
Kiln 2	84.53	71.85
Coal Handling	4.30	2.64
Subtotal	88.83	74.49
Net Change (TPY)	18.75	14.92

As shown, the net increase in PM emissions is 18.75 TPY, and the net increase in PM10 emissions is 14.92 TPY. These increases are less than the respective PSD significant emission rates of 25 TPY and 15 TPY, respectively.

1.2 SULFUR DIOXIDE (SO_2)

The applicant has stated that PSD review applies for SO_2. Therefore, the determination of exact PSD baseline emissions is not relevant. However, for documentation purposes, the baseline can be assumed to be 100 percent gas firing, which results in the lowest SO_2 emissions. SO_2 emissions from gas firing in Kiln 2 were measured at 4.5 lb/hr. This equates to 19.7 TPY, based on 8,760 hr/yr operation.

Tested → When? The calc's show this was derived by mat'l balance. (see App A - application)

1.3 NITROGEN OXIDES (NO_x)

It is acknowledged that baseline emissions for NO_x should be based on the fuel usage in Kiln 2. Actual fuel usage for the period 1977 through 1982 is presented in Table A-2 (see Appendix A). As shown, both gas and oil were burned in 1977 and 1978, but only gas was burned in 1979 through 1982. The year 1980 would be the most representative year, since the most fuel usage and clinker production occurred in this year. This year was also selected as the baseline year for PM emissions.

According to 17-2, Baseline emissions are not based on most representative year, but on actual emissions on applicable baseline date.

Based on clinker production of Kiln 2 in 1980 of 184,922 tons and the measured NO_x emission rate for gas firing of 4.73 lb/ton clinker, baseline emissions are calculated as 437.3 TPY. The proposed NO_x emissions from Kiln 2 for coal burning, as presented in the application, are 741.3 TPY. Therefore, the net increase in NO_x emissions due to the proposed modification is 304.0 TPY. Since this increase exceeds the PSD significant emission rate of 40 TPY, PSD review applies for NO_x emissions. The PSD analysis for NO_x emissions, including air quality impacts, BACT evaluation, and additional impacts, is contained in Appendix B. Maximum hourly emissions for gas firing is 118.3 lb/hr, and, for coal firing, maximum hourly emissions will be 169.3 lb/hr.

1.4 VOLATILE ORGANIC COMPOUNDS (VOCs)

The baseline VOC emissions were not based upon maximum, worst-case conditions as stated by EPA. The baseline VOC emissions were based upon a stack test for VOC on Kiln 3, which established actual emissions. It was assumed that No. 6 fuel oil was burned in the baseline calculation; however, the fuel oil was determined to contribute only 1.3 lb/hr out of the total VOC of 23.1 lb/hr. Therefore, any difference in actual emissions between natural gas and oil firing are insignificant and within the experimental error of the measurement technique (Method 25). As described previously, baseline emissions were based upon 8,760 hr/yr operation, as were future VOC emissions.

2.0 BACT DETERMINATION FOR SO_2

In regards to the SO_2 removal efficiency for Kiln 2, EPA has misinterpreted the data in Appendix A. Kiln 2 has never been converted to coal, nor stack tested when burning coal. All SO_2 stack tests on the kiln were conducted when burning gas or oil, and the actual SO_2 removal efficiencies of the system are specific to these fuels. The SO_2 emissions and removal efficiency for coal shown in Appendix A are from the 1980 permit application for Kiln 2 coal conversion, and as such were theoretical or expected rates.

The Kiln 3 coal conversion demonstrated that burning coal can result in a very different SO_2 removal efficiency. Tarmac went through many attempts to simultaneously meet the SO_2 and NO_x emission rates. This is exactly the reason for requesting the higher SO_2 emission rate for Kiln 2 when burning coal. Tarmac does not want another noncompliance situation caused by a lack of operating data. The differences between Kilns 2 and 3 are significant, such that the Kiln 3 operating experience is not directly applicable. It is not known for certain what the SO_2/NO_x emissions and interrelationship between these two pollutants will be for Kiln 2 until the kiln is actually converted and operated on coal. As stated in the application, Tarmac is willing to accept a lower SO_2 emission limit if source test data show that such a limit can be met on a continuous basis.

The use of lower sulfur coal in Kiln 2 has been investigated. The current coal contract for Kiln 3 specifies a sulfur content not to exceed 2.0 percent. Actual average coal sulfur content in 1988 was 1.5 percent for Kiln 3. Therefore, Tarmac's coal is already fairly low in sulfur.

Based on information from coal suppliers, the cost of 1.5 percent maximum sulfur coal could be as much as $3.80/ton higher or more than 2.0 percent sulfur coal, depending on the tariff zone from which the coal originated. Coal with 1.0 percent sulfur maximum could be as much as $4.90/ton higher or more. The coal suppliers could not guarantee the tariff zone from which the lower sulfur would come and, therefore, could not guarantee a coal price. In addition, the coal suppliers indicated only 6-month contracts would be given, due to uncertainty in future coal prices and supplies.

In addition to the cost of the coal, Tarmac would need to construct separate coal handling and storage facilities for Kiln 2, since the lower sulfur coal could not be mixed with the higher sulfur coal for Kiln 3. This would include separate rail dump facilities, separate storage pile, additional front-end loader, and additional coal conveying and storage bins. The capital cost of new coal handling and storage facilities for segregated coal is $1.7 million. Additional operating and maintenance (O&M) costs are estimated at $100,000 per year, including labor and materials. Use of shared coal handling facilities for Kilns 2 and 3 will result only in increased O&M costs of $20,000/yr.

Utilizing lower sulfur coal will potentially lower SO_2 emissions, but this will be very dependent on operation of the kiln. Assuming the kiln will be operated to minimize SO_2 emissions, it is assumed that SO_2 emissions due to sulfur in the fuel will be directly proportional to the sulfur content of the fuel. Based upon the information presented in the permit application, maximum SO_2 emissions from the kiln are as follows (includes the 36 percent inherent SO_2 removal efficiency):

	2.0 Percent Sulfur	1.5 Percent Sulfur	1.0 Percent Sulfur	
SO_2 due to fuel (lb/hr)	333	250	167	
SO_2 due to raw feed	66	66	66	(lb/hr)
TOTAL (lb/hr)	400	316	233	

A cost-effectiveness analysis of utilizing lower sulfur coal in Kiln 2 is presented in Table 2-1. The capital cost and O & M costs are shown for each coal sulfur content (2.0, 1.5, and 1.0 percent), as well as total

Table 2-1. Cost Analysis of Using Lower Sulfur Coal In Kiln 2

Cost Element	Maximum Coal Sulfur Content (Percent)		
	2.0 percent*	1.5 percent	1.0 percent
Capital Cost	$0	$1,700,000	$1,700,000
Annual O&M Costs:			
Coal+	$1,423,500	$1,639,872	$1,702,506
Other	20,000	120,000	120,000
Subtotal	$1,443,500	$1,759,872	$1,822,506
Annualized Costs			
Annualized Capital Cost**	$0	$340,000	$340,000
Annual Operating Costs	1,443,500	1,759,872	1,822,506
Total Annual Cost	$1,443,500	$2,099,872	$2,162,506
Differential Annual Cost	-	$656,372	$719,006
Cost Effectiveness			
Increase in Production Cost			
($/ton clinker)	$0.00	> $3.00	> $3.28
(%)	0.0	> 8	> 9
SO2 Emissions (TPY)	1,752	1,384	1,021
SO2 Removed (TPY)	-	368	731
Cost Effectiveness ($/ton removed)	-	$1,784	$983

Note: All values based upon a 100 percent annual operating capacity factor.
- 219,000 tons clinker per year.
- 56,940 tons coal per year.
- Current production cost is $38/ton clinker.

* Assumes shared coal handling facilities with Kiln 3.
\+ Minimum coal costs are as follows:
2.0 percent S - $25.00/ton
1.5 percent S - $28.80/ton
1.0 percent S - $29.90/ton
Coal costs may be higher depending on tariff zone.
** Based upon Capital Charge Factor of 0.20.

annualized costs. The O&M costs include fuel costs. As shown, the differential annual cost between 2.0 and 1.5 percent sulfur coal is $656,000 per year, and between 2.0 and 1.0 percent coal is $719,000 per year.

The most significant cost effectiveness figure is that of projected production cost associated with Kiln 2. The projected production cost (which Tarmac desires to keep confidential) currently is just marginally competitive on the open market. For Kiln 2, reducing coal sulfur content to 1.5 percent would increase production cost by $3.00 per ton clinker or more, or more than an 8 percent increase in production cost. Using a 1.0 percent sulfur coal will increase production cost by $3.28 per ton clinker or more, or more than a 9 percent increase over using 2.0 percent sulfur coal.

The increased production costs for Tarmac associated with lower sulfur coal would be prohibitive. The cement industry is highly competitive. The additional cost of lower sulfur coal would place Tarmac in an unfair economic position compared to local competitors who are not restricted to the use of lower sulfur coal.

Tarmac has provided information to support the "antidumping petition" filed September 26, 1989 with the U.S. International Trade Commission and with the International Trade Administration of the U.S. Department of Commerce. This petition depicts the devastating impact on domestic cement producers in Florida, Texas, New Mexico, and Arizona caused by the dumping of cement by Mexican producers. Any increase in production costs above those projected costs for Kiln 2 would seriously impact Tarmac's competitive position. In essence, Tarmac would be forced to keep Kiln 2 shut down. Operating the kiln on oil or gas results in even higher production costs, which would be prohibitive. As a result, using oil or gas is not an option.

In summary, the cost of using lower sulfur coal in Kiln 2 would be economically prohibitive in terms of production cost and the price of clinker on the open market. Future long-term coal prices and availability are uncertain. Tarmac already uses low sulfur coal, which has generally averaged about 1.5 percent sulfur. Using lower sulfur coal would reduce SO_2 emissions by at most 730 tons per year (TPY). The actual reduction may be much less, because, as stated previously, Tarmac will make all efforts to operate Kiln 2 in order to reduce SO_2 emissions below the requested 400 lb/hr. Tarmac will agree to revising this emission limit downward if source test data demonstrate that a lower limit can be met.

In regards to the use of a baghouse as a means of SO_2 control, review of the EPA publication entitled Portland Cement Plants--Background Information for Proposed Revisions To Standards (EPA-450/3-85-003a), shows that there is inconclusive evidence concerning baghouse versus electrostatic precipitator (ESP) SO_2 removal efficiencies. This is because many unpredictable factors affect SO_2 emissions. It is stated that no significant reduction may occur in the fabric filter, depending upon the chemistry of the filter cake. This same document places the 1983 cost of a fabric filter at a small kiln such as Tarmac's at $1.9 million capital cost and $0.6 million annual operating cost. In addition, at Tarmac, the existing ESP would have to be removed to accommodate a new baghouse, requiring additional capital costs. Such costs are not justified since little or no SO_2 removal may result, and an efficient particulate control device is already in place.

3.0 AIR QUALITY ANALYSIS

3.1 BUILDING DOWNWASH EFFECTS

To fully investigate the potential effects of building downwash, a complete downwash analysis with the ISCST model was performed. This analysis evaluated potential downwash due to all structures at Tarmac. The Kiln 3/4 ESPs were simulated as a solid structure, even though they are open at the bottom. The downwash analysis for SO_2 is presented in Appendix C, and the downwash analysis for NO_x emissions is presented in Appendix D.

3.2 PROPERTY BOUNDARY

A description of the property boundary and the restrictions to public access are presented in the revised SO_2 modeling analysis (Appendix C).

3.3 AIR QUALITY ANALYSIS FOR BISCAYNE NATIONAL MONUMENT

FDER has requested an analysis of air quality impacts for the Biscayne National Park. It is Tarmac's position that such an analysis is not required by an applicant under PSD regulations, since this area is not classified as a PSD Class I area. Of course, FDER and the National Park Service are free to conduct their own analysis of the impacts on this area. However, there is no regulatory authority to request that Tarmac perform such an analysis.

APPENDIX A

HISTORICAL DATA FOR KILN 2

Table A-1. Historic PM Emissions, Kiln 2

Test Date	Run No.	Kiln Feed (TPH)	Fuel Type	Production Rate (TPH)	PM (lb/hr)	Gas Flow Rate acfm	Gas Flow Rate dscfm	Stack Temperature (°F)
02/15/78	1	39.8	gas	NA	16.46	111,745	51,066	367
02/16/78	2	39.8	gas	NA	23.28	118,490	54,982	370
02/16/78	3	39.8	gas	NA	15.40	112,319	53,501	352
1978 Average					18.38			
03/29/79	1	41.13	gas	NA	5.03	103,479	52,159	348
03/29/79	2	41.13	gas	NA	5.98	103,492	53,056	347
03/29/79	3	41.13	gas	NA	5.04	102,183	51,273	350
1979 Average					5.35			
04/24/80	20	37.68	gas	23.33	27.00	130,500	65,666	344
04/25/80	22	39.50	gas	24.46	10.00	128,300	62,500	337
04/26/80	24	36.95	gas	22.88	14.00	132,700	64,833	336
04/27/80	26	39.03	gas	24.17	12.00	132,700	64,666	335
04/28/80	28	40.38	gas	25.00	17.00	131,000	63,167	340
04/29/80	30	39.84	gas	24.67	16.00	133,700	64,500	347
1980 Average					16.00			
03/17/81	1	43.21	gas	NA	15.75	137,897	66,249	342
03/17/81	2	43.21	gas	NA	4.00	136,390	65,061	348
03/17/81	3	43.21	gas	NA	4.75	139,781	66,922	345
1981 Average					8.17			
03/04/82	1	44.38	gas	24.83	10.78	92,187	44,810	318
03/04/82	2	44.38	gas	24.83	26.29	101,278	48,082	322
03/04/82	3	44.38	gas	24.83	10.13	95,619	45,571	324
1982 Average					15.73			

Note: acfm = actual cubic feet per minute.
dscfm = dry standard cubic feet per minute.

Table A-2. Historic Fuel Usage Data, Kiln 2

Year	Production (tons clinker)	Fuel	Fuel Used*	MMBTU/ton Clinker
1977	125,443	gas oil	$699(10)^6 \left(1000 \frac{BTU}{SCF}\right) = 7.0(10)^{11}$ BTU $724(10)^3 \left(150{,}000 \frac{BTU}{gal}\right) = 1.09(10)^{11}$ BTU $8.09(10)^{11}$ BTU	6.4
1978	157,352	gas oil	950 9	6.0
1979	169,075	gas	1,043	6.2
1980	184,922	gas	1,209	6.5
1981	150,690	gas	944	6.3
1982	57,098	gas	305	5.7

*Units of measure:
gas = 10^6 cubic feet.
oil = 10^3 gallon.

1977 ACTUAL SO_2 EMISSIONS:

GAS: $4.5 \frac{lb}{hr} \times \frac{7}{8.09} = 3.89$

OIL: $45.3 \frac{lb}{hr} \times \frac{1}{8.09} = 5.59$

$9.48 \frac{lb}{hr}$

APPENDIX B

REVISIONS TO KILN 2 EMISSIONS OF PARTICULATE MATTER AND PM10

Table B-1. Tarmac Kiln 2 Annual Particulate Matter (TSP) Emissions Increase (Revised)

SOURCE	TYPE	s SILT CONTENT (%)	M MOISTURE CONTENT (%)	U WIND SPEED (MPH)	H DROP HEIGHT (FT)	Y DEVICE CAPACITY (YD**3)	E EMISSION FACTOR (LB/TON)
1) RAILCAR UNLOADING	BATCH DROP	5	7.2	8.8	20	87.0	0.00040
2) FEL-TO-PILE	BATCH DROP	5	7.2	8.8	10	7.0	0.00046
3) FEL-TO-LOADING HOPPER	BATCH DROP	5	7.2	8.8	10	7.0	0.00046
4) ACTIVE COAL PILE	WIND EROSION	5	-	-	-	-	*
5) ACTIVE COAL PILE	VEHICULAR TRAFFIC	5	-	-	-	-	*
6) BAGHOUSE G-509	BAGHOUSE	-	-	-	-	-	*
7) BAGHOUSE G-521	BAGHOUSE	-	-	-	-	-	*
8) BAGHOUSE G-527	BAGHOUSE	-	-	-	-	-	*

ANNUAL EMISSION ESTIMATES

SOURCE	UNCONTROLLED EMISSION FACTOR (LB/TON)	ANNUAL THRUPUT (TPY)	ANNUAL EMISSIONS (TPY)
1) RAILCAR UNLOADING	0.00040	56,940	0.012
2) FEL-TO-PILE	0.00046	56,940	0.013
3) FEL-TO-LOADING HOPPER	0.00046	56,940	0.013
4) ACTIVE COAL PILE (WIND)	*	*	0.480
5) ACTIVE COAL PILE (TRAFFIC)	*	56,940	2.56+
6) BAGHOUSE G-509	*	56,940	0.35
7) BAGHOUSE G-521	*	56,940	0.52
8) BAGHOUSE G-527	*	56,940	0.35

	TOTAL ANNUAL EMISSIONS =		4.30

*REFER TO TEXT FOR EMISSION FACTORS OR BASIS OF EMISSIONS
+RELECTS 75 PERCENT CONTROL DUE TO WATERING

Table B-3. Tarmac Kiln 2 PM10 Emissions Increase (Revised)

ANNUAL PM10 EMISSION ESTIMATES

SOURCE	TYPE OPERATION	ANNUAL PM(TSP) EMISSIONS (TPY)	PM10 PARTICLE SIZE MULTIPLIER	ANNUAL PM10 EMISSIONS (TPY)
1) RAILCAR UNLOADING	BATCH DROP	0.012	0.36	0.0043
2) FEL-TO-PILE	BATCH DROP	0.013	0.36	0.0047
3) FEL-TO-LOADING HOPPER	BATCH DROP	0.013	0.36	0.0047
4) ACTIVE COAL PILE	WIND EROSION	0.480	1.00	0.4800
5) ACTIVE COAL PILE	VEHICULAR TRAFFIC	2.56	0.36	0.9216
6) BAGHOUSE G-509	BAGHOUSE	0.35	1.00	0.3500
7) BAGHOUSE G-521	BAGHOUSE	0.52	1.00	0.5200
8) BAGHOUSE G-527	BAGHOUSE	0.35	1.00	0.3500
		------		------
	TOTAL ANNUAL EMISSIONS =	4.30		2.64

24-HOUR PM10 EMISSION ESTIMATES

SOURCE	TYPE OPERATION	MAXIMUM 24-HOUR PM EMISSIONS (lb/day)	PM10 PARTICLE SIZE MULTIPLIER	MAXIMUM 24-HOUR PM10 EMISSIONS (lb/day)
1) RAILCAR UNLOADING	BATCH DROP	0.00	0.36	0.00
2) FEL-TO-PILE	BATCH DROP	0.00	0.36	0.00
3) FEL-TO-LOADING HOPPER	BATCH DROP	0.15	0.36	0.05
4) ACTIVE COAL PILE	WIND EROSION	8.80	1.00	8.80
5) ACTIVE COAL PILE	VEHICULAR TRAFFIC	11.63	0.36	4.19
6) BAGHOUSE G-509	BAGHOUSE	2.04	1.00	2.04
7) BAGHOUSE G-521	BAGHOUSE	3.06	1.00	3.06
8) BAGHOUSE G-527	BAGHOUSE	2.04	1.00	2.04
		------		------
	TOTAL 24-HOUR EMISSIONS =	27.72		20.18

APPENDIX C

REVISIONS TO AIR QUALITY ANALYSIS FOR SO_2

REVISIONS TO AIR QUALITY ANALYSIS FOR SO_2

C.1 SO_2 MODELING METHODOLOGY

The following discussion is presented in response to comments received from FDER and EPA regarding the PSD permit application for the proposed conversion to coal of Kiln 2 at the Tarmac facility located in northwest Dade County. This response should be viewed in conjunction with the PSD Permit Application (Kiln 2 Coal Conversion, Tarmac Florida, Inc.) prepared by KBN and submitted to FDER in August 1989. All data and assumptions contained in the PSD application remain unchanged except as discussed in the following paragraphs.

The effects of building downwash from structures at the Tarmac facility on predicted SO_2 impacts were considered. The most significant structures at the Tarmac facility are the finish mill building, the kiln burner building, Kiln 1 and 2 ESPs, and Kiln 3 and 4 ESPs. As stated in the PSD application, the kiln burner building and Kiln 1 and 2 ESPs are not tall enough to influence plume dispersion from any of the kilns. However, potential downwash could occur due to the finish mill building and Kiln 3 and 4 ESPs, since the stacks for Kilns 1, 2, and 3 are less than Good Engineering Practice (GEP) stack height for these structures. Source-building combinations and directions relative to the location of Kiln 2, in which building downwash is possible, are presented in the following table (also refer to Figure C-1.).

Source	Radial Direction (Degrees)	Structure
Kilns 1 and 2	120-150	Kiln 3 and 4 ESP
	100-120	Finish Mill Building
	280-330	Kiln 3 and 4 ESP
	Other directions	None
Kiln 3	All directions	Kiln 3 and 4 ESP

The Kiln 3 stack is downwashed in all directions, but Kiln 1 and Kiln 2 stacks are downwashed only in certain directions. The stacks for Kilns 1

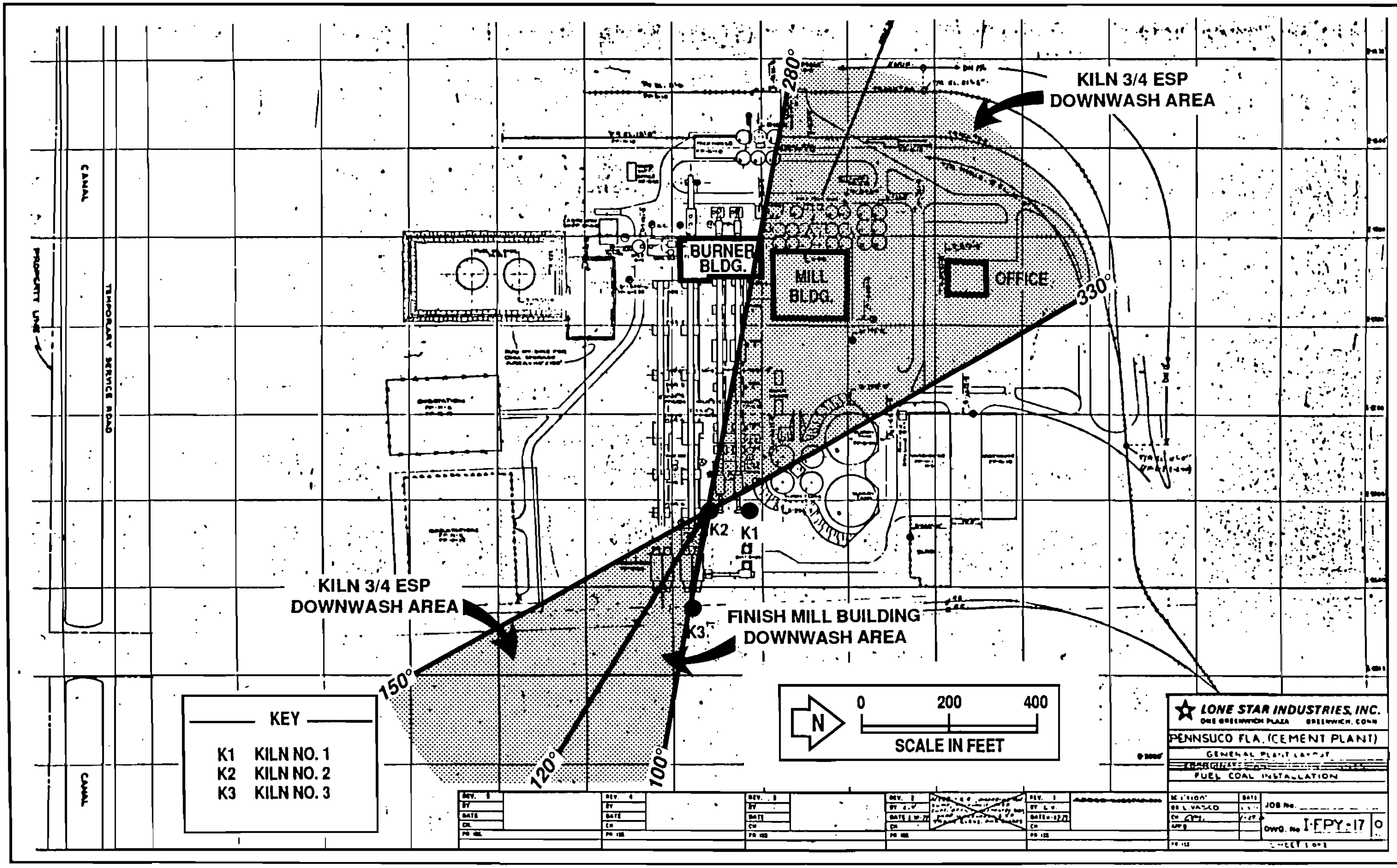

Figure C-1 BUILDING DOWNWASH ANALYSIS
FOR KILN NO. 2

KBN

and 2 are more than two building heights upwind from the finish mill building and, therefore, are only influenced downwind of this building in the 100° through 120° radial directions.

The building dimensions presented in the PSD application were used in the modeling analysis. None of the structures at the Tarmac facility are tall enough, relative to the stack heights, to require direction-specific building dimensions used in the Schulman-Scire downwash algorithm. Therefore, potential downwash at the Tarmac facility is simulated using the Huber-Snyder downwash algorithms that conservatively assume that any stack within the influence of a building has the potential to downwash in all directions. When a stack is in the influence of several buildings, the building dimensions resulting in highest GEP are used to simulate downwash.

In order to avoid simulating downwash for directions in which the potential for downwash does not exist, the modeling analysis was separated into two cases. For those directions in which downwash potentially can occur for all three kiln stacks (i.e., 110° through 150°; 280° through 300°; and 310° through 330°) receptors were placed accordingly and building dimensions were input into the model for Kilns 1, 2, and 3. In a separate modeling analysis, receptors were located in those directions in which downwash will not occur for the stack for Kilns 1 and 2. Therefore, building dimensions were not input into the model for Kilns 1 and 2 for this case. Building dimensions were included for Kiln 3, which due to its proximity to Kiln 3 and 4 ESP, has the potential to downwash in all directions. The results of each case were reviewed and highest annual and highest, second-highest short-term impacts were identified.

Impacts on plant property, previously reported in the PSD application, were eliminated from consideration. Only those impacts affecting ambient air (not on the limited access Tarmac property) were reported for comparison to PSD increments and AAQS. The extent of Tarmac's plant property is shown in Figure C-2. Distance and direction to plant property relative to Kiln 2 are presented in Table C-1. (Note that in Figure 2-2 of the application,

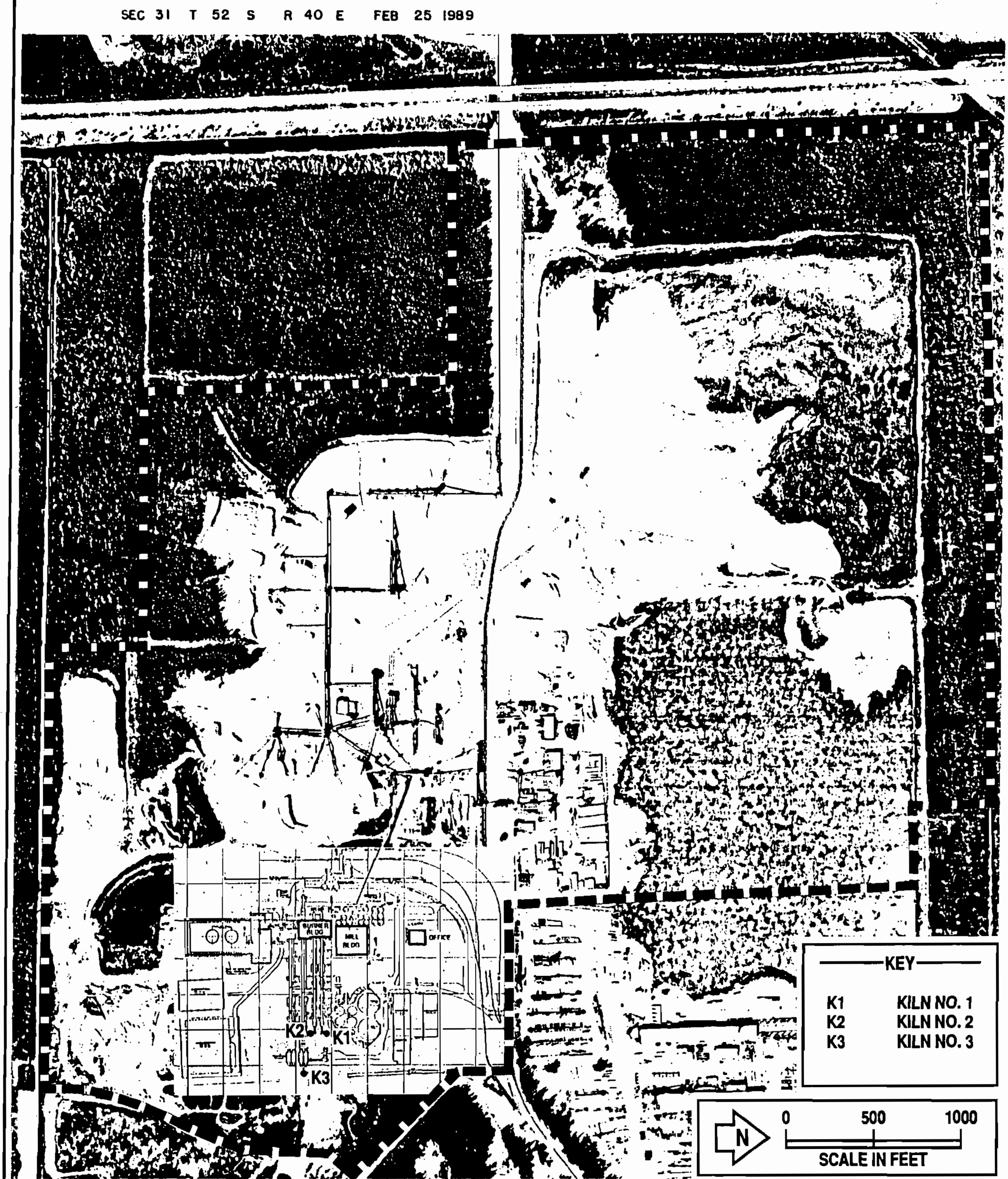

Figure C-2 PLOT PLAN AND PLANT PROPERTY BOUNDARY OF TARMAC FACILITY

KBN

Table C-1. Plant Property Receptors Used in the Modeling Analysis

Direction* (°)	Distance* (m)	Direction* (°)	Distance* (m)
10	336	190	461
20	230	200	470
30	211	210	509
40	211	220	576
50	211	230	701
60	221	240	739
70	230	250	835
80	202	260	1,094
90	192	270	1,085
100	192	280	1,114
110	211	290	1,613
120	211	300	1,766
130	278	310	1,766
140	250	320	1,488
150	221	330	374
160	326	340	346
170	461	350	336
180	451	360	326

*Relative to Kiln 2 stack location.

the north arrow was incorrectly oriented. Figures C-1 and C-2 are correct as shown.

Preliminary modeling showed that maximum impacts would be due to downwash conditions within several hundred meters of Kiln 2. Therefore, a less extensive receptor grid was used in this modeling analysis than in the original PSD application. The ring distances presented in the PSD application were retained, except that 2.5 km was the furthest downwind distance considered.

Tarmac's property boundaries are restricted by physical barriers, inaccessibility, no-trespassing signs, and guard gates. Security patrols the plant area to provide further restriction to the public. The northern, northeastern, and northwestern property boundaries are all protected by canals or lakes. In the southwest portion of the property, Tarmac's property abuts the Florida East Coast (FEC) railway property. Although no fence is located along this property, there is no access to the property by roadway, and the terrain is rugged. The FEC property in this area is bordered by canals on the west and south, further restricting public access.

Tarmac's property to the south of the kiln facilities is bordered by a canal. To the southeast, there is no access to the property by roadway. FEC property also abuts this boundary. Access roads to the southeast and northeast have guard gates. In summary, access to the Tarmac facility is difficult, with restrictions provided by water bodies, spoil piles, guards, restricted signs, and patrols.

C.2 REVISED SO_2 MODELING RESULTS

C.2.1 KILN 2 ONLY

The increase in SO_2 emissions due to Kiln 2 coal conversion, from Table 2-1 of the PSD application, is 354.7 lb/hr. The maximum impacts due to this increase are as follows: 162 $\mu g/m^3$, 3-hour; 54 $\mu g/m^3$, 24-hour; and

3.6 $\mu g/m^3$, annual average. These concentrations were obtained by rationing the maximum predicted impacts due to the proposed SO_2 emission rate for Kiln 2 (400 lb/hr), presented in Table C-2. The impacts due to the increase are above significance levels established by EPA and FDER; therefore, further modeling analysis is required for SO_2 to demonstrate compliance with PSD increments and AAQS.

C.2.2 PSD CLASS II INCREMENT ANALYSIS

Maximum SO_2 concentrations predicted from the screening analysis for comparison to the PSD Class II increments are presented in Table C-3. The results reflect impacts due to all increment consuming sources, which include Kiln 2 and Kiln 3 at Tarmac. The maximum PSD increment consumption values are well below the allowable increments. Based on the receptor spacing utilized in the modeling analysis, no refinements of the PSD Class II increment consumption values were necessary.

A summary of the maximum SO_2 PSD Class II increment consumption concentrations predicted in the analysis are presented in Table C-4. The maximum 3-hour average SO_2 PSD Class II increment consumption due to all increment consuming sources is predicted to be 162 $\mu g/m^3$, which is 32 percent of the maximum allowable PSD Class II increment of 512 $\mu g/m^3$, not to be exceeded more than once per year.

The maximum 24-hour average SO_2 PSD Class II increment consumption due to all sources is predicted to be 55 $\mu g/m^3$, which is 60 percent of the maximum allowable PSD Class II increment of 91 $\mu g/m^3$, not to be exceeded more than once per year. This maximum impact occurs at a receptor very close to the facility (300 m), and is a result of downwash conditions.

The maximum annual average SO_2 PSD Class II increment consumption is predicted to be 5.1 $\mu g/m^3$, which is 26 percent of the maximum allowable PSD Class II increment of 20 $\mu g/m^3$.

Table C-2. Maximum Predicted SO_2 Concentrations from the Screening Analysis Due to Kiln 2 Only at 400 lb/hr

Averaging Period	Maximum Concentration ($\mu g/m^3$)	Receptor Location* Direction (°)	Receptor Location* Distance (km)	Period Julian Day	Period Hour Ending	Period Year
3-Hour+	129	150	0.300	53	15	1982
	183	130	0.300	61	3	1983
	144	150	0.300	310	3	1984
	155	150	0.300	342	24	1985
	155	150	0.300	108	3	1986
24-Hour+	33	150	0.300	351	--	1982
	61	130	0.300	61	--	1983
	41	150	0.300	5	--	1984
	44	150	0.300	77	--	1985
	41	150	0.300	28	--	1986
Annual	4.1	320	1.488	--	--	1982
	2.9	310	1.766	--	--	1983
	2.9	310	1.766	--	--	1984
	3.9	150	0.300	--	--	1985
	3.5	150	0.300	--	--	1986

*Relative to the location of the Kiln 2.
+Highest, second-highest concentrations predicted for this averaging period.

Table C-3. Maximum Predicted SO_2 Concentrations from the Screening Analysis for Comparison to PSD Class II Increments

Averaging Period	Maximum Concentration ($\mu g/m^3$)	Receptor Location* Direction (°)	Receptor Location* Distance (km)	Period Julian Day	Period Hour Ending	Period Year
3-Hour+	123	150	0.300	53	15	1982
	162	130	0.300	61	3	1983
	128	150	0.300	310	3	1984
	137	150	0.300	342	24	1985
	137	150	0.300	108	3	1986
24-Hour+	40	150	0.300	11	--	1982
	55	130	0.300	61	--	1983
	38	130	0.300	328	--	1984
	43	330	0.374	325	--	1985
	44	150	0.374	80	--	1986
Annual	5.1	320	1.488	--	--	1982
	4.5	0.300	1.766	--	--	1983
	4.0	310	1.766	--	--	1984
	4.8	0.150	0.300	--	--	1985
	4.2	0.150	0.300	--	--	1986

*Relative to the location of the Kiln 2.
+Highest, second-highest concentrations predicted for this averaging period.

Note: Concentrations remain unchanged if the impacts of the proposed combined cycle units and Units 4 and 5 at FPL Fort Lauderdale are not considered in the modeling analysis.

Table C-4. Maximum Predicted SO_2 Concentrations for Comparison to PSD Class II Increments

Averaging Period	Maximum Concentration ($\mu g/m^3$)	Receptor Location* Direction (°)	Receptor Location* Distance (km)	Period Julian Day	Period Hour Ending	Period Year	PSD Class II Increment
SO_2 Concentrations							
3-Hour+	162	130	0.300	61	12	1983	512
24-Hour+	55	130	0.300	61	--	1983	91
Annual	5.1	320	1.488	--	--	1982	20

*Relative to the location of Kiln 2.

+Highest, second-highest concentrations predicted for this averaging period.

Based upon these results, operation of Kiln 2 on coal, in conjunction with all other PSD increment consuming sources, will consume less than 60 percent of the allowable Class II increments. Thus, there is PSD increment available for significant future growth in the area. As discussed in Section 6.0 of the application, the PSD Class II analysis was conducted both with and without the planned FPL Lauderdale Repowering Project. Maximum increment consumption values near Tarmac did not change as a result of the planned FPL facility. This indicates that other nearby sources (i.e., Tarmac and Dade County Resource Recovery) are the primary contributors to the Class II increment consumption values.

C.2.3 AAQS ANALYSIS

The maximum 3-hour, 24-hour, and annual average total SO_2 concentrations predicted from the screening analysis are presented in Table C-5. The total concentrations were determined from the impacts of the modeled sources added to the background concentration. These results show that the maximum SO_2 concentrations due to all sources are well below the AAQS for all averaging periods. Based upon the low predicted values, no refinements of these concentrations were performed.

The maximum 3-hour average SO_2 concentration due to all sources is predicted to be 254 $\mu g/m^3$, which is 20 percent of the Florida AAQS of 1300 $\mu g/m^3$, not to be exceeded more than once per year. The maximum 24-hour average SO_2 concentration due to all sources is predicted to be 71 $\mu g/m^3$, which is 27 percent of the Florida AAQS of 260 $\mu g/m^3$, not to be exceeded more than once per year. The maximum annual average SO_2 concentration due to all sources is predicted to be 14 $\mu g/m^3$, which is 23 percent of the Florida AAQS of 60 $\mu g/m^3$.

The Dade County Department of Environmental Resources Management, Environmental Planning Division has developed the following AAQS for SO_2 that must not be exceeded in any part of Dade County:

Table C-5. Maximum Predicted Total SO_2 Concentrations from the Screening Analysis for Comparison to AAQS

	Concentration ($\mu g/m^3$)			Receptor Location*		Period		
		Total Due To						
Averaging Period	Total	Modeled Sources	Background	Direction (°)	Distance (km)	Julian Day	Hour Ending	Year
3-hour+	243	228	15	20	2.500	28	24	1982
	220	205	15	10	2.500	277	21	1983
	199	184	15	220	2.500	284	3	1984
	219	204	15	360	2.500	156	24	1985
	254	239	15	350	2.500	130	24	1986
24-hour+	64	56	8	240	2.000	325	--	1982
	71	63	8	130	0.300	61	--	1983
	64	56	8	240	2.500	284	--	1984
	66	58	8	350	2.500	337	--	1985
	61	53	8	150	0.300	14	--	1986
Annual	14	10.5	3	320	1.488	--	--	1982
	12	8.9	3	300	1.766	--	--	1983
	12	8.8	3	310	1.766	--	--	1984
	13	10.1	3	150	0.300	--	--	1985
	12	9.4	3	150	0.300	--	--	1986

*Relative to the location of Kiln 2.
+Highest, second-highest concentrations predicted for this averaging period.

Note: AAQS are 1,300 ug/m^3, 3-hour
260 ug/m^3, 24-hour
60 ug/m^3, annual

3-Hour Average--350 $\mu g/m^3$
24-Hour Average--110 $\mu g/m^3$
Annual Average--25 $\mu g/m^3$

The 3- and 24-hour average AAQS may be exceeded once per year. As shown in Table C-5, none of the predicted concentrations exceed the Dade County AAQS.

C.2.4 CLASS I AREA ANALYSIS

The results of the PSD Class I area modeling analysis for the Everglades National Park are presented in Table C-6. The modeling analysis evaluated a number of receptors along the boundary of the Class I area.

As shown in Table C-6, total Class I PSD increment consumption concentrations for SO_2 are below the Class I increments for all averaging times. The maximum 3-hour increment consumption is predicted to be 18 $\mu g/m^3$, compared to the Class I increment of 25 $\mu g/m^3$. The maximum predicted 24-hour increment consumption for SO_2 is 4.5 $\mu g/m^3$, which is below the allowable increment of 5 $\mu g/m^3$. These maximum increment consumption values are due to the effects of two increment consuming sources located in Dade County: Tarmac Florida (cement plant) and Dade County Resource Recovery (MSW incinerator). The proposed Lauderdale Repowering Project does not contribute to these maximum increment consumption values. This value was further refined using a refined receptor grid with 100 m spacing along the boundary of the Class I area. The resulting 24-hour increment consumption was 4.7 $\mu g/m^3$ (1983, Day 178).

The maximum predicted annual SO_2 increment consumption concentration in the Class I area is predicted to be 0.56 $\mu g/m^3$. This value is well below the allowable Class I increment of 2 $\mu g/m^3$ for SO_2.

To demonstrate the effects the proposed Kiln 2 Coal Conversion will have on the Class I area, the modeling analysis evaluated the impacts of Kiln 2

Table C-6. Maximum Predicted SO_2 Concentrations for Comparison to PSD Class I Increments

Averaging Period	Maximum Concentration (ug/m^3)	Period Julian Day	Period Hour Ending	Period Year	PSD Class I Increment
3-Hour*	15	317	12	1982	25
	16	266	9	1983	
	16	69	24	1984	
	18	150	9	1985	
	12	251	24	1986	
24-Hour*	3.9	291	--	1982	5
	4.5	303	--	1983	
	3.8	268	--	1984	
	3.7	256	--	1985	
	4.1	349	--	1986	
Annual	0.56	--	--	1982	2
	0.53	--	--	1983	
	0.52	--	--	1984	
	0.49	--	--	1985	
	0.54	--	--	1986	

*Highest, second-highest concentrations predicted for this averaging period.

only. The results of this analysis are presented in Table C-7. As shown, the maximum Class I impacts due to Kiln 2 only are 7.6 $\mu g/m^3$, 3-hour, 1.8 $\mu g/m^3$, 24-hour, and 0.17 $\mu g/m^3$, annual average. These values are less than 40 percent of the Class I increments.

Maximum total SO_2 concentrations predicted in the Class I area due to all sources are presented in Table C-8. These concentrations include the estimated background concentration for the Tarmac area. As shown, the maximum concentrations are predicted to be: 197 $\mu g/m^3$, 3-hour average; 53 $\mu g/m^3$, 24-hour average; and 10.0 $\mu g/m^3$, annual average. These maximum impacts are 20 percent of the AAQS or less.

C.3 ADDITIONAL IMPACT ANALYSIS

The revised SO_2 modeling analysis demonstrates insignificant changes in total SO_2 air quality impacts in the Tarmac area and in the Class I area, compared with the original modeling results. Therefore, the additional impact analysis for SO_2 contained in the application is still applicable.

Table C-7. Maximum Predicted SO_2 Concentrations for Comparison to PSD Class I Increments Due to Kiln 2 Only at 400 lb/hr

Averaging Period	Maximum Concentration (ug/m^3)	Period Julian Day	Period Hour Ending	Period Year	PSD Class I Increment
3-Hour*	7.1	281	21	1982	25
	7.6	138	6	1983	
	6.8	260	24	1984	
	6.7	297	3	1985	
	6.2	221	3	1986	
24-Hour*	1.4	292	--	1982	5
	1.8	290	--	1883	
	1.4	227	--	1984	
	1.2	229	--	1985	
	1.3	303	--	1986	
Annual	0.17	--	--	1982	2
	0.14	--	--	1983	
	0.15	--	--	1984	
	0.13	--	--	1985	
	0.15	--	--	1986	

*Highest, second-highest concentrations predicted for this averaging period.

Table C-8. Maximum Total Predicted SO_2 Concentrations for the Everglades NP Class I Area

Averaging Period	Concentration ($\mu g/m^3$) Total	Total due to Modeled Sources	Total due to Background	Year	AAQS
3-Hour*	163	148	15	1982	1,300
	197	182	15	1983	
	185	170	15	1984	
	171	156	15	1985	
	169	154	15	1986	
24-Hour*	49	41	8	1982	260
	51	43	8	1983	
	51	43	8	1984	
	53	45	8	1985	
	44	36	8	1986	
Annual	10.0	7.0	3	1982	60
	9.3	6.3	3	1983	
	10.0	7.0	3	1984	
	9.1	6.1	3	1985	
	9.1	6.1	3	1986	

*Highest, second-highest concentrations predicted for this averaging period.

APPENDIX D

PSD ANALYSIS FOR NO_x

PSD ANALYSIS FOR NO_x

D.1 NO_x AIR QUALITY IMPACT ANALYSIS

The results of the SO_2 analysis for the burning of coal in Kiln 2 were scaled to determine maximum annual NO_x impacts. Maximum annual SO_2 impacts due to Kiln 2 only at 400 lb/hr were 4.1 $\mu g/m^3$. The increase in NO_x emissions for Kiln 2, due to conversion from gas to coal, is 51 lb/hr (169.3 lb/hr minus 118.3 lb/hr). The calculated maximum annual NO_x impact due to this increase is therefore 0.52 $\mu g/m^3$. By the same methodology, the maximum annual NO_x impact in the Class I area due to Kiln 2 coal conversion is 0.02 $\mu g/m^3$. The significant impact level established by FDER and EPA is 1.0 $\mu g/m^3$; therefore, no further modeling analysis for NO_x is required.

The maximum predicted NO_x impact due to the increase is also below the NO_x de minimis monitoring concentration of 14 $\mu g/m^3$, annual average. Therefore, Tarmac may be exempted from the preconstruction PSD monitoring requirements for NO_x.

D.2 BACT ANALYSIS FOR NO_x

The State of California, South Coast Air Quality Management District (SCAQMD) was contacted (Mr. Bill Dennison) to inquire as to NO_x control technologies for cement kilns. Mr. Dennison stated that to his knowledge there were no cement kilns operating or permitted in California with add-on NO_x control (i.e., selective catalytic or nonselective catalytic reduction). Review of the BACT/LAER Clearinghouse publications also did not reveal any determinations that required add-on NO_x control. All newly permitted cement kilns were "dry" process kilns, which employed precalciners or calciners ahead of the kiln. NO_x controls utilized were low furnace temperatures and low excess air.

EPA conducted a review of the NSPS for Portland plants in 1985 (Portland Cement Plants--Background Information for Proposed Revisions to Standards). This review revealed only one study that addressed NO_x reduction technologies for Portland cement plants firing coal (KVB, 1982). This report presented the results of a testing program on a subscale cement kiln. Only natural gas was fired in the kiln. It was concluded from the test data that the kiln was not representative of a full-scale production kiln. Therefore, the study is inconclusive. Nevertheless, the following general observations were noted.

1. Fly ash injection (dust insufflation) was the most effective means of reducing NO_x emissions.
2. Lowered excess air was not practical to control NO_x, since the cement industry already maintains the lowest practical oxygen levels in most kilns (1.5 to 2.0 percent O_2).

In another study by KVB, Inc. (1983), a wet process, coal-fired cement kiln was tested for NO_x emissions. This testing showed a 38 percent reduction in NO_x when the oxygen level was lowered from 2.9 percent to 1.5 percent. However, a simultaneous increase of 47 percent in SO_2 emission occurred. Excess air was the only process variable investigated in the full-scale testing. Further testing on a subscale cement kiln was performed, but only generalized conclusions regarding NO_x control measures could be made.

In a third study (KVB, 1984), a subscale cement kiln was evaluated for NO_x emissions. Several control techniques were analyzed, including flue gas recirculation, combustion air preheat, primary air velocity, primary/secondary air ratio, and oxygen level. Because data obtained from the study were limited, only the following general conclusions could be drawn.

1. NO_x emissions are very sensitive to excess O_2 levels.
2. Flue gas recirculation is more effective with gas firing than with coal firing.
3. Primary air dilution with inert gas was the most effective combustion modification for NO_x reduction firing coal.

Unfortunately, SO_2 emissions were not measured and hence, no assessment of NO_x/SO_2 relationships was performed.

In summary, there are few data available on NO_x combustion modification techniques for full-scale wet process cement kilns. In the one study which employed a full-scale kiln, only the oxygen level in the kiln was evaluated, and the data show a significant increase in SO_2 emissions when oxygen is lowered to reduce NO_x emissions. Significantly more research and application to a full-scale cement kiln is needed before combustion modification techniques can be applied successfully to cement kilns. Tarmac will minimize the oxygen level in Kiln 3 to the extent possible, while monitoring clinker quality and minimizing SO_2 emissions.

The most useful information concerning potential NO_x emission reductions through process controls is the experience Tarmac has gained from operation of Kiln 3 on coal. Although Kiln 2 may operate somewhat differently because of its smaller size and different operating parameters, the following general statements are believed to be applicable.

1. NO_x emissions are inversely related to SO_2 emissions (i.e., as NO_x is reduced, SO_x increases).
2. NO_x emissions are reduced by lowering flame temperature and oxygen level (low excess air) in the kiln.

In a wet process kiln, such as Kiln 2, temperature is critical and high enough temperatures must be a maintained to calcine the raw feed. If temperature is not maintained, product quality is reduced.

As a result, NO_x emissions from Kiln 2 can be reduced only by adjusting process parameters, but not so much as to affect clinker quality. Also, SO_2 emissions will increase when reducing NO_x emissions. Tarmac's objective for Kiln 2 will be to minimize SO_2 emissions while simultaneously achieving the proposed NO_x emission limit of 6.77 lb/ton clinker.

REFERENCES

KVB, Inc. 1984. Combustion Modification Tests on a Subscale Cement Kiln for NO_x Reduction. EPA-600/7-84-075.

KVB, Inc. 1983. Evaluation of Combustion Variable Effects on NO_x Emissions From Mineral Kilns. EPA-600/7-83-045.

KVB, Inc. 1982. Application of Advanced Combustion Modifications to Industrial Process Equipment: Subscale Test Results. EPA-600/7-82-021.

~~EPA did not mention that NSPS for PM will apply due to coal modification (change in method of operation with increase in emissions)~~

They did in their Dec 13 letter

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

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

RECEIVED
OCT 23 1989
DER-BAQM

4APT-APB-cdw

OCT 18 1989

Ms. Patricia G. Adams, Planner
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. (PSD-FL-142)

Dear Ms. Adams:

We have received your September 15, 1989, letter transmitting the Prevention of Significant Deterioration (PSD) application submitted by Tarmac Florida, Inc., for the conversion of kiln No. 2 to coal at the facility's existing Portland cement plant. As discussed on October 3, 1989, between Mr. John Reynolds of the Florida Department of Environmental Regulation (DER) and Mark Armentrout of my staff, we are offering the following comments.

Applicability Determination

The source has incorrectly performed PSD applicability determinations for particulate matter (PM/PM_{10}), oxides of nitrogen (NO_x), sulfur dioxide (SO_2) and volatile organic compounds (VOC). The underlying flaw in all of these determinations is in the calculation of baseline (historic actual) emissions. In the case of PM emissions, the source concluded that baseline emissions are 31.3 lb/hr. They justify this value by stating that the highest actual source test emissions, as determined by a March 1982 test, resulted in a PM emission rate of 26.3 lb/hr which is close to the current allowable of 31.3 lb/hr. As you are aware, baseline emissions must be calculated based on the two-year average of actual emissions under representative operating conditions. We request that the facility amend their application by including the results of all PM source tests during the representative two-year period, recalculating baseline emissions, and performing a PSD review, if applicable. Furthermore, and as discussed below, the applicant must submit production records for the baseline period which indicate the usage of oil and gas in the kiln and annual hours of operation. It also appears that the applicant has not included the fugitive emissions increases (new coal mill) and increases from the No. 3 kiln coal handling equipment in the PM applicability determination, i.e., in the new allowable PM emission rates.

Regarding the baseline emissions calculation for SO_2 and NO_x, the applicant again used data unrepresentative of average actual emissions. The source should be required to supply actual fuel usage data and annual hours of operation in order to properly establish baseline emissions.

The baseline emission calculations for VOC also were based on maximum, worst case conditions rather than a two-year average of actual emissions. After actual fuel usage data and plant operation data is supplied for the two-year baseline period, the baseline VOC emissions should be recalculated. If the potential VOC increase resulting from the proposed coal conversion is above 40 tpy, the nonattainment new source review regulations will apply.

BACT Determination for SO_2

The applicant has requested that best available control technology (BACT) for SO_2 be their existing electrostatic precipitator/kiln system coupled with a 400 lb/hr emission limit. This represents a 36 percent SO_2 removal efficiency based upon the potential SO_2 emissions of 623.7 lb/hr. In Appendix A, actual stack test results for the No. 2 kiln indicate that the SO_2 removal inherent in the process is 91.3 percent. Actual SO_2 emissions while burning coal are calculated to be 56.7 lb/hr or about 2.27 lb SO_2 per ton of clinker (based on rated capacity). Note also that actual testing on No. 3 kiln indicates a 98.7% SO_2 removal efficiency. The current allowable emission rate for SO_2 from the No. 3 kiln is 4.6 lb SO_2 per ton of clinker. This limit is being achieved. Since actual SO_2 removal efficiency has already been established for the No. 2 kiln, the BACT determination should be based on this degree of reduction. Further, the feasibility of utilizing lower sulfur coals should be analyzed.

Air Quality Analysis

1. On page 6-14, Building Downwash Effects, the kiln should be modeled to include effects of downwash. Alternatively, the applicant could present a detailed drawing of the ESP with supporting documentation showing why the source is not subject to a building wake effects analysis.

2. A description of the property line is needed showing the area that is fenced (precluding public access). Note: The property would not be exempt unless public access is restricted.

3. A copy of the modeling input data and output tables should be submitted.

We appreciate the opportunity to comment on this permit application. It would also be appropriate to submit this application to the Federal Land Manager since the proposed facility is only 30 km from the Everglades National Park. If you have any questions, please contact Mark Armentrout of my staff at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

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

cc: Scott Quaas, Environmental Specialist
Tarmac Florida Inc.
P.O. Box 2998
Hialeah, Florida 33012

John Bunyak
Air Quality - Permit Review
National Park Service
P.O. Box 25287
Denver, Colorado 80225

copied: C. Reynolds
B. Andrews
M. Linn
J. Goldman
P. Story
C-F/BT

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Bob Martinez, Governor   Dale Twachtmann, Secretary   John Shearer, Assistant Secretary

October 4, 1989

I. Goldman 10/27
Revision of BACT and permit to construct
Lone Star Pensacola
PSD - FL050
Nov. 9, 1984

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Scott Quaas
Environmental Specialist
Tarmac Florida, Inc.
P. O. Box 2998
Hialeah, Florida 33012

Dear Mr. Quaas:

Re: Proposed Modification - Kiln No. 2 Coal Conversion
PSD-FL-142 - AC 13-169901

This is to provide notice that additional information is required for preliminary review of the above application. EPA Region IV requests a reassessment of baseline emissions, fugitive emissions, redetermination of BACT for SO_2, and revision of the air quality analysis to include downwash effects. Rather than duplicating EPA's concerns in this letter, we have enclosed a faxed copy of their draft letter to DER dated October 3, 1989. In addition to the EPA's questions, the DER meteorological staff will require an air quality impact analysis for Biscayne National Park (treated as if a Class I area) including a Level I visibility analysis.

If you have any questions, please call John Reynolds at (904)488-1344 or write to me at the above address.

Sincerely,

C. H. Fancy

C. H. Fancy, P.E.
Bureau of Air Regulation

CHF/JR/t

cc: M. Armentrout, EPA
I. Goldman, SE District
P. Wong, DCDERM
D. Buff, P.E., KBN
C. Shaver, NPS

enclosure

BEST AVAILABLE COPY

DRAFT

OCT 3 1989

4APT-APB-cdw

Ms. Patricia G. Adams, Planner
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. (PSD-FL-142)

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Applicability Determination

The source has incorrectly performed PSD applicability determinations for particulate matter (PM/PM_{10}), oxides of nitrogen (NO_x), sulfur dioxide (SO_2) and volatile organic compounds (VOC). The underlying flaw in all of these determinations is in the calculation of baseline (historic actual) emissions. In the case of PM emissions, the source concluded that baseline emissions are 31.3 lb/hr. They justify this value by stating that the highest actual source test emissions, as determined by a March 1982 test, resulted in a PM emission rate of 26.3 lb/hr which is close to the current allowable of 31.3 lb/hr. As you are aware, baseline emissions must be calculated based on the two-year average of actual emissions under representative operating conditions. We request that the facility amend their application by including the results of all PM source

31 lb/hr O.K. based on actual testing

tests during the representative two-year period, recalculating baseline emissions, and performing a PSD review, if applicable. Furthermore, and as discussed below, the applicant must submit production records for the baseline period which indicate the usage of oil and gas in the kiln and annual hours of operation. It also appears that the applicant has not included the fugitive emissions increases (new coal mill) and increases from the No. 3 kiln coal handling equipment in the PM applicability determination, i.e., in the new allowable PM emission rates.

Regarding the baseline emissions calculation for SO_2 and NO_x, the applicant again used data unrepresentative of average actual emissions. The source should be required to supply actual fuel usage data and annual hours of operation in order to properly establish baseline emissions.

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had only one test.

BACT Determination for SO_2

The applicant has requested that best available control technology (BACT) for SO_2 be their existing electrostatic precipitator/kiln system coupled with a 400 lb/hr emission limit. This represents a 36 percent SO_2 removal efficiency based upon the potential SO_2 emissions of 623.7 lb/hr. In Appendix A, actual stack test results for the No. 2 kiln indicate that the SO_2 removal inherent in the process is 91.3 percent. Actual SO_2 emissions while burning coal are calculated to be 56.7 lb/hr or about 2.27 lb SO_2 per ton of clinker (based on rated capacity). Note also that actual testing on No. 3 kiln indicates a 98.7% SO_2 removal efficiency. The current allowable emission rate for SO_2 from the No. 3 kiln is 4.6 lb SO_2 per ton of clinker. This limit is being achieved. Since actual SO_2 removal efficiency has already been established for the No. 2 kiln, the BACT determination should be based on this degree of reduction. Further, the feasibility of utilizing lower sulfur coals should be analyzed. The applicant has also dismissed the use of a baghouse, which achieves greater SO_2 removal, based upon a conclusory statement that it is economically prohibitive. This economic showing must be included in the BACT determination.

Air Quality Analysis

1. On page 6-14, Building Downwash Effects, the kiln should be modeled to include effects of downwash. Alternatively, the applicant could present a detailed drawing of the ESP with supporting documentation showing why the source is not subject to a building wake effects analysis.

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Sincerely yours,

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

cc: Scott Quaas, Environmental Specialist
Tarmac Florida Inc.
P.O. Box 2998
Hialeah, Florida 33012

John Bunyak
Air Quality - Permit Review
National Park Service
P.O. Box 25287
Denver, Colorado 80225

MARMENTROUT/CDW/10/3/89 DOC: 21-PA-BM

ARMENTROUT__________ ARONSON___________ MILLER____________

BEST AVAILABLE COPY

TARMAC FLORIDA, INC.

P.O. Box 2998
Hialeah, Florida 33012

August 31, 1989

1989 SEP -5 AM 9:37

DER-MAIL ROOM

Mr. Clair Fancy, P.E.
Division of Air Resources Management
Fla. Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: **Application For Major Modification**
Pennsuco Cement & Supply
Permit No. AO13-157297

Dear Mr. Fancy:

Tarmac is pleased to submit an *Application To Operate/Construct Air Pollution Sources* for the modification of Kiln 2 to burn coal as primary fuel. Included as part of the submittal is a PSD application, BACT evaluation, and air quality analysis. Additionally, a check in the amount of $5000.00 is enclosed for the permit processing fee.

Tarmac looks forward to working with you and your staff on this project. Please do not hesitate to contact me or Scott Quaas of this office regarding any questions or further information you may need. The telephone number is (305)823-8800.

Sincerely,

Albert Townsend

Albert Townsend
Manager
Real Estate & Environmental

cc: K. Riveira
D. Bailey
S. Quaas
D. Buff - KBN Engineering
S. Brooks - FDER, SE Dist.
[illegible] P. Wong, DERM
[illegible]

PSD PERMIT APPLICATION
KILN 2 COAL CONVERSION
TARMAC FLORIDA, INC.
AUGUST 1989

BEST AVAILABLE COPY

$5000 pd.
9-5-89
Recpt. 117657

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301

AC13-164901
PSD-FL-142

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Portland Cement Mfg. [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [ ] Operation [X] Modification

COMPANY NAME: TARMAC FLORIDA, INC. COUNTY: Dade

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) Kiln No. 2

SOURCE LOCATION: Street 11000 NW 121 Way City Medley

UTM: East 17 - 562.8 North 2861.7

Latitude 25 ° 52 ' 30 "N Longitude 80 ° 22 ' 30 "W

APPLICANT NAME AND TITLE: Scott Quaas -- Environmental Specialist

APPLICANT ADDRESS: P.O. Box 2998, Hialeah, Florida 33012

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of TARMAC FLORIDA, INC.

I certify that the statements made in this application for a construction/modification permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: [signature]

Scott Quaas - Environmental Specialist
Name and Title (Please Type)

Date: 8/31/89 Telephone No. (305)823-8800

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been ~~designed~~/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

REGISTERED ENGINEER · DAVID A. BUFF · CERTIFICATE No. 19011 · STATE OF FLORIDA

Signed David A. Buff

David A. Buff
Name (Please Type)

KBN Engineering & Applied Sciences, Inc.
Company Name (Please Type)

P.O. Box 14288, Gainesville, Florida 32604
Mailing Address (Please Type)

Florida Registration No. 19011 Date: 8/31/89 Telephone No. (904) ~~375-8000~~ 331-9000

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Project is for the conversion of the kiln #2 system to coal and will include a 12,000 pound per hour minimum direct fired coal system. No additional control equipment will be required. Oil will remain for startup/backup fuel. Project will result in full compliance.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction ASAP Completion of Construction 18 months

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

NA - no additional control systems

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

AO13-157297 Issued: 2 February 1989 Expires: 15 November 1993

BD-FL-050 (1980) Kiln conversion for No. 3 Existing in 1971?

Kiln No. 2 - orig. constr. prior to 1977

Expanded 1974
Maule Industries - 1975
Lone Star Industries 1977/1978
- Pennsuco.

1979 to 1982 - shut down

Tarmac 1985

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;

if power plant, hrs/yr _____; if seasonal, describe: ____________________

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? YES

   a. If yes, has "offset" been applied? NO

   b. If yes, has "Lowest Achievable Emission Rate" been applied? NO

   c. If yes, list non-attainment pollutants. ozone

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. ~~YES~~

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. YES

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? NO

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? NO

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? NO

   a. If yes, for what pollutants? ____________________

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants Type	Contaminants % Wt	Utilization Rate - lbs/hr	Relate to Flow Diagram
limestone	particulates		71,280	1
ash & mineral aggregates	particulates		8,505	1
sand	particulates		1,215	1

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 81,000
2. Product Weight (lbs/hr): 50,000

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1] Maximum lbs/hr	Emission[1] Actual T/yr	Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission lbs/yr	Potential[4] Emission T/yr	Relate to Flow Diagram
particulates	31.30	137.10	$E=17.31P^{0.16}$	31.30			2
SO_2	400	1752	16.0 lb/t*	400			2
NO_x	169.25	741.30	6.77 lb/t*	169.25			2

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3] Calculated from operating rate and applicable standard.

[4] Emission, if source operated without control (See Section V, Item 3).

* - lb/ton clinker produced

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Koppers	particulates	±99.8%	5-100	mfg.
Electrostatic				
Precipitator				

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
coal	12,000	13,000	162.5
fuel oil (startup/backup)	1,160	1,170	162.5

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis: coal

Percent Sulfur: ≤ 2 Percent Ash: 10

Density: NA lbs/gal Typical Percent Nitrogen: ± 1.5

Heat Capacity: 12,500 BTU/lb _____ BTU/gal

Other Fuel Contaminants (which may cause air pollution): _____

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average _____ Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.

Precipitator dust is insufflated into system

Ash absorbed into clinker

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 200 ft. Stack Diameter: 8 ft.

Gas Flow Rate: 90,000 ACFM 47,000 DSCFM Gas Exit Temperature: 300 °F.

Water Vapor Content: 23 - 27 % Velocity: 29.8 FPS

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Patholog-ical)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Inciner-ated							
Uncon-trolled (lbs/hr)							

Description of Waste ______

Total Weight Incinerated (lbs/hr) ______ Design Capacity (lbs/hr) ______

Approximate Number of Hours of Operation per day ______ day/wk ______ wks/yr. ______

Manufacturer ______

Date Constructed ______ Model No. ______

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: ______ ft. Stack Diamter: ______ Stack Temp. ______

Gas Flow Rate: ______ ACFM ______ DSCFM* Velocity: ______ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) ______

Brief description of operating characteristics of control devices: ______________

____

____

____

____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

____

____

____

____

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]

2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.

3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).

4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)

5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).

6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.

7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).

8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[ ] Yes [ ] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

[ ] Yes [ ] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles: ---
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life:
6. Operating Costs:
7. Energy:
8. Maintenance Cost:
9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.
b. Diameter: ft.
c. Flow Rate: ACFM
d. Temperature: °F.
e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable use additional pages if necessary).

1.

a. Control Device:
b. Operating Principles:
c. Efficiency:[1]
d. Capital Cost:
e. Useful Life:
f. Operating Cost:
g. Energy:[2]
h. Maintenance Cost:
i. Availability of construction materials and process chemicals:
j. Applicability to manufacturing processes:
k. Ability to construct with control device, install in available space, and operat within proposed levels:

2.

a. Control Device:
b. Operating Principles:
c. Efficiency:[1]
d. Capital Cost:
e. Useful Life:
f. Operating Cost:
g. Energy:[2]
h. Maintenance Cost:
i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data

1. ____________ no. sites ____________ TSP ____________ ( ) SO^2* ____________ Wind spd/dir

Period of Monitoring ______/______/______ to ______/______/______
month day year month day year

Other data recorded ____

Attach all data or statistical summaries to this application.

*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from ____/____/____ to ____/____/____
month day year month day year

2. Surface data obtained from (location)______________________________

3. Upper air (mixing height) data obtained from (location)______________________

4. Stability wind rose (STAR) data obtained from (location)______________________

C. Computer Models Used

1. ______________________________ Modified? If yes, attach description.

2. ______________________________ Modified? If yes, attach description.

3. ______________________________ Modified? If yes, attach description.

4. ______________________________ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate	
TSP	______________________	grams/sec
SO^2	______________________	grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

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1.0 INTRODUCTION

Tarmac Florida, Inc. leases and operates a Portland cement manufacturing plant in northwest Dade County, just east of the Turnpike Extension and south of U.S. 27 (Figure 1-1). Currently, the Tarmac facility consists of three cement kilns which have valid air operating permits issued by the Florida Department of Environmental Regulation (FDER) and Dade County Environmental Resources Management (DERM). Kilns 1 and 2 are permitted to burn natural gas or No. 6 fuel oil, and each have a production capacity of 25.0 tons per hour (TPH) of clinker. Kiln 3 is a larger kiln which is permitted to burn coal, natural gas, or No. 6 fuel oil and has a capacity of 87.5 TPH clinker.

In keeping with Tarmac's longstanding policy of promoting energy efficiency and utilizing domestic fuel sources, Tarmac is now proposing to convert Kiln 2 to coal. Tarmac applied for and received a federal Prevention of Significant Deterioration (PSD) permit to convert Kilns 1, 2, and 3 to coal in 1984. However, this PSD permit was issued 4 years ago and may no longer be considered valid for conversion of Kiln 2 to coal, since this conversion was not accomplished within a reasonable time period after issuance of the permit. Furthermore, this PSD permit limited sulfur dioxide (SO_2) emissions from Kiln 2 to 125 pounds per hour (lb/hr). Based on extensive experience in burning coal in Kiln 3, this emission level is not appropriate. As a result, Tarmac is currently requesting an SO_2 emission limit of 400 lb/hr on Kiln 2 after coal conversion.

The coal conversion will increase actual emissions of certain regulated air pollutants over current emissions from Kiln 2. The U.S. Environmental Protection Agency (USEPA) and FDER have implemented regulations which require a PSD review for new or modified sources which increase air emissions above certain threshold amounts. Because the threshold amounts will be exceeded by the proposed project, the project is subject to PSD review. PSD regulations are promulgated under 40 Code of Federal Regulations (CFR) Part 52.21 and implemented through Florida's

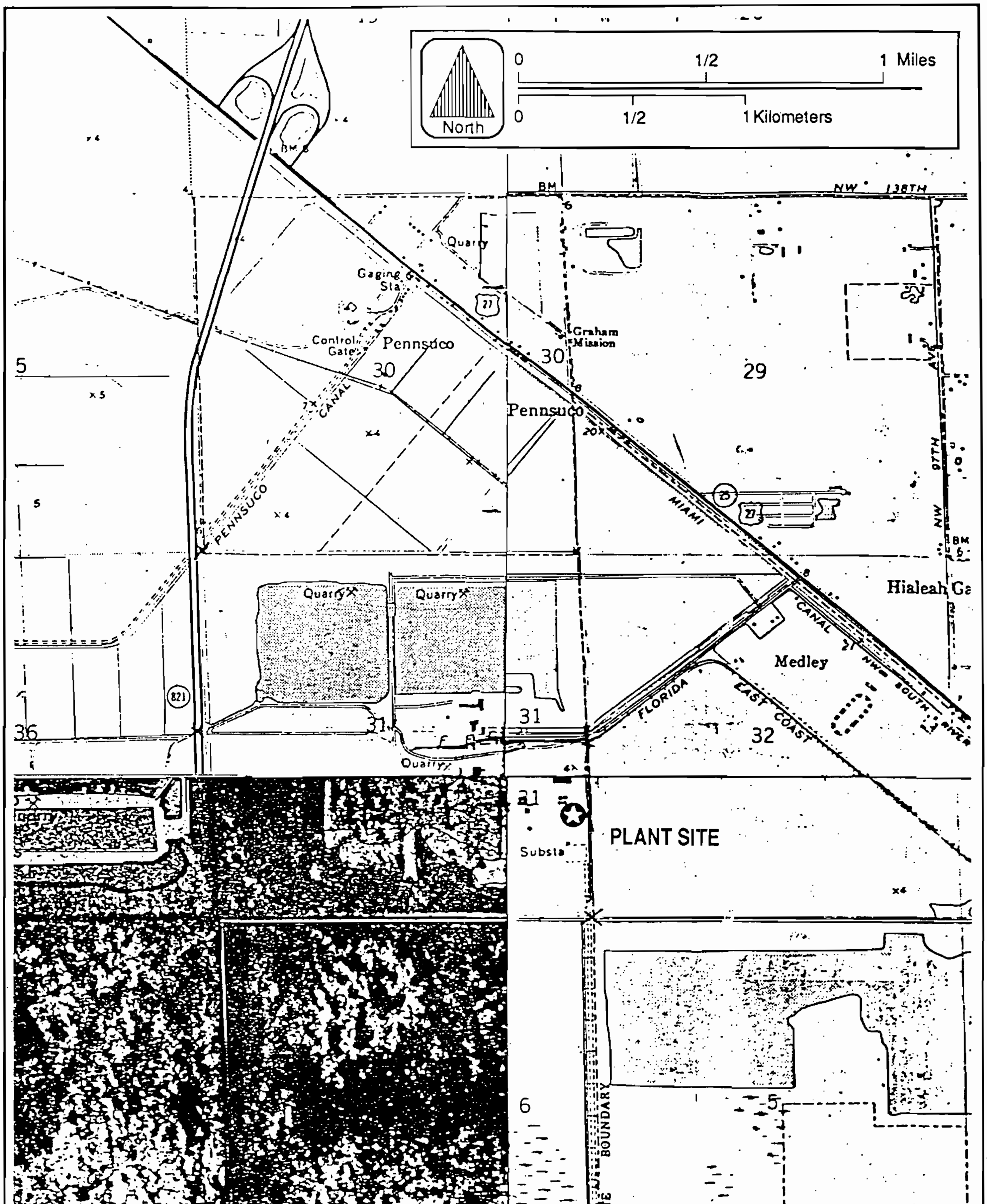

Figure 1-1 LOCATION OF TARMAC FLORIDA FACILITY

KBN

State Implementation Plan. FDER's PSD regulations are codified in Chapter 17-2.510, Florida Administrative Code (F.A.C.).

The technical information and analysis required by the federal and state PSD regulations are contained in this PSD application. The application is divided into eight major sections. Presented in Section 2.0 is a description of the facility, including air emissions and stack parameters. PSD review requirements and applicability are presented in Section 3.0. The control technology review, including the Best Available Control Technology (BACT) evaluation, is presented in Section 4.0. Air quality monitoring information is presented in Section 5.0, and the methodology and results of the impact analyses performed for the project are presented in Sections 6.0, 7.0, and 8.0.

2.0 PROJECT DESCRIPTION

2.1 PROCESS DESCRIPTION AND EMISSIONS

Tarmac is proposing to convert the existing Kiln 2 to burn coal. The kiln is currently permitted to burn natural gas and No. 6 fuel oil under FDER operating permit A013-157297. Kiln 2 has been inactive since 1982 due to low demand for cement, but work is underway for startup of the kiln on gas/oil (under the existing permit) for 1/1/90.

A flow diagram of the kiln system after coal conversion is presented in Figure 2-1. The modifications to the kiln will consist of the addition of direct-fired coal burner and the replacement of the chain system to provide better energy efficiency within the kiln. Provisions will also be made to convey raw coal from storage to a new coal mill and then to the kiln. The existing kiln feed system, clinker cooler, clinker cooler electrostatic precipitator (ESP), waste dust storage, dust insufflation system, and kiln ESP will be utilized.

The current production capacity of the kiln of 25 TPH clinker will not increase as a result of this coal conversion. Coal for Kiln 2 will be received, stored, and conveyed through the existing coal handling system for Kiln 3. This system consists of an elevated trestle for unloading bottom dump railcars, a temporary coal storage pile, an active coal storage pile, and a loading hopper for transfer to a screen and coal storage bin. Kiln 2 will have a separate coal mill, which will receive screened coal from the existing coal bin, grind it, and fire it directly into the kiln. Hot air from the existing clinker cooler will be used in the coal mill to dry the coal and pneumatically convey it to the kiln. This direct air-fired system will not have an air emission point, since the coal and air are injected directly into the kiln. Two new conveyor transfer points will be located between the coal storage bin and the new coal mill, but these will be totally enclosed. Therefore, no emissions will result from the new transfer points.

[1] Kiln Feed
[2] Kiln Stack
[3] Kiln Precipitator
[4] Kiln
[5] Waste Dust Storage
[6] Insufflated Dust
[7] Clinker Cooler
[8] Clinker
[9] Cooler Precipitator
[10] Cooler Stack
[11] Coal Storage
[12] Coal Mill

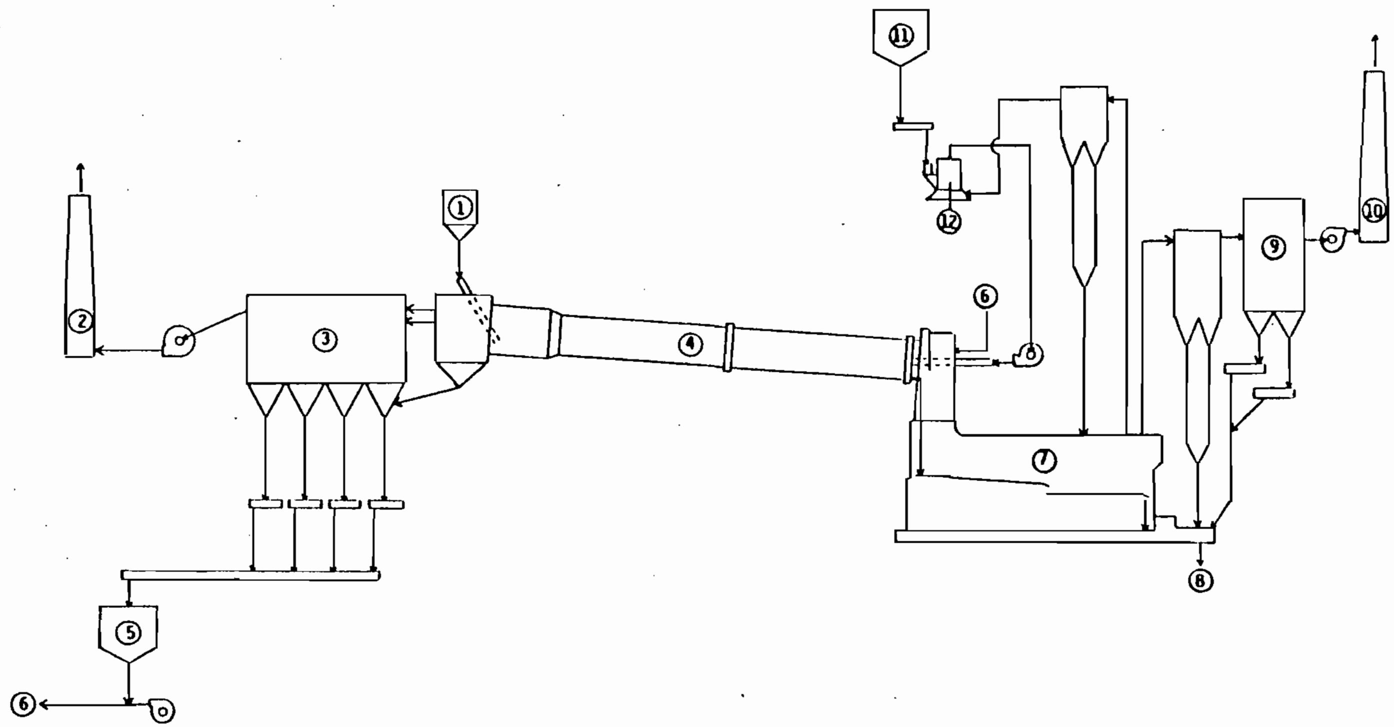

Figure 2-1 FLOW DIAGRAM FOR KILN 2

Current maximum emissions of regulated pollutants from Kiln 2 (based on gas and oil firing) are presented in Table 2-1. Maximum particulate matter-total suspended particulate [PM(TSP)] emissions are based upon the current allowable for the kiln of 31.3 lb/hr (process weight table allowable). PM(TSP) emissions from Kiln 2 have been measured as high as 26.3 lb/hr (March 1982 stack test). Therefore, it is reasonable to assume that the allowable emissions from the kiln represent actual emissions. Emissions of particulate matter with aerodynamic particle size diameter of 10 micrometers (um) or less (PM10) are based upon AP-42 data which indicate that 85 percent of PM(TSP) emissions from Portland cement kilns with ESPs are emitted as PM10 (see Appendix A).

Current SO_2 emissions from Kiln 2 are based upon gas/oil burning. SO_2 emissions tests were conducted on Kilns 1 and 2 when burning fuel oil, and the data were presented in the 1980 application to convert Kiln 2 to coal. SO_2 emissions were stated to be 45.3 lb/hr (refer to Appendix A for supportive information). This emission rate is actually much lower than emissions calculated based upon AP-42 factors for cement kilns.

Current NO_x emissions from Kiln 2 are based upon gas/oil burning. Due to the inactive status of Kiln 2, recent source test data are not available. However, a series of NO_x tests was conducted on the kiln in 1980 while burning both gas and oil (refer to Appendix A). The average of 12 tests burning gas was 4.73 lb/ton clinker, and the average of 12 tests burning oil was 6.71 lb/ton clinker. Based upon these test data, the current NO_x emissions from Kiln 2 are 6.71 lb/ton.

Specific source test data or emission factors are not available concerning carbon monoxide (CO) emissions from cement kilns. However, CO levels in the kiln must be maintained below 0.1 percent in order to eliminate explosion potential in the ESP. CO emissions can therefore be estimated from this CO level and the air flow rate through the kiln. The air flow rate for Kiln 2 when firing oil was approximately 127,000 actual cubic feet per minute (acfm). This equates to 346 lb/hr of CO emissions.

NET EMISSION INCREASE = NEW ALLOWABLE − LOWER OF OLD ACTUAL OR OLD ALLOWABLE

Table 2-1. Baseline and Future Maximum Emissions For Kiln 2 at Tarmac

Pollutant	Baseline Date	Baseline (Gas/Oil) Basis	lb/hr actual	lb/hr	TPY (Revised 11/8/89)	Future (Coal) Basis	lb/hr	lb/hr	TPY (Revised 11/8/89)	Net Increase (lb/hr)	lb/hr	TPY
Particulate Matter (TSP)	1980	Process weight table allowable	2.4	31.3	10.5	Process weight table allowable	2.9	31.3	12.6	0.0	.9	3.8
Coal Handling (TSP)							.4 / 3.3		1.7 / 14.3			
Particulate Matter (PM10)	1980	AP-42: 85% of PM(TSP) emissions	13.6 / 16.0	26.6	59.6 / 70.1	AP-42: 85% of PM(TSP) emissions	16.4	26.6	71.9	0.0		
Coal Handling (PM10)							.6 / 17.0		2.6 / 74.5		3.4 / 4.3	14.9 / 18.7
Sulfur Dioxide		Gas/oil-firing test data		~~45.3~~ 9.5	41.6	Coal firing- 16.0 lb/ton clinker (use DER standard 1.5 lb/10⁶ BTU input)	~~12.9~~ 20.3	~~400.0~~ 243.8	88.8 / 1752	~~354.7~~	234.3	1,026.2
Nitrogen Oxides		Gas/oil-firing 6.71 lb/ton clinker		167.8		Coal firing- 6.77 lb/ton clinker		169.3		1.5		
Carbon Monoxide		0.1% concentration		346.0		No increase over current (<0.1%)		346.0		0.0		
Volatile Organic Compounds		Source testing on Kiln 3		23.1		Coal firing 1.2 lb/ton clinker		30.0		6.9		
Lead		AP-42: 0.10 lb/ton clinker		2.5		AP-42: 0.10 lb/ton clinker		2.5		0.0		
Sulfuric Acid Mist		3% of SO_2 emissions		1.7		3% of SO_2 emissions		12.0		10.3		
Beryllium		0.002 lb/ton clinker		0.05		0.002 lb/ton clinker		0.05		0.0		
Other Regulated Pollutants		No data		--		No data		--		--		

Little information is available regarding emissions of volatile organic compounds (VOCs) from Portland cement kilns. However, Tarmac has recently conducted VOC testing on Kiln 3 as part of testing to burn contaminated soils (July 5, 1988, testing-- refer to Appendix A). The testing showed that the majority of VOC emissions are due to organics in the raw feed. Based upon the coal feed rate during the testing and using AP-42 emission factors for coal combustion in boilers, the contribution of coal burning to the total VOC emissions can be estimated. The emissions due to coal burning can then be subtracted from the total VOC emissions to obtain the VOC emissions due to the raw feed. The resulting VOC emission rate is 0.87 lb/ton clinker (refer to Appendix A). To obtain baseline VOC emissions due to gas/oil burning, the VOC emissions due to the raw feed must be added to VOC emissions due to fuel burning. Burning No. 6 fuel oil results in VOC emissions of 1.3 lb/hr, and total VOC emissions due to the raw feed and fuel oil burning are 23.1 lb/hr.

Baseline emissions of lead (Pb) are based upon the AP-42 factor for cement kilns of 0.10 lb/ton clinker (refer to Appendix A) and the kiln capacity of 25.0 TPH. Emission factors for sulfuric acid mist are not available. Review of the literature concerning oil and coal combustion sources indicates that approximately 3 percent of the SO_2 emissions is sulfuric acid mist. This estimate was used to calculate baseline emissions from Kiln 2.

Baseline emissions of beryllium were based upon USEPA's recent publication entitled Toxic Air Pollutant Emission Factors (USEPA, 1988a). The factor is 0.002 lb/ton clinker. Data are not available concerning the emissions of other regulated pollutants from Portland cement kilns.

Future maximum emissions of regulated pollutants from Kiln 2, after coal conversion, are also shown in Table 2-1. Future PM(TSP) and PM10 emissions will not change as a result of the conversion to coal. The existing ESP is capable of accommodating the small additional dust generated due to the ash in the coal, a majority of which will remain in the clinker and become part of the product.

Future maximum SO_2 emissions will be 400 lb/hr (16.0 lb/ton clinker produced) from Kiln 2 when burning coal with 2.0 percent sulfur content or less. This level of SO_2 emissions is for coal burning and is based upon experience with coal burning in Kiln 3. After considerable difficulty in meeting original SO_2/NO_x emission limits on Kiln 3, the SO_2 emission limit for Kiln 3 was revised to 4.6 lb/ton clinker. This limit can be met simultaneously with NO_x limits by utilizing strict control over process conditions within the kiln (combustion temperature, excess air, and dust insufflation rate). Tarmac is requesting a higher SO_2 limit for Kiln 2 because of the uncertainties associated with operation of this smaller kiln and in achieving simultaneous NO_x control. After source testing is conducted on Kiln 2 for coal burning, test data will be evaluated. Tarmac will be willing to consider a lower SO_2 emission limit at that time if the data support a reduced level.

Use reverse. Set lower limit; amend if test data show higher limit necessary.

Future maximum NO_x emissions when burning coal in Kiln 2 are 6.77 lb/ton clinker, or 169.3 lb/hr. This limit is based upon the current limit on Kiln 3 of 6.77 lb/ton clinker.

Future CO emissions from Kiln 2 when burning coal should not increase over current emissions when burning gas and oil. This is because process conditions within the kiln and ESP demand that CO be held to below 0.1 percent. CO is minimized in the kiln in order to maximize combustion efficiency and promote energy efficiency. Air flow through the Kiln 2 after conversion to coal will decrease compared to previous gas/oil firing, because of the better energy efficiency of the kiln burner and chain system. Based on these considerations, future CO emissions when burning coal are equal to baseline emission levels.

Future maximum VOC emissions from Kiln 2 burning coal are based upon the VOC emissions due to the raw feed, estimated from Kiln 3 data (refer to previous discussion) plus the VOC emissions due to coal burning. Based on the AP-42 factor of 0.10 lb/ton coal and the maximum coal feed rate to Kiln 2 of 6.50 TPH, VOC emissions due to coal burning are 0.7 lb/hr. VOC emissions due to the raw feed are 0.87 lb/ton clinker, or 21.8 lb/hr. Total future VOC emissions are therefore 22.5 lb/hr. Due to the limited database and potential variability in the organic content of the raw feed, Tarmac is requesting a higher future limit of 30.0 lb/hr.

Future maximum emissions of other regulated pollutants were estimated in the same fashion as existing baseline emissions, i.e., by using published emission factors (refer to Appendix A). The emission factors and resulting emissions are presented in Table 2-1.

As described previously, coal for Kiln 2 will be received, stored, and transported using the existing coal handling facilities, with the addition of two new conveyor transfer points and a coal mill. Additional throughput of coal for Kiln 2 will be a maximum of 56,940 TPY. The particulate matter emission sources, emission factors, and resulting emissions are presented in Appendix B. The estimated increase in annual PM(TSP) and PM10 emissions due to operation of Kiln 2 on coal is 12.0 TPY and 5.4 TPY, respectively.

2.2 STACK PARAMETERS

Stack parameters for Kiln 2 after conversion to coal, as well as stack parameters for the other two kilns, are presented in Table 2-2. Also presented are the maximum SO_2 emission rates associated with each kiln. It is noted that Kiln 1 will burn gas as the primary fuel in the future, with oil as backup. There are no plans to convert Kiln 1 to coal. Maximum SO_2 emissions from Kiln 1 are based upon oil firing.

A plot plan of the Tarmac facility is presented in Figure 2-2, with the kiln stacks indicated. The most significant structures at the facility are the finish mill building, the Kiln burner building, the Kiln 1/2 ESP and the Kiln 3/4 ESP.

Table 2-2. TARMAC - K2 Coal Conversion - Stack Parameters and SO_2 Emisssions

Source	Process Rate (TPH Clinker)	SO_2 Emission Rate (lb/hr)	Stack Height ft	Stack Height m	Stack Diameter ft	Stack Diameter m	Stack Temp. °F	Stack Temp. °K	Stack Velocity ft/min	Stack Velocity m/s	Flow Rate (acfm)
K1 - gas/oil	25.0	4.5/45.3	200	61	8.0	2.44	378	465	2527	12.84	127,000
K2 - coal	25.0	400.0	200	61	8.0	2.44	300	422	1790	9.10	90,000
K3 - coal	87.5	400.0	200	61	15.0	4.57	350	450	2172	11.04	384,000

Source: Tarmac, 1987

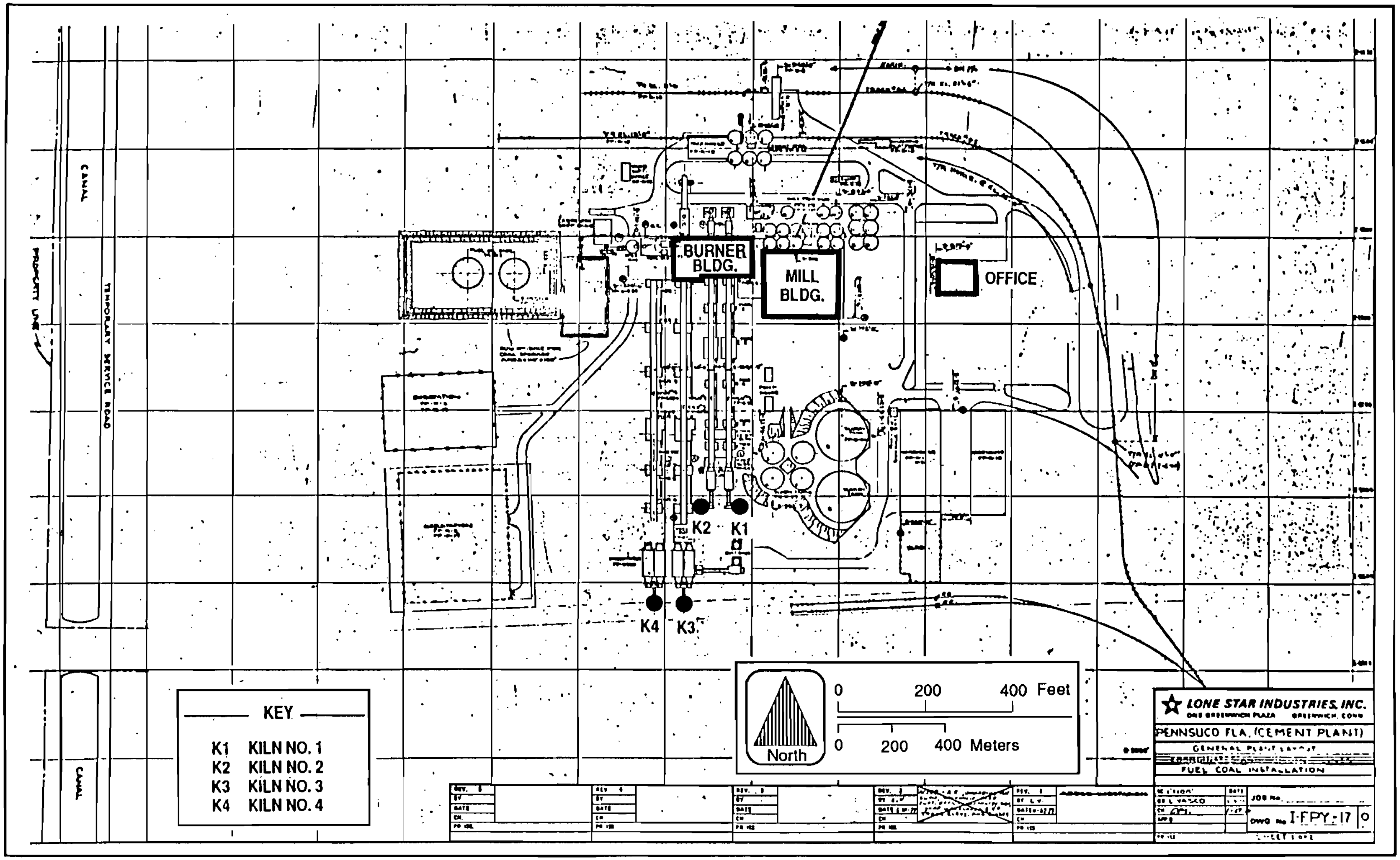

Figure 2-2 PLOT PLAN OF TARMAC FACILITY

KBN

The dimensions of these buildings are as follows:

Building	Height	Width	Area of Influence
Finish Mill Building:	106 ft.	260 ft.	530 ft.
Kiln Burner Building:	84 ft.	200 ft.	420 ft.
K1/K2 ESP:	70 ft.	60 ft.	300 ft.
K3/K4 ESP:	90 ft.	130 ft.	450 ft.

The K2 stack is approximately 500 feet from the Finish Mill Building. The K2 stack is just on the edge of the area of influence of the building, and would be affected for only a few specific wind directions when the K2 stack is downwind of the building. The GEP stack height based on this building is 265 feet compared to the K2 stack height of 200 feet.

The K2 stack is outside the area of influence of the burner buildings, and the K2 stack height is more than 2.5 times the width (lesser dimension) of the K1/K2 ESP, and therefore these structures will not cause downwash. The K2 stack is within the area of influence of the K3/K4 ESPs for a few specific wind directions. However, the K3/K4 ESPs are not a solid structure, being open at the bottom. The GEP height of this structure is 225 feet, only slightly greater than the K2 stack height of 200 feet. Based upon these considerations, the downwash potential due to the K3/K4 ESP structures will be minimal.

3.0 AIR QUALITY REVIEW REQUIREMENTS AND APPLICABILITY

The following discussion pertains to the federal and state air regulatory requirements and their applicability to the Tarmac Kiln 2 coal conversion. These regulations must be satisfied before the proposed project can be constructed and operated.

3.1 NATIONAL AND STATE AAQS

The existing applicable National and Florida ambient air quality standards (AAQS) are presented in Table 3-1. Primary National AAQS were promulgated to protect the public health, and secondary National AAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Areas of the country in violation of AAQS are designated as nonattainment areas, and new sources to be located in or near these areas may be subject to more stringent air permitting requirements.

3.2 PSD REQUIREMENTS

3.2.1 General Requirements

Under federal PSD review requirements, all major new or modified sources of air pollutants regulated under the Clean Air Act (CAA) must be reviewed and approved by the USEPA. For sources located in Florida, PSD review and approval has been delegated to FDER.

A "major stationary source" is defined as any one of 28 named source categories which has the potential to emit 100 tons per year (TPY) or more, or any other stationary source which has the potential to emit 250 TPY or more of any pollutant regulated under CAA. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment.

A "major modification" is defined under PSD regulations as a change at an existing major stationary source which increases emissions by greater

Table 3-1. National and State AAQS, Allowable PSD Increments, and Significance Levels (ug/m^3)

Pollutant	Averaging Time	AAQS National Primary Standard	AAQS National Secondary Standard	AAQS State of Florida	PSD Increments Class I	PSD Increments Class II	Significant Impact Levels
Particulate Matter (TSP)	Annual Geometric Mean	NA	NA	NA	5	19	1
	24-Hour Maximum+	NA	NA	NA	10	37	5
Particulate Matter (PM10)	Annual Arithmetic Mean	50	50	50	NA	NA	1
	24-Hour Maximum*	150	150	150	NA	NA	5
Sulfur Dioxide	Annual Arithmetic Mean	80	NA	60	2	20	1
	24-Hour Maximum+	365	NA	260	5	91	5
	3-Hour Maximum+	NA	1,300	1,300	25	512	25
Carbon Monoxide	8-Hour Maximum+	10,000	10,000	10,000	NA	NA	500
	1-Hour Maximum+	40,000	40,000	40,000	NA	NA	2,000
Nitrogen Dioxide	Annual Arithmetic Mean	100	100	100	2.5**	25**	1
Ozone	1-Hour Maximum++	235	235	235	NA	NA	NA
Lead	Calendar Quarter Arithmetic Mean	1.5	1.5	15	NA	NA	NA

\+ Maximum concentration not to be exceeded more than once per year.
* Achieved when the expected number of exceedances per year is less than 1.
** The State of Florida has not yet adopted the PSD increments for NO_2 concentrations.
++ Achieved when the expected number of days per year with concentrations above the standard is less than 1.

NA = Not applicable, i.e., no standard exists.

Note: Particulate matter (TSP) refers to total suspended particulate matter.
Particulate mater (PM10) refers to particulate matter with aerodynamic diameter less than or equal to 10 micrometers (μm).

Sources: Federal Register, Vol. 43, No. 118, June 19, 1978.
40 CFR 50
40 CFR 52.21

than "significant" amounts. PSD significant emission rates are shown in Table 3-2.

PSD review is used to determine whether significant air quality deterioration will result from the new or modified source. PSD requirements are contained in 40 CFR 52.21, Prevention of Significant Deterioration of Air Quality. Major sources and modifications are required to undergo the following analysis related to PSD for each pollutant emitted in "significant" amounts:

1. Control technology review,
2. Source impact analysis,
3. Air quality analysis (monitoring),
4. Additional impact analyses.

In addition to these analyses, a new source must also be reviewed with respect to Good Engineering Practice (GEP) stack height regulations. Discussions concerning each of these requirements are presented in the following sections.

3.2.2 Increments/Classifications

In promulgating the 1977 CAA Amendments, Congress specified that certain increases above an air quality "baseline concentration" level of SO_2 and PM(TSP) concentrations would constitute "significant deterioration." The magnitude of the allowable increment depends on the classification of the area in which a new source (or modification) will be located or have an impact. Three classifications were designated based on criteria established in the CAA Amendments. Initially, Congress promulgated areas as Class I (international parks, national wilderness areas, and memorial parks larger than 5,000 acres, and national parks larger than 6,000 acres) or as Class II (all areas not designated as Class I). No Class III areas, which would be allowed greater deterioration than Class II areas, were designated. USEPA then promulgated as regulations the requirements for classifications and area designations.

Table 3-2. PSD Significant Emission Rates and De Minimis Monitoring Concentrations

Pollutant	Regulated Under	Significant Emission Rate (TPY)	De Minimis Monitoring Concentration ($\mu g/m^3$)
Sulfur Dioxide	NAAQS, NSPS	40	13, 24-hour
Particulate Matter (TSP)	NAAQS, NSPS	25	10, 24-hour
Particulate Matter (PM10)	NAAQS	15	10, 24-hour
Nitrogen Oxides	NAAQS, NSPS	40	14, Annual
Carbon Monoxide	NAAQS, NSPS	100	575, 8-hour
Volatile Organic Compounds (Ozone)	NAAQS, NSPS	40	100 TPY+
Lead	NAAQS	0.6	0.1, 3-month
Sulfuric Acid Mist	NSPS	7	*
Total Fluorides	NSPS	3	0.25, 24-hour
Total Reduced Sulfur	NSPS	10	10, 1-hour
Reduced Sulfur Compounds	NSPS	10	10, 1-hour
Hydrogen Sulfide	NSPS	10	0.2, 1-hour
Asbestos	NESHAP	0.007	*
Beryllium	NESHAP	0.0004	0.001, 24-hour
Mercury	NESHAP	0.1	0.25, 24-hour
Vinyl Chloride	NESHAP	1	15, 24-hour
Benzene	NESHAP	0	*
Radionuclides	NESHAP	0	*
Inorganic Arsenic	NESHAP	0	*

*No ambient measurement method.
+Increases in VOC emissions.

Notes: Ambient monitoring requirements for subject pollutants may be exempted if the impact of the increase in emissions is below air quality impact de minimis levels.
NAAQS = National Ambient Air Quality Standards.
NSPS = New Source Performance Standards.
NESHAP = National Emission Standards for Hazardous Air Pollutants.

Sources: 40 CFR 52.21.
Chapter 17-2, F.A.C.

On October 17, 1988, the USEPA promulgated regulations to prevent significant deterioration due to NO_x emissions and established PSD increments for NO_2 concentrations. The USEPA class designations and allowable PSD increments are presented in Table 3-1. The Florida DER has adopted the USEPA class designations and allowable PSD increments for SO_2 and PM(TSP), but has not yet adopted the NO_2 increments.

The term "baseline concentration" evolves from federal and state PSD regulations and denotes a fictitious concentration level corresponding to a specified baseline date and certain additional baseline sources. By definition in the PSD regulations, as amended August 7, 1980, baseline concentration means the ambient concentration level which exists in the baseline area at the time of the applicable baseline date. A baseline concentration is determined for each pollutant for which a baseline date is established and includes:

1. The actual emissions representative of sources in existence on the applicable baseline date; and
2. The allowable emissions of major stationary sources which commenced construction before January 6, 1975, for SO_2 and PM(TSP) sources, or February 8, 1988, for NO_2 sources, but which were not in operation by the applicable baseline date.

The following emissions are not included in the baseline concentration and therefore affect PSD increment consumption:

1. Actual emissions from any major stationary source on which construction commenced after January 6, 1975, for SO_2 and PM(TSP) sources, and after February 8, 1988, for NO_2 sources; and
2. Actual emission increases and decreases at any stationary source occurring after the baseline date.

The term "baseline date" actually includes three different dates:

1. The major source baseline date, which is January 6, 1975, in the cases of SO_2 and PM(TSP), and February 8, 1988, in the case of NO_2.
2. The minor source baseline date, which is the earliest date after the "trigger date" on which a major stationary source or major modification subject to PSD regulations submits a complete PSD application.
3. The "trigger date", which is August 7, 1977, for SO_2 and PM(TSP), and February 8, 1988, for NO_2.

3.2.3 Control Technology Review

The control technology review requirements of the federal PSD regulations require that all applicable federal and state emission limiting standards be met and that Best Available Control Technology (BACT) be applied to control emissions from the source (40 CFR 52.21). The BACT requirements are applicable to all regulated pollutants for which the increase in emissions from the source or modification exceeds the significant emission rate (see Table 3-2).

BACT is defined in 40 CFR 52.21 as:

> An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Act...which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable ... through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.... If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology.

The requirements for BACT were promulgated within the framework of PSD in the 1977 amendments of the CAA [Public Law 95-95; Part C, Section 165(a)(4)]. The primary purpose of BACT is to optimize consumption of PSD air quality increments and thereby enlarge the potential for future economic growth without significantly degrading air quality (USEPA, 1978; 1980). Guidelines for the evaluation of BACT can be found in USEPA's "Guidelines for Determining Best Available Control Technology (BACT)," (USEPA, 1978) and in the "PSD Workshop Manual" (USEPA, 1980). These guidelines were promulgated by USEPA to provide a consistent approach to BACT and to ensure that the impacts of alternative emission control systems are measured by the same set of parameters. In addition, through implementation of these guidelines, BACT in one area may not be identical to BACT in another area. According to USEPA (1980), "BACT analyses for the same types of emissions unit and the same pollutants in different locations or situations may determine that different control strategies should be applied to the different sites, depending on site-specific factors. Therefore, BACT analyses must be conducted on a case-by-case basis."

The BACT requirements are intended to ensure that the control systems incorporated in the design of a proposed facility reflect the latest in control technologies used in a particular industry and take into consideration existing and future air quality in the vicinity of the proposed facility. BACT must, as a minimum, demonstrate compliance with NSPS for a source (if applicable). An evaluation of the air pollution control techniques and systems, including a cost-benefit analysis of alternative control technologies capable of achieving a higher degree of emission reduction than the proposed control technology, is required. The cost-benefit analysis requires the documentation of the materials, energy, and economic penalties associated with the proposed and alternative control systems, as well as the environmental benefits derived from these systems. A decision on BACT is to be based on sound judgement, balancing environmental benefits with energy, economic, and other impacts (USEPA, 1978).

Historically, a "bottom-up" approach consistent with the BACT Guidelines and Workshop Manual has been used. With this approach, an initial control level, which is usually NSPS, is evaluated against successively more stringent controls until a BACT level is selected. However, USEPA developed a concern that the bottom-up approach was not providing the level of BACT decisions originally intended. As a result, in December 1987 the USEPA Assistant Administrator for Air and Radiation mandated changes in the implementation of the PSD program including the adoption of a new "top-down" approach to BACT decision making.

The top-down approach requires an applicant to start with the most stringent control alternative, usually Lowest Achievable Emission Rate (LAER), and either provide an analysis that justifies its rejection based on technical or economic infeasibility, or propose it as BACT.

The top-down BACT approach essentially starts with the most stringent (or top) technology and emissions limit that have been applied elsewhere to the same source category. The applicant must next provide a basis for rejecting this technology in favor of the next most stringent technology or propose to use it.

Rejection of control alternatives may be based on technical or economical infeasibility. Such decisions are made on the basis of physical differences (e.g., fuel type), locational differences (e.g., availability of water), or significant differences that may exist in the environmental, economic or energy impacts. The differences between the proposed facility and the facility on which the control technique was applied previously must be justified.

3.2.4 Air Quality Analysis

In accordance with requirements of 40 CFR 52.21(m), any application for a PSD permit must contain an analysis of continuous ambient air quality data in the area affected by the proposed major stationary source or major modification. For a new major source, the affected pollutants are those that the source would potentially emit in significant amounts. For a major modification, the pollutants are those for which the net emissions increase exceeds the significant emission rate (see Table 3-2).

According to CAA, ambient air monitoring for a period of up to 1 year is generally appropriate to satisfy the PSD monitoring requirements. A minimum of four (4) months of data is required. Existing data from the vicinity of the proposed source may be utilized if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered. Guidance in designing a PSD monitoring network is provided in USEPA's "Ambient Monitoring Guidelines for Prevention of Significant Deterioration" (USEPA, 1987a).

The regulations include an exemption which excludes or limits the pollutants for which an air quality analysis must be conducted. This exemption states that the Administrator may exempt a proposed major stationary source or major modification from the monitoring requirements of 40 CFR 52.21(m) with respect to a particular pollutant if the emissions increase of the pollutant from the source or modification would cause, in any area, air quality impacts less than the de minimis levels presented in Table 3-2.

3.2.5 Source Impact Analysis

A source impact analysis must be performed by a proposed major source subject to PSD for each pollutant for which the increase in emissions exceeds the significant emission rate (Table 3-2). The PSD regulations specifically require the use of atmospheric dispersion models in performing impact analysis, estimating baseline and future air quality levels, and determining compliance with AAQS and allowable PSD increments. Designated USEPA models must normally be used in performing the impact analysis. Specific applications for other than USEPA-approved models require USEPA's consultation and prior approval. Guidance for the use and application of dispersion models is presented in the USEPA publication "Guideline on Air Quality Models (Revised)" (USEPA, 1987b).

The source impact analysis for criteria pollutants may be limited to only the new or modified source if the net increase in impacts due to the new or modified source is below significance levels, as presented in Table 3-1.

Various lengths of record for meteorological data can be utilized for impact analysis. A 5-year period can be used with corresponding evaluation of highest, second-highest short-term concentrations for comparison to AAQS or PSD increments. The term "highest, second-highest" (HSH) refers to the highest of the second-highest concentrations at all receptors (i.e., the highest concentration at each receptor is discarded). The second-highest concentration is significant because short-term AAQS specify that the standard should not be exceeded at any location more than once a year. If less than 5 years of meteorological data are used in the modeling analysis, the highest concentration at each receptor must normally be used for comparison to air quality standards.

3.2.6 Additional Impact Analysis

In addition to air quality impact analyses, federal PSD regulations require analyses of the impairment to visibility and the impacts on soils and vegetation that would occur as a result of the proposed source. These analyses are to be conducted primarily for PSD Class I areas. Impacts due to general commercial, residential, industrial, and other growth associated with the source must also be addressed. These analyses are required for each pollutant emitted in significant amounts (Table 3-2).

3.2.7 Good Engineering Practice Stack Height

The 1977 CAA Amendments require that the degree of emission limitation required for control of any pollutant not be affected by a stack height that exceeds GEP, or any other dispersion technique. On July 8, 1985, USEPA promulgated final stack height regulations (USEPA, 1985). GEP stack height is defined as the highest of:

1. 65 meters (m), or
2. A height established by applying the formula:
   $H_g = H + 1.5L$
   where: H_g = GEP stack height,
   H = Height of the structure or nearby structure, and
   L = Lesser dimension (height or projected width) of nearby structure(s), or
3. A height demonstrated by a fluid model or field study.

"Nearby" is defined as a distance up to five times the lesser of the height or width dimensions of a structure or terrain feature, but not greater than 0.8 km. Although GEP stack height regulations require that the stack height used in modeling for determining compliance with AAQS and PSD increments not exceed the GEP stack height, the actual stack height may be greater.

The stack height regulations also allow increased GEP stack height beyond that resulting from the above formula in cases where "plume impaction" occurs. Plume impaction is defined as concentrations measured or predicted to occur when the plume interacts with "elevated terrain." "Elevated terrain" is defined as terrain which exceeds the height calculated by the GEP stack height formula. Because the terrain in the vicinity of the Tarmac plant is flat, plume impaction was not considered in determining the GEP stack height.

3.3 NONATTAINMENT RULES

The Emission Offset Interpretative Ruling (40 CFR 51, Appendix S) applies to new and modified major sources affecting nonattainment areas. Under Section IV.A of the Ruling, such sources are required to: (1) meet an emission limitation which specifies the lowest achievable emission rate for such sources, (2) certify that all existing major sources owned or operated by the applicant in the same state are in compliance with all applicable emission limitations and standards under the Act, (3) obtain emission offsets such that there will be reasonable progress toward attainment of the applicable national AAQS, and (4) demonstrate that the emission offsets would provide a positive net air quality benefit in the affected area [not applicable for VOC or NO_x].

Based on the current nonattainment provisions, all major new sources and modifications to existing major sources located in a nonattainment area must undergo nonattainment review if the proposed pieces of equipment have the potential to emit 100 TPY or more of the nonattainment pollutant, or if the major modification results in a significant net emission increase of the nonattainment pollutant.

3.4 **SOURCE APPLICABILITY**

3.4.1 <u>PSD Review</u>

3.4.1.1 Pollutant Applicability

The Tarmac plant is located in Dade County, which has been designated by USEPA and FDER as an attainment area for all criteria pollutants except ozone. Because of the ozone nonattainment designation, emissions of VOC from the Tarmac plant will not be subject to PSD review. Dade County is designated as a PSD Class II area for SO_2, PM(TSP), and NO_x. The Tarmac site is located approximately 30 km northeast of the Everglades National Park, the nearest PSD Class I area.

The existing Tarmac plant is considered to be an existing "major stationary source" because current emissions of regulated pollutants exceed 100 TPY. Since the source is an existing major source, PSD review is required for any pollutant for which the net increase in emissions due to the proposed project exceeds the PSD significant emission rates presented in Table 3-2 (i.e., major modification).

Presented in Table 3-3 is the maximum net increase in emissions for each regulated pollutant due to the Kiln 2 coal conversion, based upon the maximum hourly change in emissions presented in Table 2-1, and assuming 8,760 hr/yr operation. Also included is the estimated increase in PM(TSP) and PM10 emissions due to increased coal handling for Kiln 2. As

Table 3-3. Net Increase in Emissions Due to the Kiln 2 Coal Conversion Compared to the PSD Significant Emission Rates

Pollutant	Increase in Emissions Due to Kiln 2 Coal Conversion		Significant Emission Rate (TPY)	PSD Review Applies?
	lb/hr	TPY		
Particulate Matter (TSP)	--	12.0	25	No
Particulate Matter (PM10)	--	5.4	15	No
Sulfur Dioxide	354.7	1,553	40	Yes
Nitrogen Dioxide	1.5	6.6	40	No
Carbon Monoxide	0.0	0.0	100	No
Votatile Organic Compounds*	6.9	30.2	40	No*
Lead	0.0	0.0	0.6	No
Sulfuric Acid Mist	10.3	45.1	7	Yes
Beryllium	0.0	0.0	0.0004	No

* Nonattainment pollutant; PSD review does not apply.

shown, potential emissions from the proposed project will exceed the PSD significant emission rate for only SO_2 and sulfuric acid mist. The proposed modification is subject to PSD review for these pollutants.

3.4.1.2 Ambient Monitoring

Based upon the net increase in emissions from the proposed coal conversion, presented in Table 3-3, a PSD preconstruction ambient monitoring analysis is required for SO_2 and sulfuric acid mist. However, if the net increase in impact of a pollutant is less than the de minimis monitoring concentration, then an exemption from the preconstruction ambient monitoring requirement may be granted for that pollutant. In addition, if an acceptable ambient monitoring method for the pollutant has not been established by USEPA, monitoring is not required.

The maximum predicted 24-hour SO_2 impact due to the net increase in SO_2 emissions associated with the Kiln 2 coal conversion is 21 ug/m^3. The methodology used to predict maximum impacts and the impact analysis results are presented in Sections 6.0 and 7.0. This maximum 24-hour impact is above the de minimis monitoring concentration for SO_2 of 13 ug/m^3. There is no acceptable ambient monitoring method for sulfuric acid mist, and therefore monitoring is not required for this pollutant. As a result, the proposed project is subject to preconstruction ambient monitoring analysis for SO_2 only. The air quality analysis for SO_2 is presented in Section 5.0.

3.4.1.3 GEP Stack Height

The GEP stack height regulations allow any stack to be at least 65 meters high. The existing stack for the Kiln 2 is 200 ft in height (61.0 meters) and, therefore, does not exceed the GEP stack height.

3.4.2 Nonattainment Review

Nonattainment review is required for ozone if the net increase in VOC emissions due to the proposed modification exceeds the significant emission rate of 40 TPY. As shown in Table 3-3, the maximum potential increase in VOC emissions due to the project is less than 40 TPY. As a result, nonattainment review for VOC emissions is not required.

4.0 CONTROL TECHNOLOGY EVALUATION

As discussed in the PSD source applicability section (Section 3.4), only SO_2 and sulfuric acid mist emissions require a BACT evaluation. Since sulfuric acid mist emissions are a direct result of sulfur emissions, sulfuric acid mist will be controlled by controlling SO_2. As a result, only SO_2 will be discussed in this section. The BACT evaluation is presented in this section.

Kiln 2 at Tarmac is an existing cement kiln equipped with an ESP for particulate control. The existing kiln already provides SO_2 removal due to the alkaline nature of the kiln dust. The ESP provides some additional SO_2 removal as a result of contact of the flue gases with the kiln dust. A baghouse used for particulate control would inherently provide greater SO_2 removal (in the range of 20 to 45 percent) than the ESP due to the filter cake formed on the bags. However, the use of a baghouse at Tarmac would require complete replacement of the existing ESP, and would be economically prohibitive.

Based upon the sulfur in the coal (2.0 percent sulfur maximum) and the sulfur in the raw feed to the kiln (0.16 percent ~~sulfur~~ SO_3), total potential SO_2 emissions from the kiln are 623.7 lb/hr. To achieve the requested 400 lb/hr SO_2 emission rate, an inherent SO_2 removal efficiency of 36 percent is required. At this level of SO_2 emissions, the flue gases would contain approximately 650 parts per milliion by volume (ppmv) (wet) SO_2. This concentration of SO_2 is approximately equivalent to that concentration in the exhaust gases of a power plant burning 0.9% S coal.

Tarmac's proposed BACT for SO_2 is the inherent control within the kiln/ESP system to achieve an emission rate of 400 lb/hr or less. Based upon experience with Kiln 3 burning coal, regulating conditions within the kiln (i.e., temperature, excess air, etc.) to control SO_2 emissions affects NO_x emissions. After startup of Kiln 2 on coal, Tarmac will conduct performance tests to determine the lowest routinely achievable SO_2 emission rate while at the same time complying with the maximum NO_x emission rate of 169.3 lb/hr (6.77 lb/ton clinker). Based upon this testing, Tarmac is willing to re-evaluate the SO_2 emission limit and accept a lower limit if justified by the test results. Tarmac is fully committed to minimizing SO_2 emissions from the kiln by optimizing kiln operating parameters, while maintaining clinker quality.

There are considered no feasible alternatives to SO_2 control on Kiln 2. Review of the EPA BACT/LAER Clearinghouse documents revealed that no existing or permitted cement kiln employs an add-on SO_2 control system. All cement kilns employ the inherent removal of SO_2 in the kiln and a particulate control device as the SO_2 control method. This is the method proposed by Tarmac, with the commitment to re-evaluating the SO_2 emission limit based upon stack test results.

The proposed BACT for the kiln is the existing kiln/ESP system and operation of the kiln to minimize SO_2 while maintaining compliance with the NO_x on the kiln. This is based upon the consideration of the existing kiln/ESP system and the inherent minimum 36 percent removal efficiency of the existing system, Tarmac's commitment to minimize SO_2 emissions from the kiln, and with the commitment to re-evaluate the SO_2 emission limit for Kiln 2, after test data is obtained.

5.0 AIR QUALITY ANALYSIS

5.1 PROJECT MONITORING APPLICABILITY

As determined by the source applicability analysis described in Section 3.4, an ambient monitoring analysis is required by PSD regulations for SO_2 only. In order to satisfy these requirements, Tarmac proposes to use existing ambient SO_2 data collected by FDER at a site near to the Tarmac facility. The available SO_2 monitoring data are described in Section 5.2.

5.2 AMBIENT SULFUR DIOXIDE DATA

Ambient SO_2 monitoring data from Dade County are available from a FDER operated monitoring station located within 3 km of the Tarmac facility. The monitoring site is located at the intersection of SR 821 (Turnpike Extension) and US 27. Ambient SO_2 data collected at this site for the period 1987 through 1988 are presented in Table 5-1. The monitor actually operated at the site during the period August 1987 through October 1988. The data were collected using a continuous monitor, and since the site is operated by FDER, the data are gathered by required quality assurance procedures for PSD networks.

As indicated in the table, all recorded SO_2 concentrations are low and well below the AAQS. The highest measured 3-hour concentration during the monitoring period was 15 ug/m^3, and the highest measured 24-hour concentration was 8 ug/m^3. These values are well below the AAQS of 1,300 ug/m^3, 3-hour average, and 260 ug/m^3, 24-hour average. The recorded mean SO_2 concentration at the site was 3 ug/m^3. This concentration is well below the AAQS of 60 ug/m^3 for the annual averaging period.

Background SO_2 concentrations for use in the impact analysis are based upon the maximum 3-hour, 24-hour and annual average concentrations measured at the monitoring site. This was assumed since the observed values were low compared to AAQS. The resulting background concentrations are: 15 ug/m^3, 3-hour; 8 ug/m^3, 24-hour; and 3 ug/m^3, background levels are considered conservative since they reflect current operation of the Tarmac facility, and the Tarmac facility will be included specifically in the modeling analysis.

Table 5-1. Summary of Ambient Sulfur Dioxide Data, Dade County, 1987-1988

				Sulfur Dixide Concentration ($\mu g/m^3$)				
Site No.	Site Name	Time Period	No. Obs.	Max. 3-hr	2nd Max. 3-hr	Max. 24-hr	2nd Max. 24-hr	Arithmetic Mean
0860-019	Miami-- US 27 & SR 821	1987*	3,049	9	8	4	4	3
		1988+	6,605	15	13	8	5	3
Federal Primary AAQS				-	-	-	365	80
Federal Secondary AAQS				-	1,300	-	-	-
Florida AAQS				-	1,300	-	260	60

* Data cover period Aug - Dec 1987.
\+ Data cover period Jan - Oct 1988.

6.0 AIR QUALITY MODELING APPROACH

6.1 GENERAL MODELING APPROACH

The general modeling approach followed USEPA and FDER modeling guidelines for determining compliance with AAQS and PSD increments. In general, when model predictions are used to determine compliance with AAQS and PSD increments, current policies stipulate that the highest annual average and highest, second-highest short-term (i.e., 24 hours or less) concentrations be compared to the applicable standard when 5 years of meteorological data are used. The highest, second-highest concentration (HSH) is calculated for a receptor field by:

1. Eliminating the highest concentration predicted at each receptor,
2. Identifying the second-highest concentration at each receptor, and
3. Selecting the highest concentration among these second-highest concentrations.

This approach is consistent with the air quality standards, which permit a short-term average concentration to be exceeded once per year at each receptor.

To develop the maximum short-term concentrations for the proposed facility, the general modeling approach was divided into screening and refined phases to reduce the computation time required to perform the modeling analysis. The basic difference between the two phases is the receptor grid used when predicting concentrations, the number of emission points, and the number of meteorological periods evaluated. In general, concentrations for the screening phase were predicted using a coarse receptor grid, limited number of major sources, and a 5-year meteorological record.

After a final list of HSH short-term concentrations was developed, the refined phase of the analysis was conducted by predicting concentrations for a refined receptor grid centered on the receptor at which the HSH concentration was produced from the screening phase. The air dispersion model was executed for the meteorological periods during which both the highest and second-highest concentrations were predicted to occur at that receptor, based on the screening phase results. This approach was used to ensure that valid HSH concentrations were obtained. More detailed descriptions of the emission inventory and receptor grids used in the screening and refined phases of the analysis are presented in the following sections.

6.2 MODEL SELECTION

The selection of an appropriate air dispersion model was based on the model's ability to simulate impacts in areas surrounding the Tarmac facility. Within 50.0 km of the facility, the terrain can be described as simple, i.e., flat to gently rolling. As defined in the USEPA modeling guidelines, simple terrain is considered to be an area where the terrain features are all lower in elevation than the top of the stack(s) under evaluation. Therefore, a simple terrain model was selected to predict maximum ground-level concentrations.

The Industrial Source Complex (ISC) dispersion model (USEPA, 1988a) was used to evaluate the pollutant emissions from the Tarmac facility and other existing major facilities. This model is contained in USEPA's User's Network for Applied Modeling of Air Pollution (UNAMAP), Version 6 (USEPA, 1988b). The ISC model is applicable to sources located in either flat or rolling terrain where terrain heights do not exceed stack heights.

The ISC model consists of two sets of computer codes which are used to calculate short- and long-term ground level concentrations. The main differences between the two codes are the input format of the meteorological data and the method of estimating the plume's horizontal dispersion.

The first model code, the ISCST model, is designed to calculate hourly concentrations based on hourly meteorological parameters (i.e., wind direction, wind speed, atmospheric stability, ambient temperature, and mixing heights). The hourly concentrations are processed into non-overlapping, short-term and annual averaging periods. For example, a 24-hour average concentration is based on 24 1-hour averages calculated from midnight to midnight of each day. For each short-term averaging period selected, the highest and second-highest average concentrations are calculated for each receptor. As an option, a table of the 50 highest concentrations over the entire field of receptors can be produced.

The second model code within the ISC model is the ISC long-term (ISCLT) model. The ISCLT model uses joint frequencies of wind direction, wind speed, and atmospheric stability to calculate seasonal and/or annual average ground-level concentrations. Because the input wind directions are for 16 sectors, with each sector defined as 22.5 degrees, the model calculates concentrations by assuming that the pollutant is uniformly distributed in the horizontal plane within a 22.5 degree sector.

In this analysis, the ISCST model was used to calculate both short-term and annual average concentrations because these concentrations are readily obtainable from the model output. In general, the ISCST model will produce higher annual average concentrations as compared to the ISCLT model.

Major features of the ISCST model are presented in Table 6-1. Concentrations due to stack and volume sources are calculated by the ISCST model using the steady-state Gaussian plume equation for a continuous source. The area source equation in the ISCST model is based on the equation for a continuous and finite crosswind line source. The ISC model has rural and urban options which affect the wind speed profile exponent law, dispersion rates, and mixing-height formulations used in calculating ground level concentrations. The criteria used to determine when the rural or urban mode is appropriate are based on land use near the proposed plant's surroundings (Auer, 1978). If the land use is classified as heavy industrial, light-moderate industrial, commercial, or compact residential for more than 50 percent of the area within a 3 km radius circle centered

Table 6-1. Major Features of the ISCST Model

ISCST Model Features
o Polar or Cartesian coordinate systems for receptor locations
o Rural or one of three urban options which affect wind speed profile exponent, dispersion rates, and mixing height calculations
o Plume rise due to momentum and buoyancy as a function of downwind distance for stack emissions (Briggs, 1969, 1971, 1972, and 1975)
o Procedures suggested by Huber and Snyder (1976); Huber (1977); and Schulmann and Hanna (1986) and Schulmann and Scire (1980) for evaluating building wake effects
o Procedures suggested by Briggs (1974) for evaluating stack-tip downwash
o Separation of multiple point sources
o Consideration of the effects of gravitational settling and dry deposition on ambient particulate concentrations
o Capability of simulating point, line, volume and area sources
o Capability to calculate dry deposition
o Variation with height of wind speed (wind speed-profile exponent law)
o Concentration estimates for 1-hour to annual average
o Terrain-adjustment procedures for elevated terrain including a terrain truncation algorithm
o Receptors located above local terrain, i.e., "flagpole" receptors
o Consideration of time-dependent exponential decay of pollutants
o The method of Pasquill (1976) to account for buoyancy-induced dispersion
o A regulatory default option to set various model options and parameters to EPA recommended values (see text for regulatory options used)
o Procedure for calm-wind processing

Source: USEPA, 1988b

on the proposed source, the urban option should be selected. Otherwise, the rural option is more appropriate.

For modeling analyses that will undergo regulatory review, such as PSD permit applications, the following model features are recommended by USEPA (1987a) and are referred to as the regulatory options in the ISCST model:

1. Final plume rise at all receptor locations,
2. Stack-tip downwash,
3. Buoyancy-induced dispersion,
4. Default wind speed profile coefficients for rural or urban option,
5. Default vertical potential temperature gradients,
6. Calm wind processing, and
7. Reducing calculated SO_2 concentrations in urban areas by using a decay half-life of 4 hours (i.e., reduce the SO_2 concentration emitted by 50% for every 4 hours of plume travel time).

In this analysis, the USEPA regulatory options were used to address maximum impacts. Based on a review of the land use around the Tarmac facility, the rural mode was selected based on the degree of residential, industrial, and commercial development within 3 km of the site.

6.3 METEOROLOGICAL DATA

Meteorological data used in the ISCST model to determine air quality impacts consisted of a concurrent 5-year period of hourly surface weather observations and twice-daily upper air soundings from the National Weather Service (NWS) stations at Miami International Airport and West Palm Beach, respectively. The 5-year period of meteorological data was from 1982 through 1986. The NWS station in Miami, located approximately 10 km to the southeast of the Tarmac site, was selected for use in the study because it is the closest primary weather station to the study area with similar surrounding topographical features. This station also has the most readily available and complete database which is representative of the plant site.

The surface observations included wind direction, wind speed, temperature, cloud cover, and cloud ceiling. The wind speed, cloud cover, and cloud ceiling values were used in the ISCST meteorological preprocessor program to determine atmospheric stability using the Turner stability scheme. Based on the temperature measurements at morning and afternoon, mixing heights were calculated with the radiosonde data at West Palm Beach International Airport using the Holzworth approach (1972). The West Palm Beach International Airport is located about 100 km north-northeast of the site. Hourly mixing heights were derived from the morning and afternoon mixing heights using the interpolation method developed by USEPA (Holzworth, 1972). The hourly surface data and mixing heights were used to develop a sequential series of hourly meteorological data (i.e., wind direction, wind speed, temperature, stability, and mixing heights). Because the observed hourly wind directions were randomized within each sector to account for the expected variability in air flow. These calculations were performed by using the USEPA RAMMET meteorological preprocessor program.

6.4 EMISSION INVENTORY

6.4.1 Tarmac Facility

Stack operating parameters and SO_2 emission rates for the kilns at Tarmac are presented in Section 2.0, Table 2-2. For determining PSD increment consumption for SO_2, only Kilns 2 and 3 are increment-consuming sources due to their conversion or proposed conversion to coal. The PSD baseline SO_2 emissions for Kilns 2 and 3 are 45.1 lb/hr and 21.9 lb/hr, respectively, based upon oil burning (emission rates documented in 1980 coal conversion application). Thus, increment-consuming emissions for the two kilns are the post-coal conversion emission rate (400 lb/hr each kiln) minus the baseline emission rate, or 354.9 lb/hr for Kiln 2 and 378.1 lb/hr for Kiln 3.

For Kiln 1, a conservatively estimated gas flow rate of 87,000 acfm was used instead of the higher flow rate shown in Table 2-2. This equates to a stack exit velocity of 1,731 ft/min or 8.79 m/s.

6.4.2 Other Air Emission Sources

SO_2 is the only pollutant required to be addressed in the impact analysis. Therefore, an emission inventory for SO_2 was developed from available databases.

FDER provided KBN with AIR 10 reports and APIS inventories for Broward, Dade, and Palm Beach counties. Using this information, supplemented with data from permits, PSD applications, and previous modeling analyses, the SO_2 emitting facilities within 50 km of the location of the Tarmac site were identified and are presented in the attached tables.

All facilities located within 15 km of the Tarmac site with SO_2 emissions greater than 25 TPY were included in the modeling analysis. Facilities located 15 to 50 km from the proposed units with SO_2 emissions greater than 100 TPY were subject to further screening to determine the potential of significant interaction with the proposed sources. An additional source, North Broward Resource Recovery, was also included in the modeling analysis because it is a PSD increment-consuming source, although this is slightly more than 50 km from the Tarmac facility. A list of facilities considered in the modeling analysis is presented in Table 6-2. UTM coordinates of the Tarmac site are 583.2 km east, 2881.3 km north.

As described above, each facility between 15 and 50 km from the Tarmac site was further screened to determine the probability of source interaction. The recommended screening technique is the "Screening Threshold" method developed by the North Carolina Department of Natural Resources and Community Development, and approved by the USEPA. The method is designed to objectively eliminate from the emission inventory those facilities which are not likely to have significant interaction with the source undergoing evaluation. In general, facilities that should be considered in the modeling analyses are those with emissions greater than Q (in TPY), which is calculated by the following criterion:

Table 6-2. Source Inventory Considered in the Modeling Analysis

APIS Facility Identification Number	Facility	County	UTM Coordinates (km) East	UTM Coordinates (km) North	Relative Location (km) to Tarmac Facility+ X	Relative Location (km) to Tarmac Facility+ Y	Distance From Proposed Site (km)	Direction From Proposed Site (degrees)	Maximum Allowable SO_2 Emissions* (TPY)
50BRO060036	FPL -Port Everglades	Broward	587.4	2885.3	24.5	23.6	34.0	46	76,239
50BRO060037	FPL -Fort Lauderdale	Broward	580.3	2883.3	17.4	21.6	27.7	39	63,964
50DAD130003	FPL -Turkey Point	Dade	567.2	2813.2	4.3	-48.5	48.7	175	36,192
50DAD130004	General Portland	Dade	551.7	2843.4	-11.2	-18.3	21.5	211	10,546
50DAD130348	Metro Dade Resource Recovery	Dade	564.3	2857.4	1.4	-4.3	4.5	162	2,996 T
50BRO06????	South Broward County Resource Recovery	Broward	579.6	2883.3	16.7	21.6	27.3	38	1,318
50BRO06????	North Broward County Resource Recovery	Broward	583.6	2907.6	20.7	45.9	50.4	24	896
50DAD130001	FPL -Cutler	Dade	570.4	2834.9	7.5	-26.8	27.8	164	488
50BRO060015	East Coast Asphalt	Broward	584.9	2902.2	22.0	40.5	46.1	29	230
50DAD130015	Rinker Materials	Dade	558.2	2851.3	-4.7	-10.4	11.4	204	218 A
50BRO062094	Waste Management	Broward	583.2	2908.0	20.3	46.3	50.6	24	187
50DAD130483	General Asphalt Portable Plant	Dade	561.5	2853.2	-1.4	-8.5	8.6	189	103
50DAD130053	Brewer Company of Florida	Dade	551.0	2816.8	-11.9	-44.9	46.5	195	85
50DAD130013	Homestead City Utilities	Dade	552.5	2817.6	-10.4	-44.1	45.3	193	77
50BRO060046	Weekly Asphalt Paving	Broward	576.9	2886.1	14.0	24.4	28.1	30	39

* Maximum facility emissions are based on emissions found in APIS, or specific operation permits and PSD application.

\+ The Tarmac facility is located at UTM coordinates of 583.2 km east and 2881.3 km north.

Note: T = Emission rate based on Emission Testing emission information, because no information was available on allowable emissions.

A = Emission rate based on ACTUAL emission information, because no information was available on allowable emissions.

$$Q = 20 \times D$$

where D is the distance (km) from the particular source to the source undergoing evaluation.

A listing of the SO_2 facilities in the inventory with associated maximum allowable emissions, distance from the proposed site, and associated Q is presented in Table 6-3. Those facilities with maximum allowable emissions which are below the calculated "screening threshold" were eliminated from further consideration in the modeling analysis. The remaining facilities, along with all facilities greater than 25 TPY emissions and located within 15 km of the Tarmac site, comprise the facility list to be used in the modeling.

Two different source inventories for the FPL-Fort Lauderdale facility were considered for the PSD increment consumption modeling analysis. The first source inventory did not include the proposed FPL Combined Cycle Units and the subsequent retirement of Units 4 and 5. The second source inventory included the increment consumption of the proposed Combined Cycle Units and the increment expansion due to the retirement of Units 4 and 5. The PSD modeling analysis was conducted in this manner to demonstrate the impacts, if the proposed FPL Combined Cycle Units are permitted as planned. Impacts with and without contributions from the FPL-Fort Lauderdale facility will be presented in Section 7.0.

A summary of the SO_2 sources used in the modeling is presented in Table 6-4. PSD increment-affecting sources are noted and were used in the PSD analysis.

6.5 RECEPTOR LOCATIONS

As discussed in Section 6.1, the general modeling approach considered screening and refined phases to address compliance with maximum allowable PSD Class I and Class II increments and AAQS. In the ISCST modeling,

Table 6-3. Summary of SO2 Facilities Considered in the Modeling Analysis Using the "Screening Threshold" Technique

APIS Facility Identification Number	Facility	Distance From Proposed Site (km)	Direction From Proposed Site (degrees)	Maximum SO2 * Emissions (TPY)	Q, Emission Threshold (TPY) (20 x Distance)	Included in Modeling
50BR0060036	FPL - Port Everglades	34.0	46	76,239	680	YES
50BR0060037	FPL -Fort Lauderdale	27.7	39	65,964	555	YES
50DAD130003	FPL -Turkey Point	48.7	175	36,192	974	YES
50DAD130004	General Portland	21.5	211	10,546	429	YES
50DAD130348	Metro Dade Resource Recovery	4.5	162	2,996	90	YES
50BRO06????	South Broward County Res. Rec.	27.3	38	1,318	546	YES
50BRO06????	North Broward County Res. Rec.	50.4	24	896	1,007	YES
50DAD130001	FPL -Cutler	27.8	164	488	557	NO
50BRO060015	East Coast Asphalt	46.1	29	230	922	NO
50DAD130015	Rinker Mat	11.4	204	218	228	YES
50BRO062094	Waste Management	50.6	24	187	1,011	NO
50DAD130483	General Asphalt Portable Plant	8.6	189	103	172	YES
50DAD130053	Brewer Company of Florida	46.5	195	85	929	NO
50DAD130013	Homestead City Utilities	45.3	193	77	906	NO
50BRO060046	Weekly Asphalt Paving	28.1	30	39	563	NO

* *Maximum facility emissions determined from APIS or other available information on facility.*

Note: All facilities within 15 km of Tarmac with SO_2 emissions greater than 25 TPY were modeled.

Table 6-4. Summary of SO_2 Emission Sources To Be Used in the Modeling Analysis

APIS Facility Number	Facility	Coordinates Relative To Proposed Unit (km) X	Y	Source Description	Stack Data (ft) Height	Diameter	Operating Data Temperature (degrees F)	Velocity (ft/sec)	Modeled Emissions (lb/hr)	Annual Emissions (TPY)	PSD Sources
50BR0060036	FPL - Port Everglades	24.5	23.6	Units 1 and 2	344	14.0	289	68.0	5,060	22,163 *	No
				Units 3 and 4	343	18.1	275	68.0	8,470	37,098 *	No
				Gas Turbines 1-12	51	18.0**	860	70.0	3,876	16,978 *	No
50BR0060037	FPL - Fort Lauderdale	17.4	21.6	Proposed CT/HRSG	150	16.0	280	36.2	3,678	16,109	Yes
				Units 4 and 5	151	14.0	300	57.8	3,630	15,900	No
				Gas Turbines 1-12	51	18.0**	860	70.0	3,876	16,978	No
				Gas Turbines 13-24	44	18.0**	860	70.0	3,876	16,978	No
50AD13003	FPL - Turkey Point	4.3	-48.5	Unit 1 and 2	400	18.1	275	63.0	19,800	36,192	No
50BR006????	South Broward County Resource Revovery	16.7	21.6	Units 1-3	195	7.5	226	59.1	303	1,318	Yes
50BR006????	North Broward County Resource Recovery	20.7	45.9	Units 1-3	200	7.5	226	59.1	281	896	Yes
50DAD130004	General Portland	-11.2	-18.3	Cement Kilns 1 and 2	225	14.8	475	15.0	2,408+	10,546	No
50DAD130348	Metro Dade Resource Recovery	1.4	-4.3	Boilers 1-4	151	9.0	390	40.0	418	1,832	Yes
50DAD130015	Rinker Materials	-4.7	-10.4	Concrete Batch Plant	137	15.0	260	25.0	111	218	No
50DAD130483	General Asphalt	-1.4	-8.5	Concrete Batch Plant	23	3.8	300	76.0	23	103	No

* Annual emissions are based on the assumption of 8,760 hours of operation at the modeled emission rate.
\+ Short-term emissions are based on the assumption of 8,760 hours of operation at the annual emission rate.
** Effective diameter based on the rectangular area of the stack.

concentrations were predicted for the screening phase using several receptor grids. The locations of the receptors were based on identifying the areas in which maximum concentrations would be expected due to the proposed units.

A description of the receptor locations for determining compliance with PSD Class II increments and AAQS is as follows:

1. 360 receptors located at distances of 100, 300, 500, 800, 1100, 1,500, 2,000, 2,500, 3,200 and 4,000 m along 36 radials with each radial spaced at 10-degree increments.

2. 24 receptors located along the north and east boundaries of the Everglades National Park for the PSD Class I analysis. The locations of these receptors are presented in Table 6-5.

After the screening modeling was completed to determine impacts for comparison to PSD Class II increments and AAQS, refined short-term modeling was conducted using a receptor grid centered on the receptor which had the highest, second-highest short-term concentrations. The receptors were located at intervals of 100 m between the distances considered in the screening phase along 9 radials, at 2-degree increments, centered on the radial along which the maximum concentration was produced. For example, if the maximum concentration was produced along the 90-degree radial at a distance of 1.75 km, the refined receptor grid would consist of receptors at the following locations:

Directions (degrees)	Distance (km)
82, 84, 86, 88, 90, 92, 94, 96, 98	1.35, 1.45, 1.55, 1.65, 1.75, 1.85, 1.95, 2.05, and 2.15 per direction

To ensure that a valid HSH concentration was calculated, concentrations were predicted for the refined grid for the periods that produced both the highest and HSH concentrations from the screening receptor grid.

Table 6-5. Receptors Used in the PSD Class I Modeling Analysis To Address Predicted Impacts on the Everglades National Park

Receptor No.	UTM Coordinates (km) East	UTM Coordinates (km) North	Relative Position to Proposed Site (km)* East	North	Distance
1	515.0	2848.0	-47.9	-13.7	49.8
2	520.0	2848.0	-42.9	-13.7	45.0
3	525.0	2848.0	-37.9	-13.7	40.3
4	530.0	2848.0	-32.9	-13.7	35.6
5	533.5	2848.0	-29.4	-13.7	32.4
6	533.5	2843.0	-29.4	-18.7	34.8
7	533.5	2838.0	-29.4	-23.7	37.8
8	533.5	2833.0	-29.4	-28.7	41.1
9	533.5	2828.0	-29.4	-33.7	44.7
10	533.5	2823.0	-29.4	-38.7	48.6
11	533.5	2818.0	-29.4	-43.7	52.7
12	533.5	2815.3	-29.4	-46.4	54.9
13	538.0	2815.3	-24.9	-46.4	52.7
14	541.3	2814.0	-21.6	-47.7	52.3
15	542.0	2811.0	-20.9	-50.7	54.8
16	543.0	2810.0	-19.9	-51.7	55.4
17	543.0	2805.0	-19.9	-56.7	60.0
18	543.0	2800.0	-19.9	-61.7	64.8
19	543.0	2796.5	-19.9	-65.2	68.2
20	548.0	2796.5	-14.9	-65.2	66.9
21	553.0	2796.5	- 9.9	-65.2	65.9
22	556.0	2796.0	- 6.9	-65.7	66.1
23	556.6	2792.0	- 6.3	-69.7	70.0
24	557.0	2789.0	- 5.9	-72.7	72.9

* The UTM coordinates of the Tarmac facility are 562.9 km east and 2861.7 north.

6.6 BACKGROUND CONCENTRATIONS

Background concentrations used in the air quality impact analysis are discussed in Section 5.0. The SO_2 background concentrations used in the AAQS analysis were 15 $\mu g/m^3$, 8 $\mu g/m^3$ and 3 $\mu g/m^3$ for averaging times of 3-hour, 24-hour, and annual, respectively.

6.7 BUILDING DOWNWASH EFFECTS

Based on the building dimensions associated with buildings or structures at the Tarmac facility, stacks for Kilns 1, 2, and 3 are within 10% of GEP based on the K3/K4 ESP. In addition, the K3/K4 ESP is not a solid structure, being open at the bottom and allowing air flow under the ESPs. Therefore, no potential building downwash or wake effects were considered in the modeling analysis due to this structure.

The K1 and K2 stacks are marginally within the area of influence of the Finish Mill Building, and the stacks are near the GEP height for this building of 265 feet. Therefore downwash due to this structure will not be significant. The K3 stack is not in the influence of the Finish Mill Building or any other buildings other than the K3/K4 ESP.

Building downwash was simulated for the FPL-Fort Lauderdale facility. The parameters used for model simulation of downwash can be found in the model printouts.

7.0 AIR QUALITY MODELING RESULTS

7.1 KILN 2 ONLY

A summary of the maximum predicted SO_2 impacts due to Kiln 2 only burning coal, based on the screening analysis, is presented in Table 7-1. The results reflected the proposed SO_2 emissions of 400 lb/hr. The maximum predicted 3-hour, 24-hour and annual SO_2 concentrations are 90, 24 and 3.4 $\mu g/m^3$, respectively. These maximum impacts are all above the significance levels established by USEPA and FDER, and therefore further modeling analysis is required for SO_2 to demonstrate compliance with PSD increments and AAQS.

The maximum predicted impacts due to the <u>increase</u> in SO_2 emissions due to Kiln 2 Coal Conversion can be obtained by ratioing the above results. The increase in SO_2 emissions, from Table 2-1, is 354.7 lb/hr. The maximum impacts due to this increase are as follows: 80 $\mu g/m^3$, 3-hour; 21 $\mu g/m^3$, 24-hour; and 3.1 $\mu g/m^3$, annual average.

7.2 PSD CLASS II INCREMENT ANALYSIS

Maximum SO_2 concentrations predicted from the screening analysis for comparison to the PSD Class II increments are presented in Table 7-2. The results reflect impacts due to all increment consuming sources, which include Kiln 2 and Kiln 3 at Tarmac. The maximum PSD increment consumption values were well below the allowable increments. The 24-hour increment consumption was predicted from the screening analysis to be about 30 percent of the allowable increment, and therefore this impact was further refined (1985, Day 244 and 32). A summary of the maximum SO_2 PSD Class II increment consumption concentrations predicted in the analysis are presented in Table 7-3.

The maximum 3-hour average SO_2 PSD Class II increment consumption due to all increment consuming sources is predicted to be 103 $\mu g/m^3$, which is

Table 7-1. Maximum Predicted SO_2 Concentrations from the Screening Analysis Due to Kiln 2 Only

Averaging Period	Maximum Concentration (ug/m^3)	Receptor Location+ Direction (°)	Receptor Location+ Distance (km)	Period Julian Day	Period Hour Ending	Period Year
3-Hour*	89	330	0.800	239	12	1982
	90	340	1.100	149	15	1983
	84	300	0.800	245	15	1984
	78	250	0.800	148	15	1985
	74	10	1.100	70	12	1986
24-Hour*	20	320	1.500	201	-	1982
	24	280	1.500	185	-	1983
	22	310	1.100	122	-	1984
	20	290	2.000	237	-	1985
	19	330	1.500	48	-	1986
Annual	3.3	320	1.500	-	-	1982
	3.4	300	1.100	-	-	1983
	2.9	300	1.500	-	-	1984
	2.1	230	1.500	-	-	1985
	2.3	270	2.000	-	-	1986

\+ Relative to the location of the Kiln 2.

* Highest, second-highest concentrations predicted for this averaging period.

Table 7-2. Maximum Predicted SO_2 Concentrations from the Screening Analysis for Comparison to PSD Class II Increments

Averaging Period	Maximum Concentration (ug/m^3)	Receptor Location+ Direction (°)	Receptor Location+ Distance (km)	Period Julian Day	Period Hour Ending	Period Year
3-Hour*	97	330	0.800	204	12	1982
	103	300	0.800	200	12	1983
	94	330	0.800	182	12	1984
	83	250	0.800	148	15	1985
	81	340	1.500	48	12	1986
24-Hour*	23.5	320	1.500	177	-	1982
	25.7	280	1.500	212	-	1983
	23.6	310	1.100	122	-	1984
	26.1	340	2.000	244	-	1985
	23.1	330	1.500	169	-	1986
Annual	4.5	320	1.500	-	-	1982
	4.6	300	1.500	-	-	1983
	3.9	300	1.500	-	-	1984
	3.3	280	2.000	-	-	1985
	3.6	270	2.000	-	-	1986

\+ Relative to the location of the Kiln 2.

* Highest, second-highest concentrations predicted for this averaging period.

Note: 3-and 24-hour average concentrations remain unchanged if the impacts of the proposed combined cycle units and Units 4 and 5 at FPL Fort Lauderdale are not considered in the modeling analysis. Annual concentrations are reduced by 0.1 ug/m^3 if impacts from these sources are not considered.

Table 7-3. Maximum Predicted SO_2 Concentrations for Comparison to PSD Class II Increments

Averaging Period	Maximum Concentration (ug/m^3)	Receptor Location+ Direction (°)	Distance (km)	Period Julian Day	Hour Ending	Year	PSD Class II Increment
SO_2 Concentrations							
3-Hour*	103	300	0.800	204	12	1982	512
24-Hour*	26.3	338	1.900	244	--	1985	91
Annual	4.6	300	1.500	--	--	1983	20

\+ Relative to the location of the Kiln 2.
* Highest, second-highest concentrations predicted for this averaging period.

20 percent of the maximum allowable PSD Class II increment of 512 $\mu g/m^3$, not to be exceeded more than once per year.

The maximum 24-hour average SO_2 PSD Class II increment consumption due to all sources is predicted to be 26.3 ug/m^3, which is 29 percent of the maximum allowable PSD Class II increment of 91 ug/m^3, not to be exceeded more than once per year.

The maximum annual average SO_2 PSD Class II increment consumption is predicted to be 4.6 $\mu g/m^3$, which is 23 percent of the maximum allowable PSD Class II increment of 20 $\mu g/m^3$.

Based upon these results, operation of Kiln 2 on coal, in conjunction with all other PSD increment consuming sources, will consume less than 30 percent of the allowable Class II increments. Thus, there is increment available for significant future growth in the area. As discussed in Section 6.0, the PSD Class II analysis was conducted both with and without the planned FPL Lauderdale Repowering Project. Maximum increment consumption values near Tarmac did not change as a result of the planned FPL facility. This indicates that other nearby sources (i.e., Tarmac and Dade County Resource Recovery) are the primary contributors to the Class II increment consumption values.

7.3 AAQS ANALYSIS

The maximum 3-hour, 24-hour, and annual average total SO_2 concentrations predicted from the screening analysis are presented in Table 7-4. The total concentrations were determined from the impacts of the modeled sources added to the background concentration determined from monitoring data. These results show that the maximum SO_2 concentrations due to all sources are well below the AAQS for all averaging periods.

Table 7-4. Maximum Predicted Total SO_2 Concentrations from the Screening Analysis for Comparison to AAQS

	Concentration (ug/m^3)							
		Total Due To		Receptor Location++		Period		
Averaging Period	Total	Modeled Sources	Background	Direction (°)	Distance (km)	Julian Day	Hour Ending	Year
3-hour	239	224	15	20	3.2	28	24	1982
	225	210	15	320	4.0	263	24	1983
	244	229	15	330	4.0	74	24	1984
	217	202	15	10	3.2	156	24	1985
	246	231	15	10	4.0	130	21	1986
24-hour*	76	68	8	340	4.0	314	--	1982
	65	57	8	320	4.0	303	--	1983
	72	64	8	330	4.0	269	--	1984
	67	59	8	10	4.0	337	--	1985
	60	52	8	230	3.2	155	--	1986
Annual	13	10	3	320	1.5	--	--	1982
	12	9	3	300	1.5	--	--	1983
	12	9	3	300	1.5	--	--	1984
	12	9	3	320	4.0	--	--	1985
	12	9	3	270	3.2	--	--	1986

* Highest, second-highest concentrations predicted for this averaging period.
++ Relative to the location of Kiln 2.

Note: AAQS are 1,300 ug/m^3, 3-hour
260 ug/m^3, 24-hour
60 ug/m^3, annual

Based upon the low predicted values, no refinements of these concentrations were performed. Review of the model printouts indicated fairly uniform concentrations across the receptor grid, indicating a distant source is causing the maximum impacts.

The maximum 3-hour average SO_2 concentration due to all sources is predicted to be 246 $\mu g/m^3$, which is 19 percent of the Florida AAQS of 1300 $\mu g/m^3$, not to be exceeded more than once per year. The maximum 24-hour average SO_2 concentration due to all sources is predicted to be 76 $\mu g/m^3$, which is 29 percent of the Florida AAQS of 260 $\mu g/m^3$, not to be exceeded more than once per year. The maximum annual average SO_2 concentration due to all sources is predicted to be 13 $\mu g/m^3$, which is 22 percent of the Florida AAQS of 60 $\mu g/m^3$.

The Dade County Department of Environmental Resources Management, Environmental Planning Division has developed the following AAQS for SO_2 that must not be exceeded in any part of Dade County:

3-Hour Average	-	350 $\mu g/m^3$
24-Hour Average	-	110 $\mu g/m^3$
Annual Average	-	25 $\mu g/m^3$

The 3- and 24-hour average AAQS may be exceeded once per year. As shown in Table 7-4, none of the predicted concentrations exceed the Dade County AAQS.

7.4 CLASS I AREA ANALYSIS

The results of the PSD Class I area modeling analysis for the Everglades National Park are presented in Table 7-5. The modeling analysis evaluated a number of receptors along the boundary of the Class I area.

Table 7-5. Maximum Predicted SO_2 Concentrations for Comparison to PSD Class I Increments

Averaging Period	Maximum Concentration (ug/m^3)	Period Julian Day	Period Hour Ending	Period Year	PSD Class I Increment
3-Hour*	15	317	12	1982	25
	16	266	9	1983	
	16	56	12	1984	
	19	150	9	1985	
	12	257	24	1986	
24-Hour*	3.9	291	--	1982	5
	4.5	303	--	1983	
	3.9	268	--	1984	
	3.7	256	--	1985	
	4.1	124	--	1986	
Annual	0.56	--	--	1982	2
	0.53	--	--	1983	
	0.52	--	--	1984	
	0.49	--	--	1985	
	0.54	--	--	1986	

* Highest, second-highest concentrations predicted for this averaging period.

As shown in Table 7-5, total Class I PSD increment consumption concentrations for SO_2 are below the Class I increments for all averaging times. The maximum 3-hour increment consumption is predicted to be 19 $\mu g/m^3$, compared to the Class I increment of 25 $\mu g/m^3$. The maximum predicted 24-hour increment consumption for SO_2 is 4.5 $\mu g/m^3$, which is below the allowable increment of 5 $\mu g/m^3$. These maximum increment consumption values are due to the effects of two increment consuming sources located in Dade County: Tarmac Florida (cement plant) and Dade County Resource Recovery (MSW incinerator). The proposed Lauderdale Repowering Project does not contribute to these maximum increment consumption values. This value was further refined using a refined receptor grid with 100 m spacing along the boundary of the Class I area. The resulting 24-hour increment consumption was 4.7 $\mu g/m^3$ (1983, Day 303).

The maximum predicted annual SO_2 increment consumption concentration in the Class I area is predicted to be 0.56 $\mu g/m^3$. This value is well below the allowable Class I increment of 2 $\mu g/m^3$ for SO_2.

To demonstrate the effects the proposed Kiln 2 Coal Conversion will have on the Class I area, the modeling analysis evaluated the impacts of Kiln 2 only. The results of this analysis are presented in Table 7-6. As shown, the maximum Class I impacts due to Kiln 2 only are 7.2 $\mu g/m^3$, 3-hour, 1.8 $\mu g/m^3$, 24-hour, and 0.16 $\mu g/m^3$, annual average. These values are less than 40 percent of the Class I increments.

Maximum total SO_2 concentrations predicted in the Class I area due to all sources are presented in Table 7-7. These concentrations include the estimated background concentration for the Tarmac area. As shown, the maximum concentrations are predicted to be: 193 $\mu g/m^3$, 3-hour average; 52 $\mu g/m^3$, 24-hour average; and 9.9 $\mu g/m^3$, annual average. These maximum impacts are 20 percent of the AAQS or less.

Table 7-6. Maximum Predicted SO_2 Concentrations for Comparison to PSD Class I Increments Due to Kiln 2 Only

Averaging Period	Maximum Concentration (ug/m^3)	Period: Julian Day	Period: Hour Ending	Period: Year	PSD Class I Increment
3-Hour*	6.9	206	3	1982	25
	7.2	138	6	1983	
	6.8	260	24	1984	
	6.6	149	3	1985	
	6.2	221	3	1986	
24-Hour*	1.4	292	--	1982	5
	1.8	290	--	1983	
	1.4	78	--	1984	
	1.2	343	--	1985	
	1.2	295	--	1986	
Annual	0.16	--	--	1982	2
	0.14	--	--	1983	
	0.15	--	--	1984	
	0.13	--	--	1985	
	0.15	--	--	1986	

* Highest, second-highest concentrations predicted for this averaging period.

Table 7-7. Maximum Total Predicted SO_2 Concentrations for the Everglades NP Class I Area

Averaging Period	Concentration (ug/m³) Total	Total due to Modeled Sources	Total due to Background	Year	AAQS
3-Hour*	159	144	15	1982	1,300
	193	178	15	1983	
	181	166	15	1984	
	167	152	15	1985	
	163	148	15	1986	
24-Hour*	48	40	8	1982	260
	50	42	8	1983	
	50	42	8	1984	
	52	44	8	1985	
	44	36	8	1986	
Annual	9.9	6.9	3	1982	60
	9.2	6.2	3	1983	
	9.9	6.9	3	1984	
	9.0	6.0	3	1985	
	9.1	6.1	3	1986	

8.0 IMPACTS TO AIR QUALITY RELATED VALUES, VEGETATION, SOILS AND VISIBILITY

8.1 AIR QUALITY RELATED VALUES

The impacts of the proposed Kiln 2 coal conversion on Air Quality Related Values (AQRV), in the Everglades National Park are addressed in this section. The AQRVs are defined under PSD regulations as being: "All those values possessed by an area except those that are not affected by changes in air quality and include all those assets of an area whose vitality, significance, or integrity is dependent in some way upon the air environment. These values include visibility and those scenic, cultural, biological, and recreational resources of an area that are affected by air quality. Important attributes of an area are those values or assets that make an area significant as a monument, preserve, or primitive area. They are the assets that are to be preserved if the area is to achieve the purposes for which it was set aside" (Federal Register, 1978).

Freshwater and coastal wetlands, dominant plant communities, unique and rare plant communities, soils and associated periphyton, and the wildlife dependent upon these communities for habitat are considered part of the AQRVs. Rare, endemic, threatened, and endangered species of the national park and bioindicators of air pollution (e.g., lichens) are also AQRVs and are evaluated in this section.

8.1.1 General Description

The Everglades National Park is a subtropical preserve located on the southern tip of Florida. The park comprises about 715,000 acres including an estimated 330,000 acres of mangrove and saltmarsh, 366,000 acres of prairie, and 20,000 acres of pineland (Taylor and Herndon, 1981). Small islands of tropical hardwood hammock, evergreen temperate swamp ("bayheads") and cypress swamp are present and are interspersed among the larger vegetation communities.

Most of the coastline is occupied by mangroves. Species present include red mangrove (Rhizophora mangle), black mangrove (Avicennia germinans), and white mangrove (Laguncularia racemosa).

Prairies which are seasonally inundated are the largest vegetation communities in the national park. These wetlands are dominated by sawgrass (Cladium jamaicense), muhlygrass (Muhlenbergia filipes), and/or little bluestem (Schizachyrium rhizomatum). Muhlygrass dominates the drier prairies; sawgrass occurs where the hydroperiod is longer than 5-months. Algal periphyton mats are usually present in these prairies. The predominant soil in the prairies is Marl. Marl is a calcareous substance precipitated by the blue-green algae of the periphyton mats. The algae comprising the periphyton are important primary producers and are dependent upon calcium-rich waters (Gleason and Spackman, 1973). Sawgrass sometimes occurs on pockets of peat within the marl-limestone substrate.

Pinelands occur on limestone (Miami oolite),and have many crevices and solution holes but very little soil development (Loope, et al., 1979). South Florida slash pine (Pinus elliottii var. densa) is the single canopy tree in this vegetation type. The understory, which is diverse, includes tropical hardwoods and herbaceous species endemic to South Florida. Pinelands were once the dominant upland community in South Florida, but very little of this community type remains outside of the national park boundaries.

Hardwood hammocks in the park range up to a few acres in size and number in the thousands. They occur on small areas of ground higher than the surrounding prairie. Dominant species include gumbo-limbo (Bursera simaruba), poisonwood (Metopium toxiferum), buckthorn (Bumelia salicifolia), strangler fig (Ficus aurea), and pigeon-plum (Coccoloba diversifolia). Other important trees and shrubs include myrsine (Myrsine floridana), wild tamarind (Lysiloma latisiliquum), white stopper (Eugenia axillaris), wild coffee (Psychotria nervosa), and marlberry (Ardisia escallonioides). The hardwood hammocks contain numerous tropical plant species not found anywhere else in the United States (Loope and Urban, 1980). Epiphytic orchids and bromeliads are frequent. The hammocks grow on eroded limestone which is covered with a shallow layer of organic soil (Olmsted, et al., 1980).

Temperate swamp hardwoods are found in the areas which are inundated seasonally. These areas are dominated by redbay (Persea borbonia), wax myrtle (Myrica cerifera), sweetbay (Magnolia virigniana), and dahoon (Ilex cassine). Pond apple (Annona glabra), cocoplum Chrysobalanus icaco), and buttonbush (Caphalanthus occidentalis) are in the shrub layer. Ferns are common in the ground layer. Epiphytes include Tillandsia spp. and Encyclia tampensis. Peat forms the substrate which varies in depth from 30 to 200 cm over limestone.

Two types of cyprss, bald cypress (Taxodium distichum) and pond cypress (Taxodium ascendens), occur in the national park. The understory of cypress-dominated communities is typically open and contains many of the same species that are present in the temperate swamp hardwood communities. Ferns usually dominate the groundlayer. Epiphytic vascular plants and lichens are abundant. Again, in these areas peat or peaty marls form the substrate.

Lichens are abundant on the bark of hardwood trees and cypress hammocks, as well as on ornamental trees planted at visitor centers within the park. Lichens are important for their intrinsic functions in the park ecosystem and for their use as bioindicators based on their sensitivity to air pollution. They provide a germination substrate for vascular epiphytes, and serve as food for invertebrates. Some species fix nitrogen. Because lichens are sensitive to air pollution, potential impacts of air pollution on the national park vegetation can be evaluated by comparing predicted pollutant levels in the park to the threshold levels of pollutants known to be injurious to lichens. If projected pollutant levels are below amounts known to adversely impact lichens, then less sensitive vascular plants are very unlikely to be affected.

Vascular epiphytes, many of them threatened or endangered species, are common in tree hammocks. Most of these are orchids (<u>Epidendrum</u> spp., <u>Oncidium</u> spp.) and bromeliads (<u>Catopsis</u> <u>beteroniana</u>, <u>Catopsis</u> <u>nutans</u>, <u>Tillandsia</u> <u>balbisiana</u> eg.). These plants obtain water and essential elements from precipitation and much of their surface area is exposed to airborne contaminants. Therefore, vascular epiphytes may potentially be sensitive to air pollutants.

No plant species in the park are listed by the U.S. Fish and Wildlife Service as threatened or endangered. However, certain species that are either under review for listing by the Fish and Wildlife Service or protected by the State of Florida under the Preservation of Native Flora of Florida Act (Table 8-1) could be present in the park.

Major soil associations found within the national park and their characteristics are summarized in Table 8-2. The soils consist primarily of histosols and shallow entisols over limestone substrate.

Threatened and endangered wildlife species found in the national park are listed in Table 8-3. The primary habitats for each of these species are shown in Table 8-4.

8.1.2 <u>Impacts to Vegetation</u>

One essential plant nutrient is sulfur. Sulfur is usually taken up as sulfate ions from the soil solution through the roots. When sulfur dioxide in the atmosphere enters the foliage through pores in the leaves, it reacts with water in the leaf interior to form sulfite ions. Sulfite ions are highly toxic. They interact with enzymes, compete with normal metabolites, and interfere with a variety of cellular functions (Horsman and Wellburn, 1976). However, sulfite is oxidized to sulfate ions within the leaf, which can then be used by the plant as a nutrient. Small amounts of sulfite may be oxidized before they become toxic to the plant.

Table 8-1. Rare Plants Found to Occur in South Florida Area

SCIENTIFIC NAME	COMMON NAME	USFWS STATUS	FDA STATUS
SPECIAL PLANT			
Asclepias curtissii	Curtiss' milkweed		T
Conradina grandiflora	large-flowered rosemary	UR2	
Ernodea littoralis	beach-creeper		T
Jacquemontia reclinata	beach jacquemontia	UR2	E
Lechea cernua	nodding pinweed	UR2	
Myrcianthes fragrans var simponii	twinberry	UR2	
Okenia hypogaea	burrowing four-o'clock		E
Coccothrinax argentata	silver palm		C
Digitaria gracillima	longleaf crabgrass	UR2	
Epidendrum nocturnum	night-scented orchid		T
Hymenocallis latifolia	broad-leaved spiderlily	UR5	
Remirea maritima	beach-star		E
Tillandsia flexuosa	banded wild-pine		T
Acrostichum aureum	golden leather fern		E
Asplenium dentatum	slender spleenwort		T
Asplenium serratum	bird's nest spleenwort		E
Ophioglossum palmatum	hand fern	UR5	E

Source: Wood, 1988

Table 8-2. Summary of Characteristics of Major Soil Associations Found Within Everglades National Park

Soil Type/Association	Characteristics
Broward-Parkwood-Keri Association	Derived from moderately thin beds of sand over marl or relatively hard limestone. Parkwood soils are underlain by soft marl at somewhat deeper depths; the Keri series is typically comprised of layers of sand and marl within 100 cm from the surface.
Perrine-Ochopee Association	The Perrine series are poorly drained from recent unconsolidated, finely divided calcareous sediments and are generally associated with tidal swamps and marshes. Depth to underlying limestone is 20 to 91 cm. The Ochopee soils are poorly drained and originated from calcareous sands and marl.
Everglades-Brighton-Pamlico Association	Highly organic muck or peat soils formed from decomposition of emergent vegetation that overlie nearly neutral or alkaline sands and sandy clays. Underlain by marl or limestone. Everglades soils are slightly acid to alkaline; Brighton and Pamlico soils tend to be more acidic.
Tidal Marsh-Coastal Beach-Coastal Dunes	Restricted to the periphery of the coast and consists of nearly level salt marshes, coastal beach, and coastal dunes. Tidal exchange and sea salt deposition dominate the ionic balance and pH regime of these systems.
Rockland	Porous limestone through which water flows freely.

Source: Smith, et al., 1973.

Table 8-3. Federal and State Listed Endangered and Threatened Animals in the Everglades National Park

Animals	State	Federal
Mammals		
Florida Panther	End.	End.
Mangrove Fox Squirrel	End.	-
Florida Black Bear	Thr.	-
Everglades Mink	Thr.	-
Manatee	Thr.	End.
Birds		
Wood Stork	End.	-
Everglade Kite	End.	End.
Cape Sable Seaside Sparrow	End.	End.
Peregrine Falcon	End.	End.
Southern Bald Eagle	Thr.	End.
Osprey	Thr.	-
Florida Sandhill Crane	Thr.	-
Brown Pelican	Thr.	End.
Great White Heron	Thr.	-
Southeastern American Kestrel	Thr.	-
Reptiles		
American Crocodile	End.	End.
American Alligator	Thr.	Thr.
Eastern Indigo Snake	Thr.	Thr.

End. = endangered; Thr. = threatened

Table 8-4. Habitat of Federal and State Listed Endangered and Threatened Animals in the Everglades National Park

Species	Pine Forest	Tropical Hardwood Forest	Cypress Forest	Evergreen Swamp Forest	Inland Marshes, Ponds, Sloughs	Wet Prairies	Mangrove Forest	Coastal Marshes
Mammals								
Florida Panther	X	X	X	X		X	X	X
Mangrove Fox Squirrel	X	X	X	X		X		
Florida Black Bear	X	X	X	X		X	X	X
Everglades Mink			X	X	X	X		
Manatee							X	
Birds								
Wood Stork			X	X	X	X	X	X
Everglade Kite					X	X		
Cape Sable Seaside Sparrow					X	X		X
Peregrine Falcon	X				X	X	X	X
Southern Bald Eagle	X		X		X		X	X
Osprey	X		X			X	X	X
Florida Sandhill Crane					X	X		X
Brown Pelican							X	X
Great White Heron				X			X	X
Southeastern American Kestrel	X				X	X		
Reptiles								
American Crocodile							X	
American Alligator			X	X	X	X	X	
Eastern Indigo Snake	X	X	X			X	X	

Source: Duever, _et al_., 1979.

If a plant is subject to long-term exposure to sulfur dioxide, sulfate may accumulate in the leaves because more sulfate is produced than can be utilized by the plant. Reduced yield and other impacts on growth and vigor may result from these chronic, long-term exposures. Frequency of exposure is important. Low doses of sulfur dioxide, followed by long periods of very low or no exposure, may be less damaging than the same total dose received continuously. This is because plants can utilize the accumulated sulfate during the period of no exposure.

Plant species vary widely with regard to the threshold level of pollutants which cause injury or growth reduction. Plant response to sulfur dioxide emissions from the proposed facility will depend upon the concentration of the gas, the duration of each exposure, and the frequency of exposures. Near the Tarmac facility (i.e., within 4 km), the pattern of exposure will consist of a few episodes of relatively high concentration for a short duration interspersed with long periods of extremely low concentrations. At longer distances from the facility, such as within the Class I area, concentrations are generally low for long periods of time.

The maximum predicted 3-hour average SO_2 concentration in the Class I area due to all sources is 193 ug/m^3, (see Table 7-8). The total maximum predicted 24-hour average concentration is 52 ug/m^3, and the annual average concentration is 9.9 ug/m^3. Concentrations which are at or near the maximum levels will occur infrequently during the year and will occur at the eastern border of the national park. Maximum concentrations will decrease with distance to the west of the eastern boundary, since emissions sources lie to the east of the park.

The maximum contribution of Kiln 2 to concentrations in the Class I area are 7.2 ug/m^3, 3-hour, 1.8 ug/m^3, 24-hour, and 0.16 ug/m^3 annual average. These maximum contributions are less than 1 percent of the AAQS for SO_2.

Exposures to SO_2 that have been shown by laboratory tests or field observations to adversely affect plant species that occur, or are similar to those that occur, in the national park are presented in Table 8-5. The most sensitive species are two lichen species that are common in the park, but less abundant in urban areas east of the national park (Ramalina denticulata and Parmotrema tinctorum). Exposures that affect these lichens are much higher than the concentrations and frequencies of SO_2 that will result from the proposed Kiln 2 Coal Conversion. Therefore, no adverse impact to vegetative resources in the national park is expected to result from the coal conversion.

In conclusion, the predicted concentrations of sulfur dioxide resulting from the proposed coal conversion will have no impact on the vegetation of the national park.

8.1.3 Impacts to Soils

Potential and hypothesized effects of atmospheric deposition on soils include: increased soil acidification; alteration in cation exchange; loss of base cations; and mobilization of trace metals. The potential sensitivity of specific soils to atmospheric inputs is related to two factors. First, the physical ability of a soil to conduct water vertically through the soil profile is important. Second, the ability of the soil to resist chemical changes, as measured in terms of pH and soil cation exchange capacity (CEC), is important in determining how a soil responds to atmospheric inputs.

The soils of the national park are generally classified as histosols or entisols. Histosols (or peat soils) are organic and have extremely high buffering capacities based on CEC, base saturation, and bulk density. Therefore, they will be relatively insensitive to atmospheric inputs. The entisols are shallow sandy soils overlying limestone, such as the soils found in the pinelands. The direct connection of these soils with subsurface limestone tends to neutralize any acidic inputs. In addition, the groundwater table is highly buffered due to the interaction with subsurface limestone formations, which results in high alkalinity (as Calcium Carbonate).

Table 8-5. Lowest Doses of SO_2 Reported to Affect Plant Species Common to Site Region

Species	Lowest SO_2 Concentration (ug/m^3) Known to Affect Species	Reference
Parmotrema tinctorum	200, for 6 hours/week for 10 weeks. Increased percent electrolyte leakage. (240, for 3 hours/week for 6 weeks showed no effect on leakage, biomass gain, or photosynthetic rate.	Hart et al., 1988
Ramalina denticulata	400, for 6 hours/week for 10 weeks. Reduced biomass gain, lowered photosyntheitic rate, and increased percent electrolyte leakage in comparison to effects of lower SO_2 concentrations	Hart et al., 1988
Taxodium distichum (bald cypress)	1300, for 48 hours did not affect dry weight gain	Shanklin and Kozlowski; 1985
Pinus elliottii (slash pine)	650, for 2 hours - Reduced needle growth	Berry 1974
Lycopersicon (tomato) escoulentum	1258, for 5 hours on each of 57 days reduced growth	Kohut et al., 1982
C_4 species - Amaranthus retroflexus, Setaria faberii, Setaria lutescens (pigweed) (foxtail grasses)	650 ug/m^3, 8 hours/day for 5 days during 2 weeks. Increased weight at normal CO_2 concentrations	Carlson and Bazzaz, 1982
Lemna spp (duckweed)	390 for 6 weeks reduced growth	Fankhauser et. al., 1976
Orange (citrus)	2,080 for 23 days with 10 day interruption reduced leaf area.	Matsushima and Brewer 1972

The relatively low sensitivity of the soils in the park to acidic deposition, coupled with the extremely low ground-level SO_2 concentrations predicted for the national park, will result in no significant impact on soils in the park.

8.1.4 Impacts to Wildlife

Both physiological and ecological effects to fauna due to gaseous and particulate pollutants have been reported (Newman, 1980; Newman and Schreiber, 1988). The most severe of these effects have been observed at concentrations above the secondary national ambient air quality standards. Physiological and/or behavioral effects have also been observed in experimental animals at concentrations below these standards (see Table 8-6).

The major air quality risk to wildlife in the United States is from continuous exposure to pollutants above the national ambient air quality standards. Risks also occur for wildlife living in the vicinity of an emission source which experiences frequent "upset" or episodic conditions that occur because of malfunctioning of equipment, unique meteorological conditions or during start up emission sources (Newman and Schreiber, 1988). Under these conditions, chronic effects, e.g., particulate contamination or acute effects, such as injury to health, have been observed (Newman, 1980).

The lowest threshold values of SO_2 reported to cause physiological changes in wildlife are shown in Table 8-6. These values are well below the maximum predicted 3-hour and annual average concentrations in the National Park of 193 $\mu g/m^3$, and 9.9 $\mu g/m^3$, respectively. As a result, no significant effects on terrestrial wildlife AQRVs from SO_2 are expected.

No impacts to the Everglades National Park's wildlife or wildlife habitats, including threatened and endangered species, nor to wildlife resources in the vicinity of the Tarmac plant, are expected.

Table 8-6. Examples of Lowest Observed Effect Levels of Air Pollutants on Wildlife

Pollutant	Reported Effect	Concentration (ug/m^3)	Exposure
Sulfur Dioxide	respiratory stress in guinea pigs	427 to 854	1 hour
	respiratory stress in rats	267	7 hours/day;* 5 day/week for 10 weeks
	decreased abundance deer mice	13-157	continually for 5 months**

Source: Adapted from Newman (1981) and Newman and Schreiber (1988).

* Used to compare as a range between 3 hour and 24 hour averaging times.
** Used to compare with annual averaging times.

8.2 IMPACTS TO VISIBILITY

The Clean Air Act Amendments of 1977 provide for implementation of guidelines to prevent visibility impairment in mandatory Class I areas. The guidelines are intended to protect the aesthetic quality of these pristine areas from reduction in visual range and atmospheric discoloration due to various pollutants.

The nearest Class I area is the Everglades National Park, located about 30 km from the Tarmac site. A Level-1 visibility screening analysis was performed to determine the potential adverse visibility effects using the approach suggested in the Workbook for Plume Visual Impact Screening and Analysis (USEPA, 1988). The Level-1 screening model has been computerized by EPA. The user inputs emissions of particulates, NO_x (as NO_2), primary NO_2, soot, and primary SO_4 from the proposed source, along with transport specifications for the particular case (i.e. distance to Class I area, background visual range, meteorological conditions, etc.). Visibility impacts are determined for two parameters:

1) Contrast of a plume against a viewing background such as the sky or a terrain feature.
2) Perceptibility of a plume on the basis of the color difference between the plume and the viewing background (Delta E).

Results are provided by the model for several scenarios based on the background view, the viewing angle, visibility impairment due to plumes located both inside and outside the Class I area, and the sun angle. The critical value for contrast is 0.05 while that for Delta E is 2.00. If these levels are not exceeded by the proposed source, the source passes the Level-1 visibility analysis, and the source will not have a significant impact on the Class I area.

Input parameters and results of the Level-1 analysis for the proposed Lauderdale units are presented in Figure 8-1. As shown, Kiln 2 will emit particulates, NO_x and primary SO_4 (sulfuric acid mist). Emission rates are

Visual Effects Screening Analysis for
Source: Tarmac Kiln 2
Class I Area: Everglades NP

*** Level-1 Screening ***

Input Emissions for

Particulates	31.30	LB /HR
NOx (as NO2)	169.30	LB /HR
Primary NO2	.00	LB /HR
Soot	.00	LB /HR
Primary SO4	12.00	LB /HR

**** Default Particle Characteristics Assumed

Transport Scenario Specifications:

Background Ozone:	.04 ppm
Background Visual Range:	25.00 km
Source-Observer Distance:	30.00 km
Min. Source-Class I Distance:	30.00 km
Max. Source-Class I Distance:	50.00 km
Plume-Source-Observer Angle:	11.25 degrees
Stability: 6	
Wind Speed: 1.00 m/s	

R E S U L T S

Asterisks (*) indicate plume impacts that exceed screening criteria

Maximum Visual Impacts INSIDE Class I Area
Screening Criteria ARE NOT Exceeded

					Delta E		Contrast	
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume
SKY	10.	84.	30.0	84.	2.00	1.500	.05	.004
SKY	140.	84.	30.0	84.	2.00	.641	.05	-.014
TERRAIN	10.	84.	30.0	84.	2.00	.896	.05	.012
TERRAIN	140.	84.	30.0	84.	2.00	.209	.05	.010

Maximum Visual Impacts OUTSIDE Class I Area
Screening Criteria ARE NOT Exceeded

					Delta E		Contrast	
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume
SKY	10.	65.	28.0	104.	2.00	1.521	.05	.004
SKY	140.	65.	28.0	104.	2.00	.647	.05	-.015
TERRAIN	10.	50.	26.2	119.	2.00	1.036	.05	.014
TERRAIN	140.	50.	26.2	119.	2.00	.250	.05	.012

Figure 8-1 VISIBILITY SCREENING RESULTS, TARMAC KILN 2

KBN

the same as presented in Table 2-1 for Kiln 2 after conversion to cool. Primary NO_2 and soot are not emitted in significant quantities by fossil fuel combustion sources, and therefore these emissions were set to zero.

The background visual range, as determined for southeast Florida from the Workbook manual, is 25 km. Other parameters input to the model were based upon default values given in the Workbook and incorporated into the computer model.

The values of Delta E and contrast are all less than the screening criteria of 2.00 and 0.05, respectively. As a result, it is highly unlikely that emissions from the proposed coal conversion will cause adverse visibility impairment in the Everglades National Park.

8.3 IMPACTS DUE TO ASSOCIATED GROWTH

Air quality impacts due to general commercial, residential, industrial and other growth associated with the Kiln 2 Coal Conversion would potentially occur during the construction and operational phases. Since Kiln 2 is already in place, construction activities and employment will generate relatively small quantities of air pollutants that can affect air quality. The emissions from construction will be minor, since major earthworks are not necessary. Construction employment requirements are expected to be filled by existing construction and manufacturing workers that would supply the materials necessary for the conversion. The impact of this growth is insignificant relative to the existing population base in the area.

Operational employment would be about 16 personnel added to the current plant staff of 93. The additional employment is expected to originate primarily from the general population growth in the area, which would not be a direct result of the project. Based upon the above considerations, the air quality impact of the proposed project due to additional growth will be minimal.

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Appendix A
Reference Materials

EXERPT FROM 1980 PERMIT APPLICATION

KILN 2 COAL CONVERSION

Section V, Item 2 Emission Estimates (continued)

<u>Sulfur Dioxide</u>

Calculations based upon 0.08% SO_3 in raw feed, 2.0% S coal, and 91.3% SO_2 removal inherent in process based upon stack test results.

<u>Coal:</u>

Feed: 81,000 #/hr. x 0.0008 x $\frac{32}{80}$ = 25.92 #S/hr.

Fuel: 15,000 #/hr. x 0.02 = 300.0 #S/hr.

Total Input SO_2: = x 2

651.84 #SO_2/hr.

Maximum emitted = 651.84 x (1 - 0.913) = 56.7 #SO_2/hr.

Annual & Potential = 56.7 #/hr x 8760 hr/yr ÷ 2000 #/ton

= 248.4 TPY

<u>Gas:</u>

Feed: 81,000 #/hr x 0.0008 x $\frac{32}{80}$ = 25.92 #S/hr.

x2

Total Input = 51.84 #SO_2/hr.

Maximum Emitted = 51.84 #/hr x (1 - 0.913) = 4.5 #SO_2/hr.

Annual & Potential = 4.5#/hr x 8760 ÷ 2000 = 19.7 TPY

<u>Oil:</u> Base on recent stack test (June, 1979)

Maximum emitted = 0.2519 #/MM BTu x 180 MM BTu/hr = 45.3 # SO_2/hr

Annual & Potential = 45.3 #/hr x 8760 ÷ 2000 = 198.6 TPY

EXCERPT FROM 1980 PERMIT APPLICATION

KILN 3 COAL CONVERSION

Section V, Item #2: Emission Estimates

Sulfur Dioxide:

Calculation based upon 0.08% SO_3 in raw feed, 2.0% coal and 98.7% SO_2 removal inherent inprocess based upon stack test results.

Coal: based on recent stack test on similar sulfur content oil

Sulfur input:
feed:283,500 lbs/hr x 0.0008 x 32/80 = 90.72 #/hr
fuel:46,000 lbs/hr x 0.02 = 920,00 #/hr

Total input:
1010.72 #/hr. sulfur
x2
=2021.44 #/hr SO_2

Maximum emitted=2021.44 #/hr x (1-.987) = 26.28 #/hr.
Annual & Potential=26.28 #/hr x 8760 ÷ 2000 = 115.1 TPY

Gas: 283,500 lbs/hr x 0.0008 x 32/80 x 2 x (1-.987) = 2/36 #/hr SO_2
Annual & Potential =2.36 #/hr x 8760 ÷ 2000 = 10.3 TPY

Oil: Based on recent stack test at 2.37% sulfur, #6 fuel oil

0.0397 #/MMBTU x 552 MMBTU/hr. (max.) = 21.9 #/hr
Annual & Potential = 21.9 #/hr x 8760 ÷ 2000 = 95.9 TPY

NO$_x$ TEST DATA

KILN 2 - GAS & OIL

1980

TABLE T-2

MIAMI STACK EMISSION SURVEY

NOX EMISSION RATE - EPA METHOD 7

1980

Run No.	Sample No.	Kiln No.	Fuel Type	Date 1980	Lbs. NO_2 Hr.	Lbs. NO_2 Ton Clnk.	Lbs. NO_2 LB.F.Gas	PPM*
1	1	2	Gas	3-20	211.5	9.95	9.45	435
1	2	2	Gas	3-20	109.1	5.13	4.88	224
1	3	2	Gas	3-20	107.4	5.05	4.80	221
1	4	2	Gas	3-20	101.8	4.79	4.55	209
1	5	2	Gas	3-20	96.7	4.55	4.32	199
1	6	2	Gas	3-20	95.4	4.49	4.26	196
1	7	2	Gas	3-20	91.2	4.29	4.08	188
1	8	2	Gas	3-20	57.1	2.69	2.55	117
1	9	2	Gas	3-20	86.5	4.07	3.87	178
1	10	2	Gas	3-20	89.1	4.19	3.98	183
1	11	2	Gas	3-20	124.5	5.86	5.56	256
1	12	2	Gas	3-20	35.6	1.68	1.59	73
	AVE.				100.5	4.73	4.49	207
2	1	2	Oil	3-21	148.0	5.92	7.64	353
2	2	2	Oil	3-21	125.8	5.03	6.50	300
2	3	2	Oil	3-21	147.7	5.91	7.63	352
2	4	2	Oil	3-21	140.8	5.63	7.27	336
2	5	2	Oil	3-21	143.7	5.75	7.42	343
2	6	2	Oil	3-21	267.6	10.70	13.82	638
2	7	2	Oil	3-21	252.6	10.10	13.05	602
2	8	2	Oil	3-21	114.1	4.56	5.89	272
2	9	2	Oil	3-21	81.4	3.26	4.20	194
2	10	2	Oil	3-21	141.3	5.65	7.30	337
2	11	2	Oil	3-21	217.8	8.71	11.25	519
2	12	2	Oil	3-21	233.5	9.34	12.00	557
	AVE				167.9	6.71	8.66	400

VOC TESTING

KILN 3

JULY, 1988

Tarmac

TARMAC FLORIDA, INC.
EMISSION TESTS -- KILN NO. 3

< VOC's >

	July 5, 1988 [Background]	August 9, 1988 [Burning Soils]	October 4, 1988 [Burning RDF]
1	59.21	92.04	50.99
2	59.90	72.68	60.28
3	108.50	72.91	35.29
AVERAGE	75.87	79.21	48.85

Tarmac

** PROCESS DATA **

REPORT NO: ____________

===

COMPANY: Tarmac Florida, Inc.   DATE: 7/05/88

SOURCE: Kiln # 3   PERMIT NO: A013-144183

TYPE OF INSTALLATION: Cement Production Plant

TYPE OF MATERIAL PROCESSED: limestone, mineral aggregates

TYPE(s) OF FUEL USED: coal

TYPE OF POLLUTION CONTROL SYSTEM: electrostatic precipitator

GENERAL CONDITION OF CONTROL EQUIPMENT: normal

===

	RUN 1	RUN 2	RUN 3
FEED RATE (tons/hr):	133.5	133.5	133.5
PRODUCTION RATE (tons/hr):	85.1	85.1	85.1
FUEL RATE (tons/hr):	18.2	18.1	17.9

OPERATING CURRENT: see attached sheet

COMPANY REPRESENTATIVE: Scott Quaas

TITLE: Environmental Specialist

SIGNATURE: ______________________

VOC Emission Estimates

1. Baseline Emissions, Kiln 2, gas/oil:

   From VOC test on Kiln 3 (7/5/88)

   Average VOC emissions = 75.9 lb/hr
   Clinker produced = 85.1 TPH
   Fuel rate = 18.07 TPH coal

   VOC due to coal burning (total organics):

   AP-42 factor = 0.10 lb/ton
   18.07 TPH x 0.1 lb/ton = 1.81 lb/hr

   VOC due to organics in raw feed = 75.9 lb/hr - 1.8 lb/hr
   = 74.1 lb/hr

   74.1 lb/hr / 85.1 TPH clinker = 0.87 lb/ton clinker

   VOC from Kiln 2 due to organics:

   25 TPH clinker x 0.87 lb/ton = 21.8 lb/hr

   VOC from Kiln 2 due to fuel oil burning:

   AP-42 factor = 1.04 lb/1,000 gal
   Maximum heat input to Kiln 2 (existing) = 180 x 10^6 Btu/hr
   180 x 10^6 Btu/hr / 145,000 Btu/gal = 1,241 gal/hr
   1,241 gal/hr x 1.04 lb/1,000 gal = 1.3 lb/hr

   Total VOC emissions from Kiln 2 when burning oil:

   21.8 lb/hr + 1.3 lb/hr = 23.1 lb/hr

2. Future Emissions, Kiln 2, coal:

   VOC due to organics in raw feed:

   25 TPH x 0.87 lb/ton = 21.8 lb/hr

   VOC due to coal burning:

   6.5 TPH coal x 0.10 lb/ton = 0.7 lb/hr

   Total VOC:

   21.8 lb/hr + 0.7 lb/hr = 22.5 lb/hr
   To allow margin of safety, estimate maximum VOC emissions to be 30 lb/hr.
   Equivalent lb/ton clinker -
   30 lb/hr / 25 TPH = 1.2 lb/ton clinker

EXCERPTS FROM

"AP-42"

AND

"TOXIC AIR POLLUTANT EMISSION FACTORS"

TABLE 8.6-1. UNCONTROLLED EMISSION FACTORS FOR CEMENT MANUFACTURING[a]

EMISSION FACTOR RATING: E

Process	Particulate[b]		Sulfur dioxide[c]								Nitrogen oxides		Lead	
			Mineral source[d]		Gas combustion		Oil combustion		Coal combustion					
	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton
Dry process kiln	128	256	5.4	10.8	Neg	Neg	2.2S	4.4S	3.6S	7.2S	1.4	2.8	0.06	0.12
Wet process kiln	120	240	5.4	10.8	Neg	Neg	2.2S	4.4S	3.6S	7.2S	1.4	2.8	0.05	0.10
Clinker cooler[e]	4.6	9.2	-	-	-	-	-	-	-	-	-	-	-	-
Dryers, grinders, etc.[f]														
Wet process	16.0	32.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.01	0.02
Dry process	48.0	96.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02	0.04

[a] References 1-2. Expressed in terms of units of clinker produced, assuming 5% gypsum in finished cement. Includes fuel combustion emissions, which should not be calculated separately. Neg = negligible. S = % sulfur in fuel. Dash = no data. NA = not applicable.

[b] Emission Factor Rating: B

[c] Factors account for reactions with alkaline dust, with no controls. One test series for gas and oil fired wet process kilns, with limited data, suggests that 21-45% of SO_2 can be removed by reactions with the alkaline filter cake, if baghouses are used.

[d] From sulfur in raw materials, which varies with their sources. Factors account for some residual sulfur, because of its alkalinity and affinity for SO_2.

[e] Reference 8. Emission Factor Rating: D.

[f] Expressed in terms of units of cement produced.

TABLE 8.6-3. SIZE SPECIFIC PARTICULATE EMISSION FACTORS FOR CEMENT KILNS[a]

EMISSION FACTOR RATING: D

Particle size (um)	Cumulative mass % < stated size[b]						Cumulative emission factor < stated size[c]													
	Uncontrolled		Dry process kiln with multiclone[d]	Wet process kiln with ESP	Baghouse		Uncontrolled				Dry process with multiclone[d]		Wet process with ESP		Baghouse					
	Wet process kiln	Dry process kiln			Wet process kiln	Dry process kiln	Wet Process		Dry Process						Wet process		Dry process			
							kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton		
2.5	7.0	18	3.8	64	NA	45	8.4	17	23	46	5.0	10	0.25	0.50	NA	NA	0.073	0.15		
5.0	20	NA	14	83	NA	77	24	48	-	-	19	38	0.32	0.64	NA	NA	0.13	0.26		
10.0	24	42	24	85	NA	84	29	58	54	108	32	64	0.33	0.66	NA	NA	0.14	0.28		
15.0	35	44	31	91	NA	89	43	86	57	114	41	82	0.36	0.72	NA	NA	0.15	0.30		
20.0	57	NA	38	98	NA	100	68	136	-	-	49	98	0.39	0.78	NA	NA	0.16	0.32		
Total mass emission factor							120[e]	240[e]	128[e]	256[e]	130[f]	260[f]	0.39[f]	0.78[f]	0.57[f]	1.1[f]	0.16[f]	0.32[f]		

[a]Reference 8. ESP = electrostatic precipitator. NA = not available. Dash = no data.
[b]Aerodynamic diameter. Percentages rounded to two significant figures.
[c]Expressed as unit weight of particulate/unit weight of clinker produced, assuming 5% gypsum in finished cement. Rounded to two significant figures.
[d]Based on a single test, and should be used with caution.
[e]From Table 8.6-1.
[f]From Table 8.6-2.

TABLE 1.4-1. UNCONTROLLED EMISSION FACTORS FOR NATURAL GAS COMBUSTION[a]

Furnace size & type (10^6 Btu/hr heat input)	Particulate[b]		Sulfur dioxide[c]		Nitrogen oxides[d]		Carbon monoxide[e]		Volatile organics			
									Nonmethane		Methane	
	$kg/10^6 m^3$	$lb/10^6 ft^3$	$kg/10^6 m^3$	$lb/10^6 ft^3$	$kg/10^6 m^3$	$lb/10^6 ft^3$	$kg/10^6 m^3$	$lb/10^6 ft^3$	$kg/10^6 m^3$	$lb/10^6 ft^3$	$kg/10^6 m^3$	$lb/10^6 ft^3$
Utility boilers (> 100)	16 - 80	1 - 5	9.6	0.6	8800[h]	550[h]	640	40	23	1.4	4.8	0.3
Industrial boilers (10 - 100)	16 - 80	1 - 5	9.6	0.6	2240	140	560	35	44	2.8	48	3
Domestic and commercial boilers (< 10)	16 - 80	1 - 5	9.6	0.6	1600	100	320	20	84	5.3	43	2.7

[a]Expressed as weight/volume fuel fired.
[b]References 15-18.
[c]Reference 4. Based on avg. sulfur content of natural gas, 4600 $g/10^6$ Nm^3 (2000 $gr/10^6$ scf).
[d]References 4-5, 7-8, 11, 14, 18-19, 21.
[e]Expressed as NO_2. Tests indicate about 95 weight % NO_x is NO_2.
[f]References 4, 7-8, 16, 18, 22-25.
[g]References 16, 18. May increase 10 - 100 times with improper operation or maintenance.
[h]For tangentially fired units, use 4400 $kg/10^6$ m^3 (275 $lb/10^6$ ft^3). At reduced loads, multiply factor by load reduction coefficient in Figure 1.4-1. For potential NO_x reductions by combustion modification, see text. Note that NO_x reduction from these modifications will also occur at reduced load conditions.

TABLE 1.3-1. UNCONTROLLED EMISSION FACTORS FOR FUEL OIL COMBUSTION

EMISSION FACTOR RATING: A

Boiler Type[a]	Particulate Matter[b]		Sulfur Dioxide[c]		Sulfur Trioxide		Carbon Monoxide[d]		Nitrogen Oxide[e]		Volatile Organics[f] Nonmethane		Volatile Organics[f] Methane	
	kg/10^{3}l	lb/10^{3}gal	kg/10^{3}l	lb/10^{3}gal	kg/10^{3}l	lb/10^{3}gal	kg/10^{3}l	lb/10^{3}gal	kg/10^{3}l	lb/10^{3}gal	kg/10^{3}l	lb/10^{3}gal	kg/10^{3}l	lb/10^{3}gal
Utility Boilers														
Residual Oil	[g]	[g]	19S	157S	0.34S[h]	2.9S[h]	0.6	5	8.0 (12.6)(5)[i]	67 (105)(42)[i]	0.09	0.76	0.03	0.28
Industrial Boilers														
Residual Oil	[g]	[g]	19S	157S	0.24S	2S	0.6	5	6.6[j]	55[j]	0.034	0.28	0.12	1.0
Distillate Oil	0.24	2	17S	142S	0.24S	2S	0.6	5	2.4	20	0.024	0.2	0.006	0.052
Commercial Boilers														
Residual Oil	[g]	[g]	19S	157S	0.24S	2S	0.6	5	6.6	55	0.14	1.13	0.057	0.475
Distillate Oil	0.24	2	17S	142S	0.24S	2S	0.6	5	2.4	20	0.04	0.34	0.026	0.216
Residential Furnaces														
Distillate Oil	0.3	2.5	17S	142S	0.24S	2S	0.6	5	2.2	18	0.085	0.713	0.214	1.78

[a] Boilers can be approximately classified according to their gross (higher) heat rate as shown below:
- Utility (power plant) boilers: >106 x 10^9 J/hr (>100 x 10^6 Btu/hr)
- Industrial boilers: 10.6 x 10^9 to 106 x 10^9 J/hr (10 x 10^6 to 100 x 10^6 Btu/hr)
- Commercial boilers: 0.5 x 10^9 to 10.6 x 10^9 J/hr (0.5 x 10^6 to 10 x 10^6 Btu/hr)
- Residential furnaces: <0.5 x 10^9 J/hr (<0.5 x 10^6 Btu/hr)

[b] References 3-7 and 24-25. Particulate matter is defined in this section as that material collected by EPA Method 5 (front half catch).

[c] References 1-5. S indicates that the weight % of sulfur in the oil should be multiplied by the value given.

[d] References 3-5 and 8-10. Carbon monoxide emissions may increase by factors of 10 to 100 if the unit is improperly operated or not well maintained.

[e] Expressed as NO_2. References 1-5, 8-11, 17 and 26. Test results indicate that at least 95% by weight of NO_x is NO for all boiler types except residential furnaces, where about 75% is NO.

[f] References 18-21. Volatile organic compound emissions are generally negligible unless boiler is improperly operated or not well maintained, in which case emissions may increase by several orders of magnitude.

[g] Particulate emission factors for residual oil combustion are, on average, a function of fuel oil grade and sulfur content:
- Grade 6 oil: 1.25(S) + 0.38 kg/10^3 liter [10(S) + 3 lb/10^3 gal] where S is the weight % of sulfur in the oil. This relationship is based on 81 individual tests and has a correlation coefficient of 0.65.
- Grade 5 oil: 1.25 kg/10^3 liter (10 lb/10^3 gal)
- Grade 4 oil: 0.88 kg/10^3 liter (7 lb/10^3 gal)

[h] Reference 25.

[i] Use 5 kg/10^3 liters (42 lb/10^3 gal) for tangentially fired boilers, 12.6 kg/10^3 liters (105 lb/10^3gal) for vertical fired boilers, and 8.0 kg/10^3 liters (67 lb/10^3 gal) for all others, at full load and normal (>15%) excess air. Several combustion modifications can be employed for NO_x reduction: (1) limited excess air can reduce NO_x emissions 5-20%, (2) staged combustion 20-40%, (3) using low NO_x burners 20-50%, and (4) ammonia injection can reduce NO_x emissions 40-70% but may increase emissions of ammonia. Combinations of these modifications have been employed for further reductions in certain boilers. See Reference 23 for a discussion of these and other NO_x reducing techniques and their operational and environmental impacts.

[j] Nitrogen oxides emissions from residual oil combustion in industrial and commercial boilers are strongly related to fuel nitrogen content, estimated more accurately by the empirical relationship:
kg NO_2/10^3 liters = 2.75 + $50(N)^2$ [lb NO_2/10^3gal = 22 + $400(N)^2$] where N is the weight % of nitrogen in the oil. For residual oils having high (>0.5 weight %) nitrogen content, use 15 kg NO_2/10^3 liter (120 lb NO_2/10^3gal) as an emission factor.

TABLE 1.1-1. EMISSION FACTORS FOR EXTERNAL BITUMINOUS AND SUBBITUMINOUS COAL COMBUSTION[a]

Firing Configuration	Particulate[b]		Sulfur Oxides[c]		Nitrogen Oxides[d]		Carbon Monoxide[e]		Nonmethane VOC[e,f]		Methane[e]	
	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton
Pulverized coal fired												
Dry bottom	5A	10A	19.5S(17.5S)	39S(35S)	10.5(7.5)[g]	21(15)[g]	0.3	0.6	0.04	0.07	0.015	0.03
Wet bottom	3.5A[h]	7A[h]	19.5S(17.5S)	39S(35S)	17	34	0.3	0.6	0.04	0.07	0.015	0.03
Cyclone furnace	1A[h]	2A[h]	19.5S(17.5S)	39S(35S)	18.5	37	0.3	0.6	0.04	0.07	0.015	0.03
Spreader stoker												
Uncontrolled	30[j]	60[j]	19.5S(17.5S)	39S(35S)	7	14	2.5	5	0.04	0.07	0.015	0.03
After multiple cyclone												
With fly ash reinjection from multiple cyclone	8.5	17	19.5S(17.5S)	39S(35S)	7	14	2.5	5	0.04	0.07	0.015	0.03
No fly ash reinjection from multiple cyclone	6	12	19.5S(17.5S)	39S(35S)	7	14	2.5	5	0.04	0.07	0.015	0.03
Overfeed stoker[k]												
Uncontrolled	8[m]	16[m]	19.5S(17.5S)	39S(35S)	3.25	7.5	3	6	0.04	0.07	0.015	0.03
After multiple cyclone	4.5[n]	9[n]	19.5S(17.5S)	39S(35S)	3.25	7.5	3	6	0.04	0.07	0.015	0.03
Underfeed stoker												
Uncontrolled	7.5[p]	15[p]	15.5S	31S	4.75	9.5	5.5	11	0.65	1.3	0.4	0.8
After multiple cyclone	5.5[n]	11[n]	15.5S	31S	4.75	9.5	5.5	11	0.65	1.3	0.4	0.8
Handfired units	7.5	15	15.5S	31S	1.5	3	45	90	5	10	4	8

[a]Factors represent uncontrolled emissions unless otherwise specified and should be applied to coal consumption as fired.

[b]Based on EPA Method 5 (front half catch) as described in Reference 12. Where particulate is expressed in terms of coal ash content, A, factor is determined by multiplying weight % ash content of coal (as fired) by the numerical value preceding the "A". For example, if coal having 8% ash is fired in a dry bottom unit, the particulate emission factor would be 5 x 8, or 40 kg/Mg (80 lb/ton). The "condensible" matter collected in back half catch of EPA Method 5 averages <5% of front half, or "filterable", catch for pulverized coal and cyclone furnaces; 10% for spreader stokers; 15% for other stokers; and 50% for handfired units (References 6, 19, 49).

[c]Expressed as SO_2, including SO_2, SO_3 and gaseous sulfates. Factors in parentheses should be used to estimate gaseous SO_x emissions for subbituminous coal. In all cases, "S" is weight % sulfur content of coal as fired. See Footnote b for example calculation. On average for bituminous coal, 97% of fuel sulfur is emitted as SO_2, and only about 0.7% of fuel sulfur is emitted as SO_3 and gaseous sulfate. An equally small percent of fuel sulfur is emitted as particulate sulfate (References 9, 13). Small quantities of sulfur are also retained in bottom ash. With subbituminous coal generally about 10% more fuel sulfur is retained in the bottom ash and particulate because of the more alkaline nature of the coal ash. Conversion to gaseous sulfate appears about the same as for bituminous coal.

[d]Expressed as NO_2. Generally, 95 - 99 volume % of nitrogen oxides present in combustion exhaust will be in the form of NO, the rest NO_2 (Reference 11). To express factors as NO, multiply by factor of 0.66. All factors represent emission at baseline operation (i.e., 60 - 110% load and no NO_x control measures, as discussed in text).

[e]Nominal values achieveable under normal operating conditions. Values one or two orders of magnitude higher can occur when combustion is not complete.

[f]Nonmethane volatile organic compounds (VOC), expressed as C_2 to C_{16} n-alkane equivalents (Reference 58). Because of limited data on NMVOC available to distinguish the effects of firing configuration, all data were averaged collectively to develop a single average for pulverized coal units, cyclones, spreaders and overfeed stokers.

[g]Parenthetic value is for tangentially fired boilers.

[h]Uncontrolled particulate emissions, when no fly ash reinjection is employed. When control device is installed, and collected fly ash is reinjected to boiler, particulate from boiler reaching control equipment can increase by up to a factor of two.

[j]Accounts for fly ash settling in an economizer, air heater or breeching upstream of control device or stack. (Particulate directly at boiler outlet typically will be twice this level.) Factor should be applied even when fly ash is reinjected to boiler from boiler, air heater or economizer dust hoppers.

[k]Includes traveling grate, vibrating grate and chain grate stokers.

[m]Accounts for fly ash settling in breeching or stack base. Particulate loadings directly at boiler outlet typically can be 50% higher.

[n]See text for discussion of apparently low multiple cyclone control efficiencies, regarding uncontrolled emissions.

[p]Accounts for fly ash settling in breeching downstream of boiler outlet.

11.2.1 UNPAVED ROADS

11.2.1.1 General

Dust plumes trailing behind vehicles traveling on unpaved roads are a familiar sight in rural areas of the United States. When a vehicle travels an unpaved road, the force of the wheels on the road surface causes pulverization of surface material. Particles are lifted and dropped from the rolling wheels, and the road surface is exposed to strong air currents in turbulent shear with the surface. The turbulent wake behind the vehicle continues to act on the road surface after the vehicle has passed.

11.2.1.2 Emissions And Correction Parameters

The quantity of dust emissions from a given segment of unpaved road varies linearly with the volume of traffic. Also, field investigations have shown that emissions depend on correction parameters (average vehicle speed, average vehicle weight, average number of wheels per vehicle, road surface texture and road surface moisture) that characterize the condition of a particular road and the associated vehicle traffic.[1-4]

Dust emissions from unpaved roads have been found to vary in direct proportion to the fraction of silt (particles smaller than 75 micrometers in diameter) in the road surface materials.[1] The silt fraction is determined by measuring the proportion of loose dry surface dust that passes a 200 mesh screen, using the ASTM-C-136 method. Table 11.2.1-1 summarizes measured silt values for industrial and rural unpaved roads.

The silt content of a rural dirt road will vary with location, and it should be measured. As a conservative approximation, the silt content of the parent soil in the area can be used. However, tests show that road silt content is normally lower than in the surrounding parent soil, because the fines are continually removed by the vehicle traffic, leaving a higher percentage of coarse particles.

Unpaved roads have a hard nonporous surface that usually dries quickly after a rainfall. The temporary reduction in emissions because of precipitation may be accounted for by not considering emissions on "wet" days (more than 0.254 millimeters [0.01 inches] of precipitation).

The following empirical expression may be used to estimate the quantity of size specific particulate emissions from an unpaved road, per vehicle kilometer traveled (VKT) or vehicle mile traveled (VMT), with a rating of A:

$$E = k(1.7) \left(\frac{s}{12}\right) \left(\frac{S}{48}\right) \left(\frac{W}{2.7}\right)^{0.7} \left(\frac{w}{4}\right)^{0.5} \left(\frac{365-p}{365}\right) \quad \text{(kg/VKT)} \qquad (1)$$

$$E = k(5.9) \left(\frac{s}{12}\right) \left(\frac{S}{30}\right) \left(\frac{W}{3}\right)^{0.7} \left(\frac{w}{4}\right)^{0.5} \left(\frac{365-p}{365}\right) \quad \text{(lb/VMT)}$$

TABLE 11.2.1-1. TYPICAL SILT CONTENT VALUES OF SURFACE MATERIALS ON INDUSTRIAL AND RURAL UNPAVED ROADS[a]

Industry	Road Use Or Surface Material	Plant Sites	Test Samples	Silt (%, w/w)	
				Range	Mean
Copper smelting	Plant road	1	3	[15.9 - 19.1]	[17.0]
Iron and steel production	Plant road	9	20	4.0 - 16.0	8.0
Sand and gravel processing	Plant road	1	3	[4.1 - 6.0]	[4.8]
Stone quarrying and processing	Plant road	1	5	[10.5 - 15.6]	[14.1]
Taconite mining and processing	Haul road	1	12	[3.7 - 9.7]	[5.8]
	Service road	1	8	[2.4 - 7.1]	[4.3]
Western surface coal mining	Access road	2	2	4.9 - 5.3	5.1
	Haul road	3	21	2.8 - 18	8.4
	Scraper road	3	10	7.2 - 25	17
	Haul road (freshly graded)	2	5	18 - 29	24
Rural roads	Gravel	1	1	NA	[5.0]
	Dirt	2	5	5.8 - 68	28.5
	Crushed limestone	2	8	7.7 - 13	9.6

[a]References 4 - 11. Brackets indicate silt values based on samples from only one plant site.
NA = Not available.

where: E = emission factor
k = particle size multiplier (dimensionless)
s = silt content of road surface material (%)
S = mean vehicle speed, km/hr (mph)
W = mean vehicle weight, Mg (ton)
w = mean number of wheels
p = number of days with at least 0.254 mm (0.01 in.) of precipitation per year

The particle size multiplier, k, in Equation 1 varies with aerodynamic particle size range as follows:

Aerodynamic Particle Size Multiplier For Equation 1

≤30 μm	≤15 μm	≤10 μm	≤5 μm	≤2.5 μm
0.80	0.50	0.36	0.20	0.095

The number of wet days per year, p, for the geographical area of interest should be determined from local climatic data. Figure 11.2.1-1 gives the geographical distribution of the mean annual number of wet days per year in the United States.

Equation 1 retains the assigned quality rating if applied within the ranges of source conditions that were tested in developing the equation, as follows:

RANGES OF SOURCE CONDITIONS FOR EQUATION 1

Equation	Road silt content (%, w/w)	Mean vehicle weight		Mean vehicle speed		Mean no. of wheels
		Mg	ton	km/hr	mph	
1	4.3 - 20	2.7 - 142	3 - 157	21 - 64	13 - 40	4 - 13

Also, to retain the quality rating of the equation applied to a specific unpaved road, it is necessary that reliable correction parameter values for the specific road in question be determined. The field and laboratory procedures for determining road surface silt content are given in Reference 4. In the event that site specific values for correction parameters cannot be obtained, the appropriate mean values from Table 11.2.1-1 may be used, but the quality rating of the equation is reduced to B.

Equation 1 was developed for calculation of annual average emissions, and thus, is to be multiplied by annual vehicle distance traveled (VDT). Annual average values for each of the correction parameters are to be substituted into

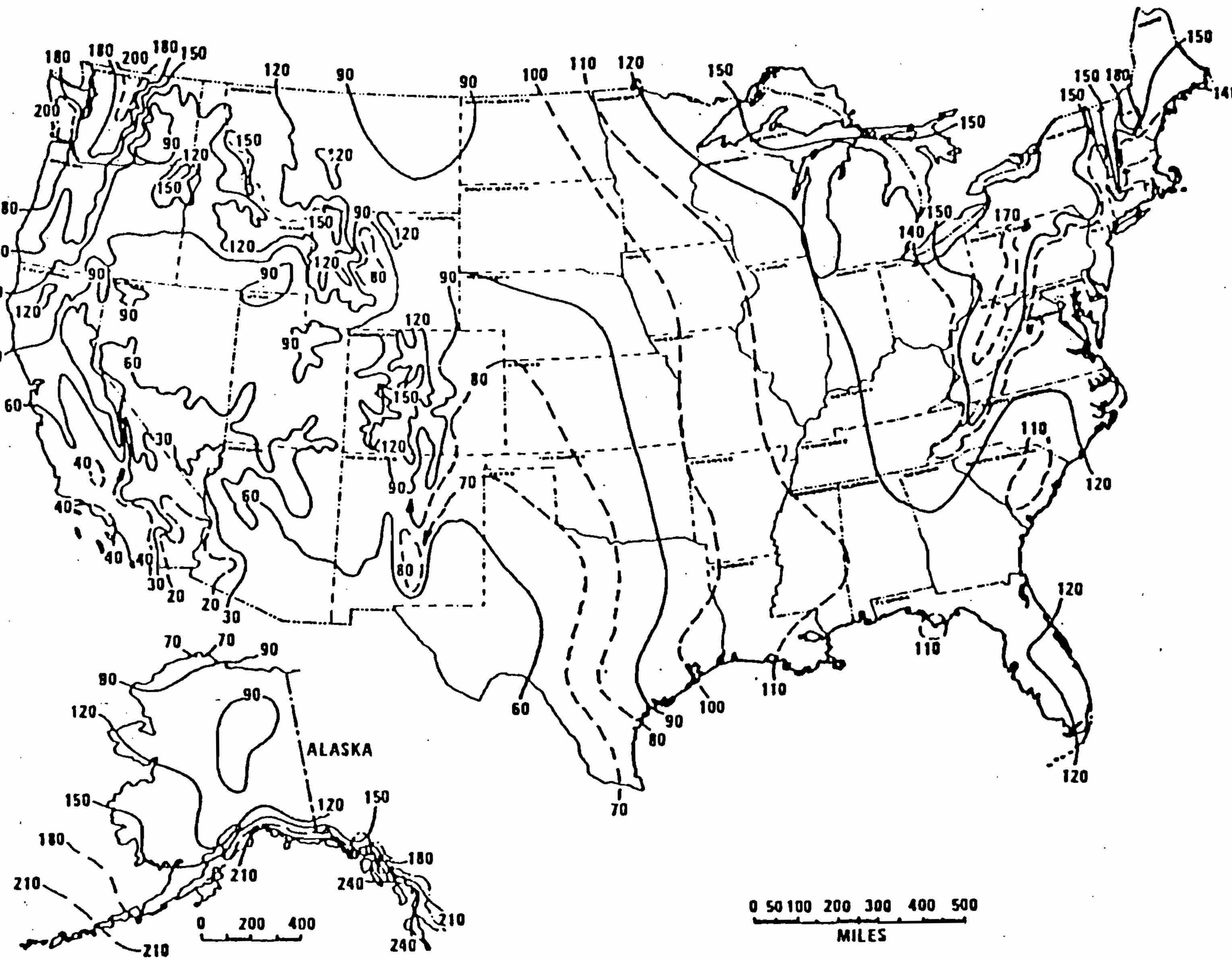

Figure 11.2.1-1. Mean number of days with 0.01 inch or more of precipitation in United States.[10]

the equation. Worst case emissions, corresponding to dry road conditions, may be calculated by setting p = 0 in the equation (which is equivalent to dropping the last term from the equation). A separate set of nonclimatic correction parameters and a higher than normal VDT value may also be justified for the worst case averaging period (usually 24 hours). Similarly, to calculate emissions for a 91 day season of the year using Equation 1, replace the term (365-p)/365 with the term (91-p)/91, and set p equal to the number of wet days in the 91 day period. Also, use appropriate seasonal values for the nonclimatic correction parameters and for VDT.

11.2.1.3 Control Methods

Common control techniques for unpaved roads are paving, surface treating with penetration chemicals, working into the roadbed of chemical stabilization chemicals, watering, and traffic control regulations. Chemical stabilizers work either by binding the surface material or by enhancing moisture retention. Paving, as a control technique, is often not economically practical. Surface chemical treatment and watering can be accomplished with moderate to low costs, but frequent retreatments are required. Traffic controls, such as speed limits and traffic volume restrictions, provide moderate emission reductions but may be difficult to enforce. The control efficiency obtained by speed reduction can be calculated using the predictive emission factor equation given above.

The control efficiencies achievable by paving can be estimated by comparing emission factors for unpaved and paved road conditions, relative to airborne particle size range of interest. The predictive emission factor equation for paved roads, given in Section 11.2.6, requires estimation of the silt loading on the traveled portion of the paved surface, which in turn depends on whether the pavement is periodically cleaned. Unless curbing is to be installed, the effects of vehicle excursion onto shoulders (berms) also must be taken into account in estimating control efficiency.

The control efficiencies afforded by the periodic use of road stabilization chemicals are much more difficult to estimate. The application parameters which determine control efficiency include dilution ratio, application intensity (mass of diluted chemical per road area) and application frequency. Between applications, the control efficiency is usually found to decay at a rate which is proportional to the traffic count. Therefore, for a specific chemical application program, the average efficiency is inversely proportional to the average daily traffic count. Other factors that affect the performance of chemical stabilizers include vehicle characteristics (e. g., average weight) and road characteristics (e. g., bearing strength).

Water acts as a road dust suppressant by forming cohesive moisture films among the discrete grains of road surface material. The average moisture level in the road surface material depends on the moisture added by watering and natural precipitation and on the moisture removed by evaporation. The natural evaporative forces, which vary with geographic location, are enhanced by the movement of traffic over the road surface. Watering, because of the frequency of treatments required, is generally not feasible for public roads and is used effectively only where water and watering equipment are available and where roads are confined to a single site, such as a construction location.

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11.2.3 AGGREGATE HANDLING AND STORAGE PILES

11.2.3.1 General

Inherent in operations that use minerals in aggregate form is the maintenance of outdoor storage piles. Storage piles are usually left uncovered, partially because of the need for frequent material transfer into or out of storage.

Dust emissions occur at several points in the storage cycle, during material loading onto the pile, during disturbances by strong wind currents, and during loadout from the pile. The movement of trucks and loading equipment in the storage pile area is also a substantial source of dust.

11.2.3.2 Emissions and Correction Parameters

The quantity of dust emissions from aggregate storage operations varies with the volume of aggregate passing through the storage cycle. Also, emissions depend on three correction parameters that characterize the condition of a particular storage pile: age of the pile, moisture content and proportion of aggregate fines.

When freshly processed aggregate is loaded onto a storage pile, its potential for dust emissions is at a maximum. Fines are easily disaggregated and released to the atmosphere upon exposure to air currents from aggregate transfer itself or high winds. As the aggregate weathers, however, potential for dust emissions is greatly reduced. Moisture causes aggregation and cementation of fines to the surfaces of larger particles. Any significant rainfall soaks the interior of the pile, and the drying process is very slow.

Field investigations have shown that emissions from aggregate storage operations vary in direct proportion to the percentage of silt (particles < 75 μm in diameter) in the aggregate material.[1 3] The silt content is determined by measuring the proportion of dry aggregate material that passes through a 200 mesh screen, using ASTM-C-136 method. Table 11.2.3-1 summarizes measured silt and moisture values for industrial aggregate materials.

11.2.3.3 Predictive Emission Factor Equations

Total dust emissions from aggregate storage piles are contributions of several distinct source activities within the storage cycle:

1. Loading of aggregate onto storage piles (batch or continuous drop operations).
2. Equipment traffic in storage area.
3. Wind erosion of pile surfaces and ground areas around piles.
4. Loadout of aggregate for shipment or for return to the process stream (batch or continuous drop operations).

TABLE 11.2.3-1. TYPICAL SILT AND MOISTURE CONTENT VALUES OF MATERIALS AT VARIOUS INDUSTRIES

Industry	Material	Silt (%)			Moisture (%)		
		No. of test samples	Range	Mean	No. of test samples	Range	Mean
Iron and steel production[a]	Pellet ore	10	1.4 - 13	4.9	8	0.64 - 3.5	2.1
	Lump ore	9	2.8 - 19	9.5	6	1.6 - 8.1	5.4
	Coal	7	2 - 7.7	5	6	2.8 - 11	4.8
	Slag	3	3 - 7.3	5.3	3	0.25 - 2.2	0.92
	Flue dust	2	14 - 23	18.0	0	NA	NA
	Coke breeze	1		5.4	1		6.4
	Blended ore	1		15.0	1		6.6
	Sinter	1		0.7	0	NA	NA
	Limestone	1		0.4	0	NA	NA
Stone quarrying and processing[b]	Crushed limestone	2	1.3 - 1.9	1.6	2	0.3 - 1.1	0.7
Taconite mining and processing[c]	Pellets	9	2.2 - 5.4	3.4	7	0.05 - 2.3	0.96
	Tailings	2	NA	11.0	1		0.35
Western surface coal mining[d]	Coal	15	3.4 - 16	6.2	7	2.8 - 20	6.9
	Overburden	15	3.8 - 15	7.5	0	NA	NA
	Exposed ground	3	5.1 - 21	15.0	3	0.8 - 6.4	3.4

[a] References 2-5. NA = not applicable.
[b] Reference 1.
[c] Reference 6.
[d] Reference 7.

Adding aggregate material to a storage pile or removing it usually involves dropping the material onto a receiving surface. Truck dumping on the pile or loading out from the pile to a truck with a front end loader are examples of batch drop operations. Adding material to the pile by a conveyor stacker is an example of a continuous drop operation.

The quantity of particulate emissions generated by a batch drop operation, per ton of material transferred, may be estimated, with a rating of C, using the following empirical expression[2]:

$$E = k(0.00090)\ \frac{\left(\frac{s}{5}\right)\left(\frac{U}{2.2}\right)\left(\frac{H}{1.5}\right)}{\left(\frac{M}{2}\right)^{2}\left(\frac{Y}{4.6}\right)^{0.33}}\quad (\mathrm{kg/Mg}) \qquad (1)$$

$$E = k(0.0018)\ \frac{\left(\frac{s}{5}\right)\left(\frac{U}{5}\right)\left(\frac{H}{5}\right)}{\left(\frac{M}{2}\right)^{2}\left(\frac{Y}{6}\right)^{0.33}}\quad (\mathrm{lb/ton})$$

where: E = emission factor
k = particle size multipler (dimensionless)
s = material silt content (%)
U = mean wind speed, m/s (mph)
H = drop height, m (ft)
M = material moisture content (%)
Y = dumping device capacity, m^3 (yd^3)

The particle size multipler (k) for Equation 1 varies with aerodynamic particle size, shown in Table 11.2.3-2.

TABLE 11.2.3-2. AERODYNAMIC PARTICLE SIZE MULTIPLIER (k) FOR EQUATIONS 1 AND 2

Equation	< 30 µm	< 15 µm	< 10 µm	< 5 µm	< 2.5 µm
Batch drop	0.73	0.48	0.36	0.23	0.13
Continuous drop	0.77	0.49	0.37	0.21	0.11

The quantity of particulate emissions generated by a continuous drop operation, per ton of material transferred, may be estimated, with a rating of C, using the following empirical expression[3]:

$$E = k(0.00090)\ \frac{\left(\frac{s}{5}\right)\left(\frac{U}{2.2}\right)\left(\frac{H}{3.0}\right)}{\left(\frac{M}{2}\right)^2}\ (\text{kg/Mg}) \qquad (2)$$

$$E = k(0.0018)\ \frac{\left(\frac{s}{5}\right)\left(\frac{U}{5}\right)\left(\frac{H}{10}\right)}{\left(\frac{M}{2}\right)^2}\ (\text{lb/ton})$$

where: E = emission factor
k = particle size multiplier (dimensionless)
s = material silt content (%)
U = mean wind speed, m/s (mph)
H = drop height, m (ft)
M = material moisture content (%)

The particle size multiplier (k) for Equation 2 varies with aerodynamic particle size, as shown in Table 11.2.3-2.

Equations 1 and 2 retain the assigned quality rating if applied within the ranges of source conditions that were tested in developing the equations, as given in Table 11.2.3-3. Also, to retain the quality ratings of Equations 1 or 2 applied to a specific facility, it is necessary that reliable correction parameters be determined for the specific sources of interest. The field and laboratory procedures for aggregate sampling are given in Reference 3. In the event that site specific values for correction parameters cannot be obtained, the appropriate mean values from Table 11.2.3-1 may be used, but in that case, the quality ratings of the equations are reduced by one level.

TABLE 11.2.3-3. RANGES OF SOURCE CONDITIONS FOR EQUATIONS 1 AND 2[a]

Equation	Silt content (%)	Moisture content (%)	Dumping capacity m^3	Dumping capacity yd^3	Drop height m	Drop height ft
Batch drop	1.3 - 7.3	0.25 - 0.70	2.10 - 7.6	2.75 - 10	NA	NA
Continuous drop	1.4 - 19	0.64 - 4.8	NA	NA	1.5 - 12	4.8 - 39

[a] NA = not applicable.

For emissions from equipment traffic (trucks, front end loaders, dozers, etc.) traveling between or on piles, it is recommended that the equations for vehicle traffic on unpaved surfaces be used (see Section 11.2.1). For vehicle travel between storage piles, the silt value(s) for the areas among the piles (which may differ from the silt values for the stored materials) should be used.

For emissions from wind erosion of active storage piles, the following total suspended particulate (TSP) emission factor equation is recommended:

$$E = 1.9 \left(\frac{s}{1.5}\right) \left(\frac{365-p}{235}\right) \left(\frac{f}{15}\right) \quad \text{(kg/day/hectare)} \qquad (3)$$

$$E = 1.7 \left(\frac{s}{1.5}\right) \left(\frac{365-p}{235}\right) \left(\frac{f}{15}\right) \quad \text{(lb/day/acre)}$$

where: E = total suspended particulate emission factor
s = silt content of aggregate (%)
p = number of days with $\geq$ 0.25 mm (0.01 in.) of precipitation per year
f = percentage of time that the unobstructed wind speed exceeds 5.4 m/s (12 mph) at the mean pile height

The coefficient in Equation 3 is taken from Reference 1, based on sampling of emissions from a sand and gravel storage pile area during periods when transfer and maintenance equipment was not operating. The factor from Test Report 1, expressed in mass per unit area per day, is more reliable than the factor expressed in mass per unit mass of material placed in storage, for reasons stated in that report. Note that the coefficient has been halved to adjust for the estimate that the wind speed through the emission layer at the test site was one half of the value measured above the top of the piles. The other terms in this equation were added to correct for silt, precipitation and frequency of high winds, as discussed in Reference 2. Equation 3 is rated C for application in the sand and gravel industry and D for other industries.

Worst case emissions from storage pile areas occur under dry windy conditions. Worst case emissions from materials handling (batch and continuous drop) operations may be calculated by substituting into Equations 1 and 2 appropriate values for aggregate material moisture content and for anticipated wind speeds during the worst case averaging period, usually 24 hours. The treatment of dry conditions for vehicle traffic (Section 11.2.1) and for wind erosion (Equation 3), centering around parameter p, follows the methodology described in Section 11.2.1. Also, a separate set of nonclimatic correction parameters and source extent values corresponding to higher than normal storage pile activity may be justified for the worst case averaging period.

11.2.3.4 Control Methods

Watering and chemical wetting agents are the principal means for control of aggregate storage pile emissions. Enclosure or covering of inactive piles to reduce wind erosion can also reduce emissions. Watering is useful mainly to reduce emissions from vehicle traffic in the storage pile area. Watering of the storage piles themselves typically has only a very temporary slight effect on total emissions. A much more effective technique is to apply chemical wetting agents for better wetting of fines and longer retention of the moisture film. Continuous chemical treatment of material loaded onto piles, coupled with watering or treatment of roadways, can reduce total particulate emissions from aggregate storage operations by up to 90 percent.[8]

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TABLE 2.2-1

ANNUAL PERCENTAGE FREQUENCY OF WIND BY SPEED GROUPS AND THE MEAN SPEED

STATE AND STATION	0 – 3 m.p.h.	4 – 7 m.p.h.	8 – 12 m.p.h.	13 – 18 m.p.h.	19 – 24 m.p.h.	25 – 31 m.p.h.	32 – 38 m.p.h.	39 – 46 m.p.h.	47 m.p.h. and over	Mean speed m.p.h.
ALA. Birmingham	27	22	30	17	3	1	•	•	•	7.9
Mobile	7	28	38	20	6	1	•	•	•	10.0
Montgomery	31	29	27	12	2	•	•			6.9
ALASKA, Anchorage	28	35	25	11	2	•	•	•		6.8
Cold Bay	4	9	18	27	21	14	5	2	•	17.4
Fairbanks	40	35	19	5	1	•	•	•		5.2
King Salmon	11	20	30	24	10	4	1	•	•	11.4
ARIZ. Phoenix	38	36	20	5	1	•	•	•		5.4
Tucson	18	35	30	14	3	1	•	•		8.1
ARK. Little Rock	12	30	39	18	2	•	•	•		8.7
CALIF. Bakersfield	35	30	24	10	1	•	•			5.8
Burbank	52	26	18	4	1	•	•	•		4.5
Fresno	30	41	22	7	1	•	•			6.1
Los Angeles	28	33	27	11	1	•	•			6.8
Oakland	26	28	28	16	2	1	•	•	•	7.5
Sacramento	15	28	31	18	5	1	•	•	•	9.3
San Diego	28	38	28	6	•	•	•			6.3
San Francisco	16	21	26	22	11	3	•	•	•	10.8
COLO. Colorado Springs	9	27	38	19	6	2	•	•	•	10.0
Denver	11	27	34	22	5	2	•	•	•	10.0
CONN. Hartford	13	26	32	24	6	1	•	•	•	9.8
D.C. Washington	11	26	35	22	5	1	•	•	•	9.7
DEL. Wilmington	15	31	30	19	4	1	•	•	•	8.8
FLA. Jacksonville	10	33	35	18	3	•	•	•		8.9
Miami	14	30	34	20	2	•	•	•	•	8.8
Orlando	18	28	32	17	4	•	•	•		8.6
Tallahassee	33	36	23	7	•	•				6.1
Tampa	9	31	40	16	2	•	•	•	•	8.8
West Palm Beach	9	22	36	27	6	1	•	•		10.5
GA. Atlanta	13	24	36	21	6	1	•	•		9.7
Augusta	36	29	25	9	1	•	•			6.3
Macon	10	26	46	16	2	•	•	•	•	8.9
Savannah	12	34	37	14	3	•	•	•	•	8.4
HAWAII, Hilo	7	34	43	15	2	•	•			8.7
Honolulu	9	17	27	32	12	2	•	•	•	12.1
IDAHO, Boise	15	30	32	18	4	1	•	•		8.9
ILL. Chicago (O'Hare)	8	22	33	27	8	2	•	•	•	11.2
Chicago (Midway)	7	26	36	25	5	1	•	•	•	10.2
Moline	14	23	32	24	7	2	•	•	•	10.0
Springfield	7	22	28	27	12	3	1	•	•	12.0
IND. Evansville	19	23	32	21	5	1	•	•		9.1
Fort Wayne	9	23	33	25	8	2	•	•	•	10.9
Indianapolis	9	22	34	26	7	2	•	•	•	10.8
South Bend	7	21	35	30	7	1	•	•		10.9
IOWA, Des Moines	3	17	38	29	10	3	1	•	•	12.1
Sioux City	10	20	31	25	10	4	1	•	•	11.7
KANS. Topeka	11	19	30	27	10	2	•	•	•	11.2
Wichita	4	12	30	31	16	5	1	•	•	13.7
KY. Lexington	8	25	39	22	6	1	•	•		10.1
Louisville	17	28	31	20	3	1	•	•		8.8
LA. Baton Rouge	17	29	34	17	3	•	•	•		8.3
Lake Charles	19	31	29	17	4	1	•	•	•	8.5
New Orleans	16	27	32	19	5	1	•	•	•	9.0
Shreveport	12	26	37	21	4	1	•	•	•	9.5
MAINE, Portland	10	30	33	22	4	1	•	•	•	9.6
MD. Baltimore	7	24	39	22	6	2	•	•	•	10.4
MASS. Boston	3	12	33	35	12	4	1	•	•	13.3
MICH. Detroit (City AP)	8	23	37	26	5	1	•	•	•	10.3
Flint	16	28	32	22	3	1	•	•	•	9.0
Grand Rapids	14	23	32	25	5	1	•	•	•	9.8
MINN. Duluth	6	15	33	31	11	4	1	•	•	12.6
Minneapolis	8	21	34	28	9	2	•	•	•	11.2
MISS. Jackson	33	25	26	14	2	•	•	•		7.1
MO. Kansas City	9	29	35	23	5	1	•			9.8
St. Louis	10	29	36	21	3	1	•	•	•	9.3
Springfield	4	13	34	32	13	3	1	•	•	12.9
MONT. Great Falls	7	19	24	24	15	9	3	1	•	13.9
NEBR. Omaha	12	17	29	28	11	3	•	•		11.6
NEV. Las Vegas	18	26	25	20	8	3	1	•	•	9.7
Reno	52	20	13	10	4	1	•	•	•	5.9
N. J. Newark	11	25	34	24	5	1	•	•	•	9.8
N. MEX. Albuquerque	17	36	26	13	5	2	•	•	•	8.6
N. Y. Albany	23	24	27	21	4	1	•	•		8.6
Binghamton	11	23	35	25	5	1	•	•	•	10.0
Buffalo	5	17	34	27	13	3	1	•	•	12.4
New York (Kennedy)	6	17	35	28	10	3	•	•	•	12.0
New York (La Guardia)	6	15	30	31	12	4	1	•	•	12.9
Rochester	8	22	34	25	9	2	1	•	•	11.2
Syracuse	14	27	30	23	5	1	•	•	•	9.7
N. C. Charlotte	20	32	31	14	2	•	•	•		7.9
Greensboro	20	32	31	14	2	•	•	•	•	8.0
Raleigh	18	33	34	14	2	•	•	•	•	7.7
Winston-Salem	19	22	33	21	4	1	•	•		9.0
N. DAK. Bismarck	14	20	27	24	12	3	1	•	•	11.2
Fargo	4	13	28	31	15	7	2	•	•	14.4
OHIO, Akron-Canton	7	25	35	26	5	1	•	•	•	10.4
Cincinnati	11	27	36	22	4	1	•	•	•	9.6
Cleveland	7	18	35	29	9	2	•	•	•	11.6
Columbus	26	23	29	18	4	1	•	•	•	8.2
Dayton	8	25	38	23	6	2	•	•	•	10.3
Youngstown	7	28	36	24	6	1	•	•	•	10.3
OKLA. Oklahoma City	2	11	34	34	13	6	1	•	•	14.0
OKLA. (Cont.) Tulsa	9	24	34	26	7	1	•	•	•	10.6
OREG. Medford	47	31	14	6	2	•	•	•	•	4.6
Portland	28	27	25	16	4	1	•	•	•	7.7
Salem	25	32	28	13	2	•	•			7.1
PA. Harrisburg	28	31	25	13	3	1	•	•		7.3
Philadelphia	11	27	35	21	5	1	•	•	•	9.6
Pittsburgh	12	26	34	22	4	1	•	•		9.4
Scranton	11	33	35	18	2	•	•	•		8.8
R. I. Providence	11	20	32	28	7	2	•	•	•	10.7
S. C. Charleston	12	28	35	19	4	1	•	•		9.2
Columbia	25	35	26	12	2	•	•			7.0
S. DAK. Huron	10	18	29	29	10	3	1	•	•	11.9
Rapid City	15	22	28	21	10	4	1	•	•	11.0
TENN. Chattanooga	39	25	24	11	1	•	•			6.1
Knoxville	29	29	25	12	4	1	•	•	•	7.5
Memphis	14	26	34	20	5	1	•	•		9.4
Nashville	27	31	25	14	2	•	•	•	•	7.2
TEX. Amarillo	5	15	32	32	12	4	1	•	•	12.9
Austin	13	25	34	23	5	1	•	•		9.7
Brownsville	10	17	25	30	14	3	•	•	•	12.3
Corpus Christi	11	16	26	33	12	2	•	•		11.9
Dallas	9	21	32	28	9	1	•	•		11.0
El Paso	10	22	32	22	9	4	1	•	•	11.3
Ft. Worth	4	14	34	34	10	3	•	•	•	12.5
Galveston	4	13	39	33	10	2	1	•	•	12.5
Houston	6	18	36	28	10	2	•	•	•	11.8
Laredo	6	15	32	34	12	1	•	•		12.3
Lubbock	4	11	33	34	13	5	1	•	•	13.6
Midland	9	22	38	26	4	1	•	•		10.1
San Antonio	18	23	32	22	4	1	•	•		9.3
Waco	3	14	36	35	10	2	•	•		12.5
Wichita Falls	5	22	41	27	5	1	•	•	•	10.5
UTAH, Salt Lake City	12	33	36	14	4	1	•	•	•	8.7
VT. Burlington	24	24	28	22	2	•	•			8.3
VA. Norfolk	14	23	30	25	6	1	•	•	•	10.2
Richmond	14	37	36	11	1	•	•			7.8
Roanoke	31	22	23	17	5	2	•	•		8.3
WASH. Seattle-Tacoma AP	13	16	35	26	8	2	•	•	•	10.7
Spokane	17	38	27	14	3	1	•	•		8.1
W. VA. Charleston	29	37	25	8	1	•	•			6.2
WIS. Green Bay	8	22	32	26	10	2	•	•	•	11.2
Madison	15	22	30	23	7	2	•	•	•	10.1
Milwaukee	8	17	31	30	11	3	1	•	•	12.1
WYO. Casper	8	16	27	27	13	7	2	•	•	13.3
PACIFIC, Wake Island	1	6	27	48	17	2	•	•		14.6
P. R. San Juan	15	28	27	25	4	•	•	•	•	9.1

Source: Climatography of the United States Series 82; Decennial Census of the United States Climate -- Summary of Hourly Observations, 1951-60 (Table B)

PB89-135644

Toxic Air Pollutant Emission Factors
A Compilation for Selected Air Toxic Compounds and Sources

Radian Corp., Research Triangle Park, NC

Prepared for

Environmental Protection Agency
Research Triangle Park, NC

Oct 88

U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

NTIS®

INDUSTRIAL PROCESS	SIC CODE	EMISSION SOURCE	SCC	POLLUTANT	CAS NUMBER	EMISSION FACTOR	NOTES	REFERENCE
process								
Cement manufacture - wet process	3241	Raw mill	305006	Cadmium	7440439	2 x 10E-5 lb/ton feed	Controlled with baghouse	38
Cement manufacture - wet process	3241	Clinker cooler	305006	Cadmium	7440439	1 x 10E-5 lb/ton feed	Controlled with ESP or baghouse	38
Cement manufacture - wet process	3241	Dryers and grinders	305007	Manganese	7439965	16 lb/10E3 tons cement produced	Uncontrolled, calculated based on engineering judgement	107
Cement manufacture - wet process	3241	Kilns	30500706	Manganese	7439965	114 lb/10E3 tons cement produced	Uncontrolled, calculated based on engineering judgement	107
Cement manufacture - wet process	3241	Kilns	30500706	Manganese	7439965	0.02-0.142 lb/10E3 tons cement produced	Controlled by ESP, calculated based on engineering judgement	107
Cement manufacture - wet process	3241	Kilns	30500706	Manganese	7439965	0.049-0.132 lb/10E3 tons cement produced	Controlled by fabric filter, calculated based on engineering judgement	107
Cement manufacture - wet process	3241	Kiln	30500706	Nickel	7440020	0.2-2 lb/1000 tons raw mater. feed input	Controlled by fabric filter, based on source tests	110
Cement manufacture - wet process	3241	Kiln	30500706	Beryllium	7440417	0.002 lb/ton produced	Engineering judgement	113
Cement manufacture - wet process	3241	Kiln	30500706	Chromium	7440473	12 kg/1000 Mg cement produced	Uncontrolled, includes fuel emissions, as total chromium	161
Cement manufacture - wet process	3241	Kiln	30500706	Chromium	7440473	0.011 kg/1000 Mg cement produced	ESP, includes fuel emissions, as total chromium	161
Cement manufacture - wet process	3241	Kiln	30500706	Chromium	7440473	0.008 kg/1000 Mg cement produced	Fabric filter, includes fuel emissions, as total chromium	161
Cement manufacture - wet process	3241	Clinker cooler	30500714	Nickel	7440020	0.004 lb/1000 tons raw mater. feed input	Controlled by fabric filter, based on source tests	110
Cement manufacture - wet process	3241	Clinker cooler	30500714	Nickel	7440020	0.1 lb/1000 tons raw mater. feed input	Controlled by ESP, based on source tests	110
Cement manufacture - wet process	3241	Clinker cooler	30500714	Nickel	7440020	0.2 lb/1000 tons raw mater. feed input	Controlled by two fabric filters in parallel, based on source tests	110
Cement manufacture - wet process	3241	Clinker cooler	30500714	Beryllium	7440417	0.0008 lb/ton produced	ESP control	113

APPENDIX B

FUGITIVE DUST EMISSION ESTIMATES

B.1 DESCRIPTION OF COAL HANDLING SYSTEM

B.1.1 EXISTING COAL HANDLING SYSTEM

At the existing coal handling facilities at Tarmac, coal is received via 100-ton railcars and bottom-dumped onto the ground from an elevated trestle. A temporary storage pile is formed under the trestle unloading area. A front-end loader (FEL) of 7 yd^3 capacity is used to move coal from temporary storage to the active coal storage pile for the facility. Current active storage amounts to approximately 1.0 acres. From the active storage pile, a FEL of 7 yd^3 capacity is used to move coal from the active storage pile to the loading hopper.

From the loading hopper onward, all conveyor transfer points, the bucket elevator, the storage bin, the coal mills and other equipment are enclosed and controlled by baghouses. These baghouses are permitted under the current operating permit (A013-157297). A flow diagram of the existing coal preparation facilities is presented in Figure B-1.

B.1.2 PROPOSED FACILITIES FOR KILN 2

No changes will be made in the existing coal receiving and storage facilities to accommodate Kiln 2. The Kiln 2 coal conversion will result in a maximum increase of 56,940 TPY of coal processed through the facilities. This will result in increased tonnage moved by the FELs, and will increase storage pile size by approximately 0.3 acres.

From the existing loading hopper through to the existing coal bin, increased throughput will occur, which will increase the annual operating hours of three baghouses controlling these points (G-509, G-521 and G-527). Operating hours will increase from about 10 hr/day to a maximum of 16 hr/day (increase of 2,040 hr/yr at 340 day/yr operation). The maximum particulate emissions from the three baghouses, based upon the air flow rates of 4,000, 6000, and 4,000 acfm, respectively, and 0.01 gr/dscf particulate loading, are 0.34 lb/hr, 0.51 lb/hr, and 0.34 lb/hr, respectively. This results in an increase in particulate emissions of

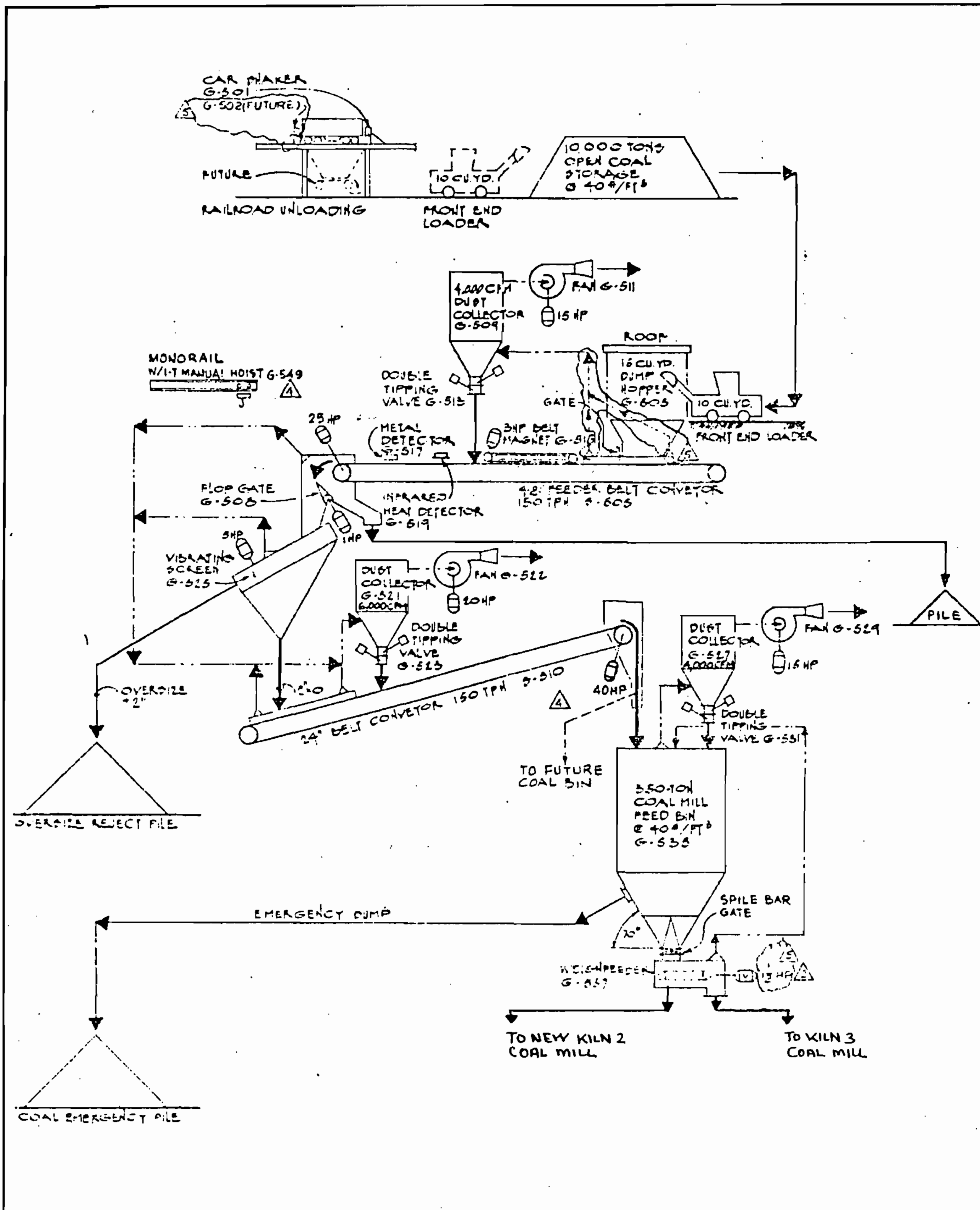

Figure B-1 FLOW DIAGRAM OF COAL PREPARATION SYSTEM

0.35 TPY , 0.52 TPY, and 0.35 TPY for the three baghouses (total increase of 1.21 TPY). These particulate emissions are assumed to be all PM10.

A new rotary conveyor will be constructed to convey coal for Kiln 2 from the existing coal bin to the new coal mill. This will be a totally enclosed conveyor, and no emissions will result. Hot air from the clinker cooler will provide drying of the coal in the mill, and will also convey the coal to the kiln. Thus, there will be no particulate emissions from the new coal mill.

B.2 FUGITIVE DUST EMISSION ESTIMATES

Fugitive dust emissions from the coal handling operations at Tarmac were estimated using the generalized fugitive dust emission factor equations contained in USEPA Publication AP-42, Section 11.2.3, Aggregate Handling and Storage Piles (10/86), and Section 11.2.1, Unpaved Roads (9/85). These sections contain emission factors for the following types of emission sources associated with the Tarmac operations:

* Batch drop operation
* Wind erosion from storage piles
* Vehicular traffic in the storage pile area

A. <u>COAL TRANSFER OPERATIONS</u>

The coal transfer operations at Tarmac consist of the railcar dump; transfer from the temporary storage pile to the active storage pile and; transfer from active storage pile to the loading hopper. These operations are all batch drop operations. The AP-42 factor for a batch drop operation is as follows:

$$E = k\,(0.0018)\,\frac{\left(\frac{s}{5}\right)\left(\frac{U}{5}\right)\left(\frac{H}{5}\right)}{\left(\frac{M}{2}\right)^{2}\left(\frac{Y}{6}\right)^{0.33}}\ \text{lb/ton}$$

where,

E = emission factor
k = particle size multiplier
s = material silt content (%)
U = mean wind speed (mph)
H = drop height (ft)
M = material moisture content (%)
Y = dumping device capacity (yd^3)

The particle size multiplier, k, is 1.0 for total suspended particulate [PM(TSP)]. The coal moisture content (M) was based on periodic sampling by Tarmac which shows an average moisture content of 7.2 percent. The silt content (s) of coal was obtained from Section 11.2.3 of AP-42, which showed an average of 5% for silt. The mean wind speed, U, in Miami is 8.8 mph, based upon a 9-year average. This average wind speed was used in the annual emission estimates. A higher wind speed of 18 mph was used for worst case daily emission estimates. This wind speed is exceeded only 2% of the time in Miami. The drop height varies for the transfer points, resulting in different emission factors. The resulting emission factors for each operation, and annual and worst case daily emission rates, are presented in Tables B-1 and B-2.

The current maximum daily delivery of coal to the site is 2,000 tons (20 rail cars). After conversion of Kiln 2 to coal, this maximum daily tonnage will not increase. Only the frequency of coal deliveries to the site will increase.

B. <u>WIND EROSION</u>

The recommended AP-42 emission factor equation for wind erosion from active storage piles is as follows:

$$E = 1.7\ (s/1.5)\ [(365-p)/235]\ (f/15)$$

where, E = total suspended particulate emission factor (lb/acre/day)
s = silt content (%)
p = number of days with precipitation greater than 0.01 inches
f = percentage of time that winds exceed 12 mph

Table B-1. Tarmac Kiln 2 Annual Particulate Matter (TSP) Emissions Increase

SOURCE	TYPE	s SILT CONTENT (%)	M MOISTURE CONTENT (%)	U WIND SPEED (MPH)	H DROP HEIGHT (FT)	Y DEVICE CAPACITY (YD**3)	E EMISSION FACTOR (LB/TON)
1) RAILCAR UNLOADING	BATCH DROP	5	7.2	8.8	20	87.0	0.00040
2) FEL-TO-PILE	BATCH DROP	5	7.2	8.8	10	7.0	0.00046
3) FEL-TO-LOADING HOPPER	BATCH DROP	5	7.2	8.8	10	7.0	0.00046
4) ACTIVE COAL PILE	WIND EROSION	5	-	-	-	-	*
5) ACTIVE COAL PILE	VEHICULAR TRAFFIC	5	-	-	-	-	*
6) BAGHOUSE G-509	BAGHOUSE	-	-	-	-	-	*
7) BAGHOUSE G-521	BAGHOUSE	-	-	-	-	-	*
8) BAGHOUSE G-527	BAGHOUSE	-	-	-	-	-	*

ANNUAL EMISSION ESTIMATES

SOURCE	UNCONTROLLED EMISSION FACTOR (LB/TON)	ANNUAL THRUPUT (TPY)	ANNUAL EMISSIONS (TPY)
1) RAILCAR UNLOADING	0.00040	56,940	0.012
2) FEL-TO-PILE	0.00046	56,940	0.013
3) FEL-TO-LOADING HOPPER	0.00046	56,940	0.013
4) ACTIVE COAL PILE (WIND)	*	*	0.480
5) ACTIVE COAL PILE (TRAFFIC)	*	56,940	10.230
6) BAGHOUSE G-509	*	56,940	0.35
7) BAGHOUSE G-521	*	56,940	0.52
8) BAGHOUSE G-527	*	56,940	0.35

		TOTAL ANNUAL EMISSIONS =	11.97

* REFER TO TEXT FOR EMISSION FACTORS OR BASIS OF EMISSIONS

Table B-2. Tarmac Kiln 2 Maximum 24-Hour Particulate Matter (TSP) Emission Increases

SOURCE	TYPE	s SILT CONTENT (%)	M MOISTURE CONTENT (%)	U WIND SPEED (MPH)	H DROP HEIGHT (FT)	Y DEVICE CAPACITY (YD**3)	E EMISSION FACTOR (LB/TON)
1) RAILCAR UNLOADING	BATCH DROP	5	7.2	18	20	87.0	0.00083
2) FEL-TO-PILE	BATCH DROP	5	7.2	18	10	7.0	0.00095
3) FEL-TO-LOADING HOPPER	BATCH DROP	5	7.2	18	10	7.0	0.00095
4) ACTIVE COAL PILE	WIND EROSION	5	-	-	-	-	*
5) ACTIVE COAL PILE	VEHICULAR TRAFFIC	5	-	-	-	-	*
6) BAGHOUSE G-509	BAGHOUSE	-	-	-	-	-	*
7) BAGHOUSE G-521	BAGHOUSE	-	-	-	-	-	*
8) BAGHOUSE G-527	BAGHOUSE	-	-	-	-	-	*

24-HOUR EMISSION ESTIMATES

SOURCE	UNCONTROLLED EMISSION FACTOR (LB/TON)	MAXIMUM 24-HOUR THRUPUT (TONS/DAY)	MAXIMUM 24-HOUR EMISSIONS (LB/DAY)
1) RAILCAR UNLOADING	0.00083	+	+
2) FEL-TO-PILE	0.00095	+	+
3) FEL-TO-LOADING HOPPER	0.00095	156	0.15
4) ACTIVE COAL PILE (WIND)	*	*	8.80
5) ACTIVE COAL PILE (TRAFFIC)	*	156	46.50
6) BAGHOUSE G-509	*	6 HR/DAY	2.04
7) BAGHOUSE G-521	*	6 HR/DAY	3.06
8) BAGHOUSE G-527	*	6 HR/DAY	2.04

		TOTAL 24-HOUR EMISSIONS =	62.59

* REFER TO TEXT FOR EMISSION FACTORS

\+ THERE WILL BE NO INCREASE IN MAXIMUM DAILY COAL UNLOADING RATE

As described above, the silt content of coal is taken to be 5%. The number of days in Miami with precipitation greater than 0.01 inches is approximately 120, and the percentage of time that the winds exceed 12 mph is 22%. Substituting these values into the above equation yields the following:

$$E = 1.7 \times (5/1.5) \times [(365\text{-}120)/235] \times (22/15) = 8.7 \text{ lb/acre/day}$$

The active coal pile at Tarmac will increase by approximately 0.3 acres. This results in the following annual average PM(TSP) emissions due to the increased storage pile area:

$$0.3 \text{ acres} \times 8.7 \text{ lb/acre/day} \times 365 \text{ days/yr} / 2{,}000 \text{ lb/ton} = 0.48 \text{ TPY}$$

For a worst case daily estimation, no precipitation was assumed, and the frequency of high winds greater than 12 mph was assumed to be 50% (i.e. half of the day). This yields the following emission factor and worst case daily emission rate:

$$E = 1.7 \times (5/1.5) \times [(365\text{-}0)/235] \times (50/15) = 29.3 \text{ lb/acre/day}$$
$$0.3 \text{ acres} \times 29.3 \text{ lb/acre/day} = 8.8 \text{ lb/day}$$

These emission rates are summarized in Tables B-1 and B-2.

C. <u>VEHICULAR TRAFFIC</u>

AP-42 recommends the use of the emission factor for unpaved roads (Section 11.2.1) for estimating fugitive emissions due to vehicular traffic in and around storage piles. The equation is as follows:

$$E = k\ (5.9)\ (s/12)\ S/30)\ (W/3)^{0.7}\ (w/4)^{0.5}\ [(365\text{-}p)/365]$$

where, E = particulate emission factor (lb/mile)
k = 1.0 for total suspended particulate matter
s = silt content of road surface material (%)
S = mean vehicle speed (mph)
W = mean vehicle weight (tons)
w = mean number of wheels
p = number of days with precipitation greater than 0.01 inches

For the Tarmac operation,

s = 15% (assumed to be three times that of coal silt content)
S = 10 mph
W = 55.0 tons (loaded weight)
= 47.5 tons (empty weight)
w = 4
p = 120

Substituting these values into the emission factor equation yields the following:

$$E = 1.0\ (5.9)\ (15/12)\ (10/30)\ (55/3)^{0.7}\ (4/4)^{0.5}\ [(365\text{-}120)/365]$$
$$= 12.6 \text{ lb/mile (loaded)}$$

$$E = 1.0\ (5.9)\ (15/12)\ (10/30)\ (47.5/3)^{0.7}\ (4/4)^{0.5}\ [(365\text{-}120)/365]$$
$$= 11.4 \text{ lb/mile (empty)}$$

For worst case daily conditions, the emission factor was adjusted for no precipitation:

$$E = 1.0\ (5.9)\ (15/12)\ (10/30)\ (55/3)^{0.7}\ (4/4)^{0.5}\ [(365\text{-}0)/365]$$
$$= 18.8 \text{ lb/mile (loaded)}$$

$$E = 1.0\ (5.9)\ (15/12)\ (10/30)\ (47.5/3)^{0.7}\ (4/4)^{0.5}\ [(365\text{-}120)/365]$$
$$= 17.0 \text{ lb/mile (empty)}$$

The frontend loader has a payload capacity of 8 tons. In order to load the maximum annual coal thruput of 56,940 tons for Kiln 2 would require 7,118 trips. The travel distance from the rail car unloading area to the coal pile is about 250 feet, and from the coal pile to the unloading hopper is about 300 feet. Total one-way distance is 550 feet or 741 miles annually. This annual mileage was increased by 15% to account for additional travel due to pile maintenance activities, i.e., 852 mi/yr. Resulting annual emissions are as follows:

Loaded: 852 mi/yr x 12.6 lb/mile / 2,000 lb/ton = 5.37 TPY
Empty: 852 mi/hr x 11.4 lb/mile / 2,000 lb/ton = 4.86 TPY

As described previously, the maximum daily amount of coal delivered to the site will not increase. However, additional loading of coal from the coal pile to the loading hopper will increase by 6.5 TPH or 156 tons per day. This rate requires 23 trips per day, or 1.3 miles one-way travel distance.

Worst case daily emissions are:

Loaded: 1.3 miles x 18.8 lb/mile = 24.4 lb/day

Empty: 1.3 miles x 17.0 lb/mile = 22.1 lb/day

D. PARTICULATE EMISSION SUMMARY

Particulate emission estimates for the Tarmac coal handling operations are summarized in Tables B-1, B-2 and B-3. These emissions represent the increase in particulate emissions due to the Kiln 2 coal conversion. As shown in Tables B-1 and B-2, annual emissions of PM(TSP) are estimated at 11.97 TPY, and worst case daily emissions are 62.6 lb/day. Based on particle site data developed by EPA, PM10 particle size multipliers and PM(TSP) estimates are shown in Table B-3. The PM10 emissions increase is 5.40 TPY annually, and 32.7 lb/day, maximum.

TARPM10
8/28/89

Table B-3. Tarmac Kiln 2 PM10 Emissions Increase

ANNUAL PM10 EMISSION ESTIMATES

SOURCE	TYPE OPERATION	ANNUAL PM(TSP) EMISSIONS (TPY)	PM10 PARTICLE SIZE MULTIPLIER	ANNUAL PM10 EMISSIONS (TPY)
1) RAILCAR UNLOADING	BATCH DROP	0.012	0.36	0.0043
2) FEL-TO-PILE	BATCH DROP	0.013	0.36	0.0047
3) FEL-TO-LOADING HOPPER	BATCH DROP	0.013	0.36	0.0047
4) ACTIVE COAL PILE	WIND EROSION	0.480	1.00	0.4800
5) ACTIVE COAL PILE	VEHICULAR TRAFFIC	10.230	0.36	3.6828
6) BAGHOUSE G-509	BAGHOUSE	0.35	1.00	0.3500
7) BAGHOUSE G-521	BAGHOUSE	0.52	1.00	0.5200
8) BAGHOUSE G-527	BAGHOUSE	0.35	1.00	0.3500
		------		------
	TOTAL ANNUAL EMISSIONS =	11.97		5.40

24-HOUR PM10 EMISSION ESTIMATES

SOURCE	TYPE OPERATION	MAXIMUM 24-HOUR PM EMISSIONS (lb/day)	PM10 PARTICLE SIZE MULTIPLIER	MAXIMUM 24-HOUR PM10 EMISSIONS (lb/day)
1) RAILCAR UNLOADING	BATCH DROP	0.00	0.36	0.00
2) FEL-TO-PILE	BATCH DROP	0.00	0.36	0.00
3) FEL-TO-LOADING HOPPER	BATCH DROP	0.15	0.36	0.05
4) ACTIVE COAL PILE	WIND EROSION	8.80	1.00	8.80
5) ACTIVE COAL PILE	VEHICULAR TRAFFIC	46.50	0.36	16.74
6) BAGHOUSE G-509	BAGHOUSE	2.04	1.00	2.04
7) BAGHOUSE G-521	BAGHOUSE	3.06	1.00	3.06
8) BAGHOUSE G-527	BAGHOUSE	2.04	1.00	2.04
		------		------
	TOTAL 24-HOUR EMISSIONS =	62.59		32.73

2 Sided Original

METROPOLITAN DADE COUNTY, FLORIDA

METRO-DADE

DERM

ENVIRONMENTAL RESOURCES MANAGEMENT
ENFORCEMENT SECTION
33 SOUTHWEST 2nd AVENUE
SUITE 1100
MIAMI, FLORIDA 33130-1540
(305) 372-6902

February 3, 1998

Richard D. Pluta, Director
Technical Services
Tarmac America, Inc.
1151 Azalea Garden Road
Norfolk, Virginia 23502

CERTIFIED MAIL NO. Z165003834
RETURNED RECEIPT REQUESTED

Re: Tarmac, Pennsuco Portland Cement Plant located at, near, or in the vicinity of 11000 N.W. 121 Way, Medley, Florida 33178.

Enclosed you will find an original Consent Agreement for the referenced facility which was executed on February 2, 1998. Be advised that the date of execution initiates specific time frames within the Agreement with which you must comply.

If you have any questions concerning the above please contact me at 372-6902.

Sincerely,

Sharon Crabtree

Sharon Crabtree
Code Enforcement Officer

cc: Jim Alves
    Mike Unger

SC:ocv

cc: J. Reynolds, BAR
    A. Linero, BAR

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AGREEMENT

DADE COUNTY DEPARTMENT OF)
ENVIRONMENTAL RESOURCES MANAGEMENT)
Complainant,)
)
vs.)
Tarmac America, Inc.)
Respondent)
)

THIS AGREEMENT, entered into by and between MIAMI-DADE COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES MANAGEMENT (hereinafter referred to as DERM), and Tarmac America, Inc. (hereinafter referred to as Tarmac or Respondent) pursuant to Section 24-5(15)(c) Miami-Dade County Environmental Protection Ordinance, shall serve to redress the alleged violations of Section 24-55 of the Code of Miami-Dade County as set forth in a June 17, 1997 Notice of Violation and Orders for Corrective Action, concerning the site located at 11000 NW 121 Way, Medley, DADE County, Florida (Folio #30-2031-001-0030).

The DERM finds the following:

FINDINGS OF FACT

1. The DERM is an agency of Miami-Dade County, a political subdivision of the State of Florida which is empowered to control and prohibit pollution and protect the environment within Dade County pursuant to Article VIII, Section 6 of the Florida Constitution, the Dade County Home Rule Charter and

Section 403.182 of the Florida Statutes.

2. Tarmac is a Delaware corporation that has its principal place of business in Norfolk, Virginia. Tarmac owns and operates a portland cement manufacturing plant located in Dade County, Florida, under the authority of DEP permit no. AC 13-169901. Tarmac is currently doing business in the State of Florida and is a person within the meaning of section 403.031(5), Florida Statutes.

3. Tarmac's cement plant (Pennsuco Plant) in Dade County includes kiln # 2, a wet process, direct-fired cement kiln that originally was constructed in 1969. In wet process cement manufacture, a slurry of filtrate of crushed limerock containing between 20% and 40% moisture content is introduced into an inclined kiln for calcination into quicklime (calcium oxide) clinker by the application of high thermal energies. At Tarmac's kiln # 2, this thermal energy currently is provided primarily by the direct firing of crushed coal. Flow from the coal mill both conveys the crushed coal to the kiln and serves as the primary combustion air for the kiln.

4. On July 8, 1980 the United States Environmental Protection Agency (EPA) issued Final Determination PSD-FL-050 for proposed fuel conversions of the Pennsuco kilns 1,2 and 3 from natural gas to coal. Condition #8 of the Final Determination limited coal-fired NOx emissions from kiln # 2 to 118 lb/hr at the maximum operating rate or 4.73 lb/ton of clinker produced

at lesser operating rates. These limiting emission rates were proposed by Respondent to ensure validity of the exemption from further Prevention of Significant Deterioration (PSD) review (no net increase in emissions). The PSD permit and accompanying regulatory materials specifically contemplated the possibility, based on published emission rate information for large utility boilers and site-specific variables that could not be quantified in advance, that actual NOx emissions while firing coal could be higher than predicted. However, Tarmac produced published test data which reported that "emissions of NOx are less using coal than when using gas or oil as a fuel for cement kilns" due to the "characteristics of the flame". Also, the EPA concurred with Tarmac "that operating conditions can be found which will result in reduced emissions or at least no net increased emissions" when utilizing coal instead of gas.

5. The conversion to coal for kiln # 2 was deferred for several years, and that kiln was never converted under PSD-FL-050. On August 21, 1989 Respondent again submitted an application to the Florida Department of Environmental Regulation (FDER, now known as the Florida Department of Environmental Protection, DEP) to convert kiln # 2 to coal. In this application Respondent requested, based on NOx emission rate data associated with a dissimilar kiln, a maximum allowable NOx emission rate of 169.25 lbs/hr for kiln # 2.

6. On February 27, 1991 DEP issued Construction Permit No. AC 13-169901 (exhibit A attached) to convert kiln # 2 to coal firing. Specific Condition # 5 of said permit limited NOx emissions to 113.8 lbs/hr. Additionally Specific Condition # 12 in DEP permit no. AC 13-169901 required that after the commencement of operation while firing coal, Tarmac shall conduct NOx emissions tests every two months for up to one year. In the event that the required compliance testing resulted in NOx emissions in the range of 113.8 lbs/hr to 169.3 lbs/hr, Specific Condition #12 of said permit provided Tarmac with the opportunity to request DEP to re-evaluate BACT and consider adjustment of the NOx emissions limitations upward from 113.8 lbs/hr to a maximum of 169.3 lbs/hr. The permit stated that DEP would not initiate enforcement proceedings while evaluating an adjustment of the NOx limitation, provided Tarmac made reasonable efforts to limit air emissions.

7. Tarmac did not convert kiln # 2 to coal for an extended period of time after issuance of permit no. AC 13-169901 in 1991 due to reported variabilities in demand for cement and fuel prices. Accordingly, the performance tests were delayed until coal-firing actually commenced. On April 24, 1994 Respondent initiated the bi-monthly compliance testing for a one year period ending April 1995. By letter dated July 21, 1995, Tarmac provided DEP with data from six stack emission tests performed while firing coal in kiln # 2. NOx emissions

exceeded permittable levels at every testing event. Tarmac requested in its July 21, 1995 letter to DEP that the NOx limit be re-evaluated and, based on a statistical analysis of the test results, be adjusted to 445 lbs/hour. DEP's August 24, 1995 response stated that Tarmac's request was "not representative of BACT under PSD rules and that the NOx test results were beyond the range of values for re-evaluation, set by Tarmac."

8. Thereafter, there were several discussions and exchanges of correspondence through which Tarmac, attempted to initiate DEP re-evaluation of the NOx emission limitation. DEP declined to re-evaluate the NOx emission limitation and ultimately expressed its preference that Tarmac evaluate and then implement physical improvements that would result in continuous compliance with the original NOx emission projections (113.8 lbs/hr).

9. On May 28, 1996 Respondent's consulting firm submitted a plan for testing NOx emission levels using a modified coal burner nozzle installed on kiln # 2. Testing was to commence by early June 1996 and test data was to be submitted to DEP by early August 1996.

10. On October 16, 1996 DEP issued a letter to Respondent stating that DEP had not received NOx emissions testing data as stated in the May 28, 1996 letter. DEP requested that Tarmac provide

immediate assessment of the NOx emission using the modified burner nozzle. Resolution of the NOx emission violation was to be achieved by the end of 1996.

11. Resolution of the elevated NOx emissions issue was not achieved and pursuant to the FDEP/DERM air permitting delegation agreement, on April 14, 1997, FDEP referred the continuing NOx emissions violation at the subject site to DERM for follow-up enforcement action.

12. On June 17, 1997 DERM issued a Notice of Violation (NOV) and Orders for Corrective Action and Settlement for exceedances of permitted NOx emission rates. Said NOV ordered Respondent to submit a written plan detailing proposed corrective actions to ensure that the allowable limits for emissions are not exceeded.

13. Tarmac has reported that its analysis indicates that the level of NOx emissions demanded by DEP can be achieved at kiln #2 while firing coal only by developing alternatives that require very substantial expenditures, such as converting kiln # 2 to indirect firing (or other alternative technology), or modernizing its existing wet process system by converting it to employ dry process technology.

14. Tarmac has expressed a willingness to adopt whichever NOx emission reduction option is most cost-effective, taking into

consideration the age of the existing equipment and the degree of reduction in NOx and other criteria pollutant emissions achievable by each alternative. Due to the reported costs involved, the substantial preliminary engineering work required, as well as the need to design for the integration of new systems into existing operations, Tarmac has stated its need for additional time in which to select and implement its best alternative method. If no economically feasible alternative can be developed, Tarmac will cease operating kiln # 2 on coal.

15. Tarmac hereby consents to the terms of this Agreement without either admitting or denying the factual or legal allegations made by DERM in this Agreement or in the Notice of Violation and Orders for Corrective Action and Settlement; and

16. In an effort to insure continued protection of the health and safety of the public and the environment of Dade County and to insure compliance with Chapter 24, Miami-Dade County Environmental Protection Ordinance and to avoid time-consuming and costly litigation, the parties hereto stipulate and agree to the following, and it is ordered:

17. Upon execution of this Consent Agreement Respondent shall, on an interim basis, meet the NOx emission limit monthly average of 220 lbs/hr for kiln # 2 with 240 lbs/hr being the maximum limit on an instantaneous basis. This NOx emission limit shall

remain in effect until the applicable requirements set forth in paragraphs # 21, 22 or 23 of this Agreement are implemented. Respondent shall then meet NOx emission limitations for kiln # 2 as required.

18. In order to verify compliance with paragraph # 17 of this Agreement, Respondent shall install and have operational a continuous emission monitor on kiln #2 by June 1, 1998. Respondent shall obtain DERM concurrence of the system prior to installation. Until the aforementioned continuous emission monitoring system is operational, Respondent shall conduct monthly NOx emission verification testing. Additionally, beginning in July 1, 1998, respondent shall submit to DERM a written Nox emission monitoring report including the monthly Nox emissions chart from kiln #2. This report shall be due by the fifteenth of the month and shall contain the information obtained from the preceding month. The first report is due to DERM by July 15, 1998. Report submittals shall continue until the expiration of this Agreement in accordance with paragraph 38 of this Agreement.

19. On or before January 31, 1998, Respondent shall provide in writing to DERM its method for eliminating exceedances of the NOx emission limitations as stipulated in permit no. AC 13-169901 for kiln # 2. The method provided shall correspond with the applicable requirements set forth below in paragraphs 21, 22 or 23 of this Agreement.

20. If Respondent chooses to implement the requirements set forth in paragraph 22, Respondent shall submit applications by completing forms designated by agency regulations, signed by the appropriate company representative and sealed by a Florida registered professional engineer, with the appropriate fee, for the required air construction permits and/or permit modifications to the FDEP or Dade County DERM, as appropriate. Said application shall be submitted by February 15, 1998. Additional information requested by the appropriate agencies shall be provided by Respondent within fourteen (14) days of the date Respondent receives the request, unless the reviewing agency determines that additional time is necessary due to the scope of its request. If Respondent chooses to implement the requirements set forth in paragraph 23 of this Agreement, these same permitting procedures shall apply, except that the deadline for submitting the applications shall be June 30, 1998. In all cases Respondent shall diligently apply for and seek in a timely manner to obtain any other necessary approvals to perform the work within the same applicable timeframes stipulated above.

21. If Respondent relinquishes its authorization to burn coal in kiln # 2, it shall notify DEP and DERM in writing by January 31, 1998, that it surrenders permit no. AC 13-169901, and within 90 days thereafter shall cease utilizing coal, and operate kiln # 2 only on those fuels currently authorized

under DEP permit no. AO 13-238048 provided that emissions levels for NOx do not exceed the previously established RACT limitation and SO2 emissions do not exceed the current regulations.

22. Alternatively to the requirements set forth in paragraph # 21 of this Agreement, if kiln # 2 is converted to indirect firing or other DERM and DEP accepted technology that meets the NOx limits in permit no. AC 13-166901, construction shall be completed within 12 months after receiving the construction permit modifications referenced in paragraph #20, above, and any other required permits, and then Respondent shall meet the same BACT NOx emission limitations and all other emission limitations as set forth in construction permit NO. AC 13-169901.

23. Alternatively to the requirements set forth in paragraphs # 21 and # 22 of this Agreement, if the plant's manufacturing process is changed to dry process technology, construction shall be completed within 36 months after the required permits have been issued and then Respondent shall meet the permitted emission limitations.

24. Commencing at the next time at which such fees are due under DEP's regulations, Respondent shall pay to FDEP the Title V permitting fee for kiln # 2 NOx emissions based on the monthly interim average of 220 lbs/hr. This fee shall be effective

upon execution of this Consent Agreement and shall remain in effect until Respondent is in compliance with kiln # 2 permitted NOx emissions limitations.

SAFETY PRECAUTIONS

25. The Respondent shall maintain the subject site, during the pendency of this Agreement, in a manner which shall not pose a hazard or threat to the public at large or the environment and shall not cause a nuisance or sanitary nuisance as set forth in Chapter 24, Miami-Dade County Environmental Protection Ordinance.

VIOLATION OF REQUIREMENTS

26. This Agreement constitutes a lawful order of the Director of the Department of Environmental Resources Management and is enforceable in a civil or criminal court of competent jurisdiction pursuant to Chapter 24, Miami-Dade County Environmental Protection Ordinance. Violation of any requirement of the Agreement may result in enforcement action by DERM. Each violation of any of the terms and conditions of this Agreement by the Respondent shall constitute a separate offense.

SETTLEMENT COSTS

27. The Respondent hereby certifies that ~~he~~ it has the financial ability to comply with the terms and conditions stipulated herein and to comply with the payments specified in this Agreement.

28. DERM has determined, that due to DERM's Administrative costs incurred to bring the subject facility into compliance and other sums recoverable pursuant to Section 24-57(e) of the Miami-Dade County Code, an environmental remediation fee of $200,000.00 is appropriate. DERM will allow $50,000 (25%) of the required $200,000.00 environmental remediation fee to be used towards offsetting the costs of continuous emission monitoring equipment installation at kiln #2 (Pennsuco Plant). If for any reason Respondent fails to install the required continuous emission monitoring system Respondent shall pay DERM the full environmental remediation fee of $200,000.00. The Respondent shall within thirty (30) days of the effective date of this Agreement, submit to DERM a certified check in the amount of $150,000.00, for environmental remediation as set forth in Section 24-57(e) for the purpose of the enforcement of environmental laws in Dade County. The check shall be made payable to DERM and sent to the Department of Environmental Resources Management, c/o Sharon Crabtree, Suite 1100, 33 SW 2nd Avenue, Miami, Florida, 33130.

29. Except as otherwise provided under paragraph 33 below, in the event Respondent fails to submit, modify, implement, obtain, provide, operate, comply and or complete those items listed in paragraphs 17,18,19,20,21,22 or 23 (as applicable) herein, the Respondent shall pay DERM a civil penalty of one hundred dollars ($100.00) per day for each day of non-compliance and the Respondent shall be subject to enforcement action in a civil or criminal court of competent jurisdiction for such failure pursuant to the provisions set forth in Chapter 24, Miami-Dade County Environmental Protection Ordinance. Said payment shall be made by Respondent to DERM within ten (10) days of receipt of written notification and shall be sent to the Department of Environmental Resources Management, c/o Sharon Crabtree, at 33 S.W. 2nd Avenue, Miami, Florida 33130.

GENERAL PROVISIONS

30. Respondent shall allow authorized representatives of DERM access to the property at reasonable times for purposes of determining compliance with this Consent Agreement and the rules and regulations set forth in Chapter 24, Miami-Dade County Environmental Protection Ordinance.

31. The DERM expressly reserves the right to initiate appropriate legal action to prevent or prohibit the future violations of applicable statutes or the rules promulgated thereunder.

32. Entry into this Consent Agreement does not relieve Respondent of the responsibility to comply with applicable federal, state or local laws, regulations and ordinances.

33. If any event occurs which causes delay, or the reasonable likelihood of delay, in complying with the requirements or deadlines of this Agreement, Respondent shall have the burden of demonstrating to DERM, that the delay was, or will be, caused by circumstances beyond the control of Respondent. Upon occurrence of the event(s) causing delay, or upon becoming aware of a potential for delay, Respondent shall promptly notify DERM orally within twenty four (24) hours and shall, within five (5) days of oral notification to the DERM, notify DERM in writing of the anticipated length and cause of the delay, the measures taken or to be taken to prevent or minimize the delay, and the timetable by which Respondent intends to implement these measures. If DERM determines that the delay has been or will be caused by circumstances beyond the reasonable control of Respondent, the time for performance hereunder shall be extended for as reasonable a period as may be determined based on such circumstances. Excessive Emissions pursuant to Florida Administrative Code (F.A.C.) 62-210.700 may be considered a reasonable delay in emissions compliance with this Agreement provided Respondent complies with the requirements of this paragraph. The Respondent shall adopt all reasonable measures necessary to avoid or minimize delay.

Failure of Respondent to comply with the notice requirements of this paragraph in a timely manner shall constitute a waiver of Respondent's right to request an extension of time for compliance with the requirements or deadlines of this Agreement.

34. This Agreement shall neither be evidence of a violation of this Chapter or other environmental laws nor shall it be deemed to impose any limitation upon any investigation or action by DERM in the enforcement of Chapter 24, Miami-Dade County Environmental Protection Ordinance.

35. In consideration of the complete and timely performance by the Respondent of the obligations contained in the Agreement, DERM waives its rights to seek judicial imposition of damages or criminal or civil penalties for the matters alleged in this Agreement and the June 17, 1997 Notice of Violations and Orders for Correction Action.

36. This Agreement shall become effective upon the date of execution by the Director, Environmental Resources Management.

37. This Agreement shall expire upon written concurrence by The DERM, at such time as Respondent ceases to utilize coal in kiln #2 and has shown to be in compliance with paragraph 21 of this agreement or files with DEP and DERM a certificate of compliance documenting that it has commenced commercial

operation and has shown to be in compliance with the prescribed requirements of paragraphs 22 or 23.

STATE OF VIRGINIA
CITY OF NORFOLK

1-30-98
Date

John D. Carr, President
Tarmac America, Inc.

BEFORE ME, the undersigned authority, personally appeared JOHN D. CARR who after being duly sworn, deposes and says that he has read and agrees to the foregoing.

Sworn to and subscribed before me this 30th day of January, 1998 by JOHN D. CARR.
(name of affiant)

Personally Known ✓ or Produced Identification ______.
(Check one)

Type of Identification Produced: ______________.

My Commission Expires August 31, 1999

Notary Public

2-2-98
Date

John W. Renfrow, P.E., Director
Environmental Resources Management

Witness

Witness

DERM
Complainant
VS.
Tarmac America, Inc.
Respondent

BEST AVAILABLE COPY

EXHIBIT A

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

PERMITTEE:
Tarmac Florida, Inc.
P. O. Box 2998
Hialeah, Florida 33012

Permit Number: AC 13-169901
PSD-FL-142
Expiration Date: June 30, 1992
County: Dade
Latitude/Longitude: 25°52'30"N
80°22'30"W
Project: Kiln No. 2 Coal Conversion

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the conversion of kiln No. 2 to coal firing. The project will be located at the permittee's existing facility in Medley, Dade County, Florida. The UTM coordinates are Zone 17, 562.8 km East and 2861.7 km North.

The source shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments are listed below:

1. Application to construct received September 5, 1989.
2. DER's letter of incompleteness dated October 4, 1989.
3. EPA's letter dated October 18, 1989.
4. KBN's response (to incompleteness letter) dated November 13, 1989.
5. Dade County DERM's letter dated November 17, 1989.
6. EPA's letter dated December 13, 1989.
7. KBN's letter dated December 21, 1989.
8. KBN's letter dated January 15, 1990.
9. KBN's letter dated January 30, 1990.
10. EPA's letter dated March 20, 1990.
11. EPA's letter dated April 13, 1990.
12. Dade County DERM's letter dated April 30, 1990.
13. NPS's letter dated May 30, 1990.

PERMITTEE:
Tarmac Florida, Inc.

Permit Number: AC 13-169901
PSD-FL-142
Expiration Date: June 30, 1992

GENERAL CONDITIONS:

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

a. Have access to and copy any records that must be kept under the conditions of the permit;

b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. a description of and cause of non-compliance; and

b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

PERMITTEE:
Tarmac Florida, Inc.

Permit Number: AC 13-169901
PSD-FL-142
Expiration Date: June 30, 1992

GENERAL CONDITIONS:

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS:

1. The construction and operation of the subject modification of kiln No. 2 shall be in accordance with the capacities and specifications stated in the application.

2. The maximum clinker production rate of kiln No. 2 shall not exceed 25 tons per hour and 197,100 tons per year. Kiln No. 2 shall operate only on coal firing for up to 7,884 hours per year at a maximum firing rate of 162.5 MMBtu per hour. The coal used for firing kiln No. 2 shall have a maximum sulfur content of 2.0 percent by weight, with the rolling 30-day average sulfur content not exceeding 1.75 percent by weight.

3. Sulfur dioxide emissions from kiln No. 2 shall not exceed 7.8 lbs/ton of clinker produced, 195.0 lbs/hr, 768.7 tons/yr.

PERMITTEE:
Tarmac Florida, Inc.

Permit Number: AC 13-169901
PSD-FL-142
Expiration Date: June 30, 1992

SPECIFIC CONDITIONS:

of 5.86 to 8.25 lbs/hr (up to 0.33 lbs/ton clinker, 32.52 TPY), the Department, if requested by the permittee, shall re-evaluate BACT and consider upward adjustments of the emission limitations for the indicated constituents based on available data. During this testing and evaluation period, the permittee shall make reasonable efforts to limit air emissions, and the Department shall not initiate enforcement proceedings. Any upward adjustment of emission limitations pursuant to this paragraph shall be the subject of public notice in a local newspaper pursuant to Department rules. The Department's determination based on the data produced under this paragraph shall be a point of entry for purposes of Section 120.57, Florida Statutes.

13. The compliance tests shall be conducted within 30 days after operation on coal begins. The Department's Southeast District office and the Dade County Department of Environmental Resources Management (DCDERM) shall be notified in writing at least 15 days prior to source testing and at least 5 days prior to initial startup. Written reports of the tests shall be submitted to those offices within 45 days of test completion.

14. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit (F.A.C. Rule 17-4.090).

15. An application for an operation permit must be submitted to the Department's Southeast District office and the DCDERM at least 90 days prior to the expiration date of this construction permit or within 45 days after completion of compliance testing, whichever occurs first. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (F.A.C. Rule 17-4.220).

Issued this 25 day
of February, 1991

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Carol M. Browner

Carol M. Browner, Secretary

Originals

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

October 16, 1996

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

PSD-FL-142
10/2/06

Mr. Scott Quaas
Environmental Manager
Tarmac America, Inc.
455 Fairway Drive
Deerfield Beach, Florida 33441

RE: NO_X Emissions - Tarmac Kiln No. 2

Dear Mr. Quaas:

This concerns the investigative effort begun by Tarmac over one year ago to determine the reasons for high NO_X emissions from Kiln No. 2 and what can be done about them. KBN's letter of May 28, 1996 stated that Tarmac would conduct tests on a modified coal burner around June 1 and report the results to us within 60 days of test completion. After four months, we have not received any test results.

At some point, the problem will have to be solved by Tarmac or the Department will have to take appropriate action to enforce the existing permit limits. We believe that point should be fast approaching, with the matter being finally resolved one way or the other by the end of this year.

Please give us your immediate assessment of whether the approach currently underway will result in the current NO_X limits being met by early 1997.

If there are any questions regarding the above, please contact John Reynolds or myself at (904)-488-1344.

Sincerely,

A. A. Linero 10/16

A. A. Linero, P.E.
Administrator
New Source Review Section

AAL/JR

c: Pat Comer, DEP
Tom Title, SED
Ewart Anderson, DCDERM
Brian Beals, EPA
David Buff, KBN

KBN

A GOLDER ASSOCIATES COMPANY

June 4, 1996

Mr. A. A. Linero, Administrator
New Source Review Section
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Fl 32399-2400

Re: Investigation of NO_x Emissions
Tarmac Florida, Kiln No. 2

Dear Mr. Linero:

In KBN's letter dated May 28, to you concerning the above referenced subject, Table A and Kiln 2 NO_x data from 1980 were inadvertently omitted. These are attached for your review. Please call if you have any questions concerning this information.

Sincerely,

David A. Buff

David A. Buff, P.E.
Principal Engineer
Florida P.E. #19011

SEAL

DB/arz

cc: Al Townsend
Scott Quass
Jim Alves

cc: J. Reynolds, BAR

9651002A/2

6241 Northwest 23rd Street Suite 500 Gainesville, Florida 32653-1500 352-336-5600 FAX 352-336-6603

5405 West Cypress Street Suite 215 Tampa, Florida 33607 813-287-1717 FAX 813-287-1716

1801 Clint Moore Road Suite 105 Boca Raton, Florida 33487 407-994-9910 FAX 407-994-9393

7785 Baymeadows Way Suite 105 Jacksonville, Florida 32256 904-739-5600 FAX 904-739-7777

1616 'P' Street NW Suite 350 Washington, DC 20036 202-462-1100 FAX 202-462-2270

TABLE T-2

MIAMI STACK EMISSION SURVEY

NOX EMISSION RATE - EPA METHOD 7

1980

Run No.	Sample No.	Kiln No.	Fuel Type	Date 1980	Lbs. NO_2 Hr.	Lbs. NO_2 Ton Clnk.	Lbs. NO_2 LB.F.Gas	PPM*
1	1	2	Gas	3-20	211.5	9.95	9.45	435
1	2	2	Gas	3-20	109.1	5.13	4.88	224
1	3	2	Gas	3-20	107.4	5.05	4.80	221
1	4	2	Gas	3-20	101.8	4.79	4.55	209
1	5	2	Gas	3-20	96.7	4.55	4.32	199
1	6	2	Gas	3-20	95.4	4.49	4.26	196
1	7	2	Gas	3-20	91.2	4.29	4.08	188
1	8	2	Gas	3-20	57.1	2.69	2.55	117
1	9	2	Gas	3-20	86.5	4.07	3.87	178
1	10	2	Gas	3-20	89.1	4.19	3.98	183
1	11	2	Gas	3-20	124.5	5.86	5.56	256
1	12	2	Gas	3-20	35.6	1.68	1.59	73
	AVE.				100.5	4.73	4.49	207
2	1	2	Oil	3-21	148.0	5.92	7.64	353
2	2	2	Oil	3-21	125.8	5.03	6.50	300
2	3	2	Oil	3-21	147.7	5.91	7.63	352
2	4	2	Oil	3-21	140.8	5.63	7.27	336
2	5	2	Oil	3-21	143.7	5.75	7.42	343
2	6	2	Oil	3-21	267.6	10.70	13.82	638
2	7	2	Oil	3-21	252.6	10.10	13.05	602
2	8	2	Oil	3-21	114.1	4.56	5.89	272
2	9	2	Oil	3-21	81.4	3.26	4.20	194
2	10	2	Oil	3-21	141.3	5.65	7.30	337
2	11	2	Oil	3-21	217.8	8.71	11.25	519
2	12	2	Oil	3-21	233.5	9.34	12.00	557
	AVE				167.9	6.71	8.66	400

Table A. Summary of SO2/NOx Emissions From Kiln No. 2, Tarmac Florida

							Sulfur Dioxide Emissions					Nitrogen Dioxide Emissions					Oxygen Level (%)		Stack Flow	
Date	Run#	Kiln Feed (TPH)	Clinker (TPH)	Coal Usage (TPH)	Heat Input (a) (MMBtu/hr)	Coal Sulfur %	ppm	lb/hr	lb/MMBtu	lb/ton kiln feed	lb/ton clinker	ppm	lb/hr	lb/MMBtu	lb/ton kiln feed	lb/ton clinker	Stack	Kiln	acfm	dscfm
04/26/94	1	39.58	24.08	4.58	114.50	1.86	0.63	0.37	0.003	0.009	0.015	1,187	450	3.93	11.37	18.69			86,415	59,855
04/26/94	2	39.58	24.08	4.58	114.50	1.86	0.61	0.36	0.003	0.009	0.015	1,092	427	3.73	10.79	17.73			91,144	59,855
04/26/94	3	39.58	24.08	4.58	114.50	1.86	0.61	0.35	0.003	0.009	0.015	1,117	422	3.69	10.66	17.52			86,816	57,827
06/28/94	1	38.33	23.6	5.33	133.25	1.75	54.18	32.33	0.243	0.843	1.370	610	255	1.91	6.65	10.81			93,138	59,875
06/28/94	2	38.33	23.6	5.33	133.25	1.75	108.2	62.76	0.471	1.637	2.659	669	281	2.11	7.33	11.91			90,738	58,286
06/28/94	3	38.33	23.6	5.33	133.25	1.75	88.07	51.46	0.386	1.343	2.181	655	282	2.12	7.36	11.95			92,633	58,642
06/28/94	4	38.46	24.0	5.41	135.25	1.75						787	332	2.45	8.63	13.83				58,937
06/28/94	5	38.46	24.0	5.41	135.25	1.75						579	246	1.82	6.40	10.25				59,280
08/31/94	1	32.8	19.3	4.90	122.50	0.85	9.90	5.03	0.041	0.153	0.261	648	237	1.93	7.23	12.28	9.4		78,548	50,967
08/31/94	2	32.8	19.3	4.90	122.50	0.85	20.60	10.89	0.089	0.332	0.564	514	195	1.59	5.95	10.10	9.4		80,268	51,988
08/31/94	3	32.8	19.3	4.90	122.50	0.85	15.00	7.76	0.063	0.237	0.402	488	182	1.49	5.55	9.43	9.4		78,548	50,967
10/27/94	1	38.9	24.7	5.10	127.50	0.76	4.39	2.56	0.020	0.066	0.104	754	316	2.48	8.12	12.79	9.72		115,146	58,456
10/28/94	3	39.8	26.1	5.50	137.50	0.76	3.43	1.96	0.014	0.049	0.075	809	333	2.42	8.37	12.76	9.76		115,912	57,531
10/28/94	4	39.8	26.1	5.50	137.50	0.76	30.52	16.75	0.122	0.421	0.642	544	215	1.56	5.40	8.24	9.28		113,480	55,094
01/03/95	1	40.5	25.0	4.75	118.75	0.88	1.61	0.92	0.008	0.023	0.037	618	255	2.15	6.29	10.19	10.3		91,761	57,583
01/03/95	2	40.5	25.0	4.75	118.75	0.88	1.26	0.7	0.006	0.017	0.028	988	398	3.35	9.84	15.93	10.3		88,956	56,308
01/03/95	3	40.5	25.0	4.75	118.75	0.88	1.23	0.07	0.001	0.002	0.003	883	354	2.98	8.74	14.16	9.76		89,294	56,002
05/31/95	1	38.5	24.0	5.30	132.50	0.67		4.23	0.032	0.110	0.176	923	347	2.62	9.01	14.45	10.7		105,551	52,186
05/31/95	2	38.5	24.0	5.29	132.25	0.67		7.26	0.055	0.189	0.303	883	332	2.51	8.62	13.84	11.1		105,918	51,013
05/31/95	3	38.5	24.0	5.29	132.25	0.67		1.81	0.014	0.047	0.075	821	322	2.43	8.35	13.40	11.2		107,367	53,963
12/11/95	1	35.0	20.8	5.10	127.50		1.51	0.91	0.007	0.026	0.044	728	308	2.42	8.80	14.81	11.0		113,178	59,063
12/11/95	2	35.0	20.8	5.10	127.50		1.53	0.91	0.007	0.026	0.044	824	355	2.78	10.14	17.07	11.3		120,039	60,164
12/11/95	3	35.0	20.8	5.10	127.50		0.00	0.00	0.000	0.000	0.000	1,044	448	3.51	12.80	21.54	10.9		118,322	59,898
						Minimum =	0.00	0.00	0.000	0.000	0.000	488	182	1.49	5.40	8.24	9.28		78,548	50,967
						Average =	19.07	9.97	0.076	0.264	0.429	790	317	2.52	8.37	13.64	10.23		98,246	56,684
						Maximum =	108.16	62.76	0.471	1.637	2.659	1,187	450	3.93	12.80	21.54	11.30		120,039	60,164

(A) Assumes 12,500 Btu/lb coal.
NA = Not available

A GOLDER ASSOCIATES COMPANY

May 28, 1996

Mr. A. A. Linero, Administrator
New Source Review Section
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RECEIVED
MAY 30 1996
BUREAU OF
AIR REGULATION

Re: Investigation of NO_x Emissions
Tarmac Florida, Kiln No. 2

Dear Mr. Linero:

As you are aware, Tarmac Florida, Inc., is in the process of investigating the high NO_x emissions being experienced from Kiln 2, and potential methods to reduce the emissions. KBN has been contracted by Tarmac to assist them in this manner. The thrust of our efforts has been toward discovering the reasons for the high emissions, and what can be done to reduce the emissions.

This letter presents a status report to the Department, which presents the results of our efforts to date. In addition, additional time is requested in order to perform stack testing to determine if NO_x reduction measures implemented by Tarmac can result in achieving the permitted NO_x limit, or to what extent they can reduce emissions.

Kiln No. 3 Emissions and Basis for Original BACT

The Department has requested that Tarmac investigate why the NO_x emissions from Kiln No. 2 exceed the BACT limit, and why they are so much higher than Kiln No. 3, which was the basis for the BACT. Therefore, a review of the permitting history of the Kiln No. 2 coal conversion PSD permit is in order.

In the original PSD permit application for the Kiln No. 2 coal conversion, Tarmac proposed BACT levels of 400 lb/hr for SO_2 (16 lb/ton clinker) and 169.3 lb/hr for NO_x (6.77 lb/ton clinker) as starting points for the BACT evaluation. This starting point for NO_x was based on the permitted emission limit for Kiln No. 3, which experience had shown was achievable in Kiln No. 3, as well as a limited set of test data from Kiln No. 2 in 1980 when burning fuel oil and gas (see attached data).

It is also important to note that the proposed BACT control technology was good combustion practices and the inherent SO_2 removal within the kiln system. Due to concerns over the nearby PSD Class I area (Everglades National Park), SO_2 emissions were considered to be of much more importance at the time. Subsequently, EPA agreed that BACT for NO_x was good operating and maintenance procedures to minimize NO_x emissions.

In addition, Tarmac proposed and strongly argued that a comprehensive test program be conducted prior to setting any final emission limits for the kiln. This was due to the uncertainty in emissions from Kiln No. 2 versus Kiln No. 3 (due to different size of the kilns and different firing types). Tarmac alluded to a similar experience with Kiln No. 3 when it was converted to coal. An emission limit was agreed to without any test data, and the limit proved to be unattainable. Therefore, the Kiln No. 3 emission limits were revised. Tarmac did not want to make this same mistake again. Tarmac's commitment was to minimize SO_2 emissions to the extent possible, again due to the Class I area concerns. EPA approved the testing plan as a mechanism to set

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the BACT limit for SO_2 in January 1990. The BACT limit for NO_x was also to be set through the testing program.

The actual test data from Kiln No. 2 shows that the original commitment of minimizing SO_2 emissions to the extent practical has been achieved beyond all expectations. The actual SO_2 emissions are well below the allowable BACT limit. However, as will be discussed in this report, the low SO_2 emissions in effect cause the conversely high NO_x emissions.

<u>Kiln No. 2 NO_x Emissions</u>

In Tarmac's February 1996 submittal to the Department, a summary of NO_x test data for Kiln No. 2 as well as other wet process kilns in the U.S. were presented. There was an error presented in Table 1 of this submittal regarding Tarmac's NO_x emissions (emissions were presented in terms of lb/ton kiln feed rather than lb/ton clinker). Therefore, this table is resubmitted (attached).

A complete summary of the SO_2 and NO_x data obtained to date for Kiln No. 2 is presented in Table A attached. As shown, the SO_2 emissions have been very low, while the NO_x emissions have been high compared to the permitted emission rates. The reasons for this have not been fully determined at this time, but according to plant kiln operators, the SO_2 and NO_x emissions are primarily related to the oxygen level in the kiln. They state that as the oxygen level in the kiln increases, SO_2 emissions decrease while NO_x emissions increase. This trend has also been evident on Kiln No. 3. Therefore, KBN is currently analyzing the available test data for Kiln No. 2 to determine if a correlation exists between these parameters.

During the stack tests on Kiln No. 2, oxygen level at the stack is measured. However, this measurement is affected by infiltration of ambient air into the system and is not reflective of conditions in the kiln. Therefore, oxygen levels in the kiln itself are needed. Tarmac maintains a kiln oxygen monitor on Kiln No. 2, and data from this monitor is archived on-site at the plant. KBN is in the process of retrieving these data, but this is a slow process, since the data are contained on strip charts. Once the data is obtained, correlation plots of oxygen versus emissions will be developed.

Based on the information gathered to date for Kiln No. 2, the reasons for the high NO_x emissions can be summarized as follows:

1. Kiln No. 2 operates at a kiln oxygen level normally in the range of 2 to 2.5 percent. By comparison, Kiln No. 3 normally operates at an oxygen level of approximately 1.0 percent.

2. Kiln No. 3 is an indirect fired kiln, meaning that the coal fuel and the primary combustion air are delivered to the kiln separately. This allows more control over the combustion air, allowing the combustion air to be varied to obtain optimum combustion conditions and flame characteristics. The air associated with the coal burner normally is not varied. In a wet process cement kiln, the flame characteristics (flame length and intensity) are critical to clinker production.

   In contrast, Kiln No. 2 is a direct fired kiln, which means that the primary combustion air is delivered to the kiln through the coal feed system. In such a system, the amount of combustion air cannot be reduced or varied, because the air velocity through the burner is critical to the flame characteristics.

3. This difference in the two kilns is reflected in the gas flow rates from the kilns. Kiln No. 2, with a maximum clinker production rate of 25 TPH, has a exhaust gas flow rate of 50,000 to 60,000 dscfm. This equates to 120,000 to 144,000 dscfm per ton of clinker produced. Kiln No. 3 normally operates at 87.5 TPH clinker with exhaust gas flow of 140,000 to 160,000 dscfm. This equates to 96,000 to 99,000 dscfm per ton of clinker produced. Therefore, Kiln No. 2 requires approximately 25 percent to 45 percent more air to operate than Kiln No. 3. This in turn results in a higher oxygen level in the kiln, and hence higher NO_x emissions but lower SO_2 emissions compared to Kiln No. 3.

<u>Measures to Reduce NO_x Emissions in Kiln No. 2</u>

Based on the above discussion, Tarmac is focusing on reducing the amount of combustion air to the kiln as the only feasible means of lowering NO_x emissions. To this end, Tarmac recently installed a modified coal burner on Kiln No. 2 during a recent outage in April. The previous coal burner had a 13 inch nozzle, while the new burner will have a 10 inch nozzle. The intention in reducing the nozzle diameter is to reduce the amount of primary air introduced through the coal burner, while maintaining the velocity through the burner obtained by the previous burner design, thus maintaining the previous flame characteristics. The test will also be used to determine the effects of the changes upon the grindability of the clinker product. As discussed above, proper clinker production is dependent upon the flame characteristics.

Tarmac is planning on conducting stack testing on Kiln No. 2 with the new burner in late May or early June. This test will assess the effectiveness and potential in reducing NO_x emissions from Kiln No. 2. The Department will be notified prior to the testing as to the exact test dates. Upon completion of the testing, the test data will be analyzed and submitted to the Department. This analysis, along with analysis of the historic test data as described above, will be submitted to the Department within 60 days of completing the testing.

The current construction permit for Kiln No. 2 has an expiration date of May 31, 1996. However, since Tarmac is a Title V source, it is our understanding that this construction permit is automatically extended to the later of November 1, 1996, or 240 days after commencing operation, per Rule 62-213.420(1)(a)4.

Please call if you have any questions concerning this information or the attached report.

Sincerely,

David A. Buff

David A. Buff, P.E.
Principal Engineer
Florida P.E. #19011

SEAL

DB/arz

cc: Al Townsend
Scott Quass
Jim Alves
File (2)

CC: John Reynolds, BAR
EPA
NPS

9651002A/1

Table 1. Summary of Nitrogen Oxide Emissions from Coal-Fired Wet Process Cement Kilns (Revised 5/28/96)

Source of Emission Factor	Fuel	Type of Firing	No. of Source Tests or CEM Data	Reference	Heat Input Rate (lb/MMBtu)	Clinker Production Rate (tons/hr)	NOx Emissions lb/hr		lb/MMBtu		lb/ton clinker	
							Average	Range	Average	Range	Average	Range
Tarmac Kiln 2 NOx Limit	Coal	Direct	1	1	162.5	25	--	113.8, max	--	0.70, max	--	4.55, max
Tarmac Kiln 3 NOx Limit	Coal	Indirect	1	1	417.5	88	--	592, max	--	1.42, max	--	6.77, max
Tarmac Source Tests: No. 2 Kiln, 1994 and 1995	Coal	Direct	6	2	115-138	19-26	308.8	205 - 417	2.50	1.7 - 3.8	13.1	8.2 - 18.7
Tarmac Source Tests: No. 3 Kiln, 1982 thru 1993	Coal	Indirect	16	3	360-473	79-92	533.0	218 - 855	1.34	0.7 - 2.1	6.2	3.5 - 8.8
Rinker Source Tests: 2 Kilns	Coal	Direct	3	4	352.4	71.4	1,182.3	883 - 1431	3.36	2.5 - 4.1	16.6	12.3 - 20.1
1982 PCA Survey of Coal-fired Wet Process Cement Kilns (b)	Coal	-	8	5	--	--	--	--	--	--	5.0	1.7 - 8.3
Continental Cement Company: June 20, 1990	Coal	Direct	1	6	475.0 (a)	57.0	671.6	--	1.41	--	--	--
Holnam, Inc. CEM Data: July 16, 1992	Coal	Direct	1	7	--	--	--	--	--	--	12.50	--
Holnam, Inc. Source Test: October 24, 1991	Coal	Direct	1	8	--	--	--	--	--	--	5.80	--
Lehigh Portland Cement Company Source Test: May 22, 1990	Coal	Direct	1	9	162.5	--	--	--	1.12	--	5.90	--
AVERAGE							**673.9**		**1.9**		**9.3**	
RANGE							**(309 - 1,182)**		**(1.1 - 3.4)**		**(5.0 - 16.6)**	

Footnotes

(a) Heat input (Btu/hr) is based on burning 100% coal, and any supplemental fuel is added at a rate of 50% of the coal Btu load (i.e., 50% coal Btu/hr, 50% hazardous waste Btu/hr).

(b) Emissions are based on a study of 8 wet process cement kilns firing 100% coal.

References

1. From Permit Allowables for Kiln 2 (AC13-169901 ;PSD-FL-142), and for Kiln 3 .
2. Tarmac Source Tests - No. 2 Kiln: April 26-27, 1994, June 28-29, 1994, August 31, 1994, October 27-28, 1994, January 3, 1995, and May 31, 1995; Medley, Florida.
3. Tarmac Source Tests - No. 3 Kiln: April and May 1982, May 16, 24, 31, and August 1985, December 1986, April and December 1987, July and August 1988, May and August 1989, October 1990, August 1992, and September 1993; Medley, Florida.
4. Rinker Materials Corporation Source Tests: January 1993; Dade County, Florida. Fired with 100% Coal.
5. "An Overview of the Formation of SOx and NOx in Various Pyroprocessing Systems" by Peter Bechtoft Nielsen & Ove Lars Jepsen, F.L. Smidth & Co. A/S, Copenhagen, Denmark. Figure 8.1.
6. "Emissions Testing of a Wet Cement Kiln at Hannibal, Missouri. Draft Final Report." EPA-530-SW-91-017. Continental Cement Company Source Test: June 20, 1990; Hannibal, Missouri. Fired with 100% Coal.
7. "Alternative Control Techniques Document-NOx Emissions from Cement Manufacturing." EPA-453/R-94-004. Holnam, Inc. CEM Data: July 16, 1992; Artesia, Mississippi. Fired with 100% Coal.
8. "Alternative Control Techniques Document-NOx Emissions from Cement Manufacturing." EPA-453/R-94-004. Holnam, Inc. Source Test: October 24, 1991; Florence, Colorado. Fired with 100% Coal.
9. "Alternative Control Techinques Document-NOx Emissions from Cement Manufacturing." EPA-453/R-94-004. Lehigh Portland Cement Company Source Test: May 22, 1990; Cementon, New York. Fired with 100% Coal.

KBN

February 16, 1996

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FEB 19 1996

BUREAU OF
AIR REGULATION

Mr. A.A. Linero, Administrator
New Source Review Section
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Fl 32399-2400

Re: Investigation of NO_x Emissions
Tarmac Florida, Kiln No. 2

Dear Mr. Linero:

The attached report presents the results of a literature search and survey conducted by KBN Engineering and Applied Sciences, Inc. (KBN) on behalf of Tarmac Florida, Inc. This report is the result of work efforts on Task 1 as described in an October 3, 1995, letter from Jim Alves of Hopping, Green, Sams & Smith to the Department. It is part of Tarmac's ongoing investigation into the high NO_x emissions being experienced from Kiln 2, and potential methods to reduce the emissions.

This report has been delayed from the originally intended date due to a number of reasons, including the Christmas holidays, the EPA shutdown in December and early January, and staff vacations and emergency leave. The report presents a summary of the data gathered by KBN to date. Our data gathering and research efforts on this subject are continuing.

Please call if you have any questions concerning this information or the attached report.

Sincerely,

David A. Buff

David A. Buff, P.E.
Principal Engineer

DAB/lcb

cc: Al Townsend
Scott Quass
Jim Alves
File (2)

9651002B/R1/01

KBN ENGINEERING AND APPLIED SCIENCES, INC.

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TARMAC FLORIDA, INC.
DEERFIELD BEACH, FL

NITROGEN OXIDE EMISSIONS AND REDUCTION FROM WET PROCESS CEMENT KILNS

LITERATURE SEARCH

KBN Engineering and Applied Sciences, Inc. (KBN) performed an extensive literature search to determine available information on reducing nitrogen oxide (NO_x) emissions from wet process cement. The following sources were contacted to obtain emissions information:

- U.S. Environmental Protection Agency (EPA) Research Triangle Park
- Best Available Control Technology/Lowest Achievable Emission Rate (BACT/LAER) Clearinghouse
- State of California
- Portland Cement Association
- Air Pollutant Control Equipment Vendors
- Suppliers of Coal Burners
- Current Operators of Wet Process Cement Kilns

Refer to the tables in Attachment A for a detailed listing of all sources contacted and the results of each contact. The literature review and information survey focused on actual NO_x emissions from wet process cement kilns, and control techniques employed to reduce NO_x emissions. It is noted that the literature search is ongoing, and additional information is expected to be obtained in the near future.

FACTORS WHICH AFFECT NO_X EMISSIONS

The literature review yielded several pertinent articles related to the formation of NO_x emissions in wet process cement kilns and the factors which affect these emissions. For long, wet kilns which fire only coal, such as Tarmac Kiln 2, the following factors were identified:

1. In wet process kilns firing coal only, the single fuel combustion zone and high temperature required to complete the clinker formation process (2,750°F) lead to high thermal NO_x formation. The major factors are combustion zone temperature,

residence time of combustion gases at the high temperature, the oxygen level in the kiln, and ratio of primary combustion air to secondary air.

2. Energy efficiency of the process is a factor, since a higher heat input requires higher combustion air amounts, leads to higher temperatures, etc.
3. Gas-fired NO_x emissions are generally higher than coal-fired emissions, due to a shorter, more intense flame associated with gas firing (other factors being equal).
4. *Direct firing* is the term used when the primary combustion air is the air swept through the coal mill to deliver the coal to the burner. In *indirect firing*, the primary combustion air is supplied to the kiln independent of the coal supply. Thus, in direct fired kilns, the amount of primary air is large and cannot be adjusted much due to the need to supply the necessary amount of coal at the proper velocity at the burner. In indirect firing systems, the amount of primary air supplied with the fuel is relatively small; therefore, the secondary air amount is higher and can be varied. For these reasons, direct fired kilns generally have higher NO_x emissions than indirect fired kilns.
5. Increasing excess air to the kiln will increase NO_x emissions up to a point, then will decrease emissions due to the reduction in flame temperature. Generally, oxygen levels of 4 to 5 percent result in high NO_x emissions, whereas oxygen levels of 0.5 to 1.5 percent produce low emissions.
6. Coal nitrogen content potentially affects total NO_x emissions: a typical kiln with a heat rating of 5.3 million British thermal units per ton (MMBtu/ton) clinker using a coal with a nitrogen content of 1 percent has the potential to produce fuel NO_x emissions of up to 14.5 pounds per ton (lb/ton) clinker.
7. The nitrogen content of the raw feed is a potential source of NO_x. Raw feed nitrogen levels have been found to vary from 20 to 1,000 parts per million (ppm). A raw feed content of 100 ppm has the potential to produce NO_x emissions up to 1 lb/ton clinker.
8. Other factors which affect wet process cement kiln NO_x emissions include the burnability of the raw feed and sulfur dioxide (SO_2) control employed.

NO_X EMISSIONS FROM WET PROCESS CEMENT KILNS

Based upon information obtained during the literature search and information survey, a compilation of NO_x emissions from wet process coal-fired cement kilns was developed. A summary of this information obtained to date is presented in Tables 1 and 2.

A summary of the NO_x data obtained for coal-only fired wet process kilns is presented in Table 1. Table 2 lists kilns which fire a mixture of coal and other fuels such as waste tires or petroleum coke. Included in Table 1 are Tarmac's present permit limits for Kilns 2 and 3, as well as actual source test data from these kilns. Also included are the test data from Rinker's two wet process kilns, also located in south Florida. As shown, the NO_x emissions data show wide variation, from 4.6 to 17.7 lb/ton clinker produced (average for a kiln). Actual emissions from Tarmac Kiln 2 fall in the lower range of these data at 8.1 lb/ton clinker (average). The average NO_x emission factor from AP-42, Section 11.6, Portland Cement Manufacturing, is 7.4 lb/ton clinker.

CONTROL TECHNIQUES FOR NO_x EMISSIONS

Thermal NO_x dominates NO_x formation in wet process cement kilns. As a result, NO_x emissions from wet process cement kilns can be controlled by two primary methods: combustion techniques and post-combustion technologies. Combustion control technologies are used to modify combustion conditions to reduce flame temperature and available oxygen, and to stage the combustion.

For direct-fired kilns, indirect firing has the potential to reduce NO_x emissions by reducing the available oxygen and staging the combustion, but this reduction must be weighed against the cost of converting and the environmental benefits.

Limited information is available regarding the use of low NO_x burners or flue gas recirculation in cement kilns. Direct fired kilns must be converted to indirect firing prior to use of low NO_x burners.

Post-combustion control technologies for NO_x reduce emissions after they are formed. These methods include: selective non-catalytic reduction (SNCR) and selective catalytic reduction (SCR). SNCR is not considered applicable to wet kilns due to difficulties involved in continuous injection of reducing agents. SCR has not been demonstrated on cement kilns and, therefore, is not considered to be applicable at this time.

The South Coast Air Quality Management District (SCAQMD) has adopted cement kiln best available control technology (BACT) guidelines; however, they do not include wet process cement kilns. The Bay Area Air Quality Management District (BAAQMD) has developed BACT guidance for precalciner kiln systems, not wet process kilns.

REFERENCES

AmTest Air Quality, Inc. 1991. State of Washington, Department of Ecology, Rubber Tire Chip Trial Burn @ Holnam Incorporated Industries, Stack Testing & Chemical Analysis, October 15-19, 1990. Preston, WA.

Hansen, E.R. nd. Panel Discussion: Reduction of Clinker Alkali and SO_2, NO_X Emissions from Preheater Kilns. Ash Grove Cement Company.

McQueen, A.T., S.J. Bortz, M.S. Hatch, H.J. Buening, D.E. Shore, R.L. Leonard, and E.F. Bouse. 1993. Cement Kiln NO_x Control. Radian Corporation, Irvine, CA. 0-7803-0960-X/93.

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Nielsen, P.B. and O.L. Jepsen. nd. An Overview of the Formation of SO_x and NO_x in Various Pyroprocessing Systems. F.L. Smidth & Co. A/S, Copenhagen, Denmark

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U.S. Environmental Protection Agency (EPA). 1994. Alternative Control Techniques Document–NO_x Emissions From Cement Manufacturing. Office of Air and Radiation, Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA-453/R-94-004.

Tarmac

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Air Quality
Management Division

29 December 2000

Ms. Mallika Muthiah, P.E., Chief
Air Facilities Section
Miami-Dade County Environmental Resources Management
33 SW 2nd Avenue
Miami, Florida 33130-1540

RE: Pennsuco Cement
Dade County – AP
Facility ID# 0250020

Dear Ms. Muthiah:

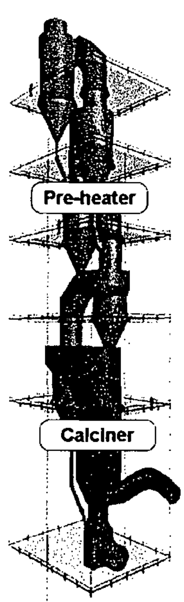
I have been directed to respond to your request for additional information [RAI] letter dated 13 December to H. Johnson regarding the construction permit revision for the above facility. I appreciated the time Courtney Pitters and Ray Gordon of your staff spent discussing the application. Following are responses to the issues raised in your RAI.

1. Please provide an explanation of how annual sulfur dioxide emissions will be maintained at an annual level equal to or less than given in the present permit without any additional controls. Sulfur dioxide emissions are directly related to annual clinker production, which will be over 1.6 million instead of 1.4 million as presently allowed.

Sulfur dioxide [SO_2] is generated from volatilization and subsequent oxidation of sulfur compounds in the raw materials within the preheater and precalciner, and by oxidation of sulfur compounds in the fuel during combustion. Therefore, SO_2 emissions are not directly related to the annual clinker production but are related to the sulfur content of the raw materials and the fuel. The raw materials used in the Pennsuco cement plant have typically been low in sulfur content, so the majority of the sulfur will be from the fuel. Control of SO_2 emissions in multi-stage combustion calciner systems depends on the system process rather than pollution control equipment. The important factor in reducing SO_2 is the presence of alkaline compounds or specifically calcium oxide [i.e., kiln feed] which reacts with the sulfur compounds. The SO_2 coming from the kiln fuel – the main source of sulfur – is thus almost totally absorbed. A significant proportion of the SO_2 from raw materials will be removed through contact with the incoming alkaline raw materials [i.e., kiln feed] which flow counter to the gas flow. Additionally, further contact is achieved in the raw mill where the flue gases are used to dry incoming kiln feed.

The SO_2 limit requested in the construction permit revision is achievable through the process control described in the application. The existing construction permit SO_2 limit was predicated on the net changes from the baseline emissions necessary to net out of PSD. The limit requested in the permit revision is a factor below the existing limit, but will maintain the existing annual SO_2 emissions. The equipment manufacturers have guaranteed the requested emission factor, and additionally, the use of the CEM system conditioned in the existing permit will ensure that the described process control will be effective.

2. Please provide the particulars of the Fuller Low NOx In-Line Calciner and the Polysius Multi-stage Calciner that are being considered for the project, specifically addressing how these units will meet the revised long-term nitrogen oxides emissions limit of 2.38 pounds per ton of clinker.



Oxides of nitrogen [NOx] emissions are generated from fuel combustion in the pyroprocessing system. NOx is generated during fuel combustion from the chemically bound nitrogen in the fuel and by elemental nitrogen in the combustion air. Both proposed pyroprocessing systems effectually control nitrogen oxides in a comparable manner. NOx emissions generated in the rotary kiln [kiln exit gases] are reduced to elemental nitrogen by multi-staged combustion in the calciner. The calciner fuel is also burned under reducing conditions to prevent new NOx from being generated in the calciner. This is achieved by a staggered introduction of raw feed and combustion air in the calciner to control temperature in the reducing zone of the calciner and to ensure complete combustion of the calciner fuel.

Through these process mechanisms both fuel NOx and thermal NOx will be controlled to meet the revised NOx emission limits requested in the construction permit revision. Again, both equipment manufacturers have guaranteed the requested emission factor, and the use of the CEM system conditioned in the existing permit will ensure that the described process control will be effective.

3. Provide similar information from both companies regarding the main kiln burner and the calciner burners.

The kiln and calciner burners do not provide any control technology related to SO_2 or NOx emissions. The control technology is effectuated in the calciner through combustion process controls for NOx and the inherent "scrubbing" in an alkaline environment to control SO_2.

process controls for NOx and the inherent "scrubbing" in an alkaline environment to control SO_2.

4. We agree that the MACT rules for greenfield plants do not apply to the Tarmac project. Rather the MACT for new kilns at brownfield sites applies. Therefore, a VOC (THC) emission limit of 50 ppm does not apply to this project.

   Understood, no response necessary.

5. The department finds that the THC (VOC) monitor is necessary to demonstrate compliance with the emissions limit of 0.19 pounds per ton of clinker. We believe the need to monitor continuous compliance with the lower value is constituted by the fact that the emissions limit is substantially less than the limit for a greenfield plant, which also requires THC (VOC) monitoring. Additionally, the Florida DEP has advised us that several plants are having difficulty meeting VOC limits and they are requiring THC (VOC) monitors at all new kilns, whether or not they are at greenfield sites.

Emissions of VOC are controlled by utilization of proper combustion practices to maximize the complete combustion of fuels. The control of process temperatures, excess air and process fuels typically result in simultaneous optimization for control of VOC plus CO and NOx. Tarmac does not believe there is a demonstrated need for continuous emission monitoring for VOC emissions. The requested emission limit of 0.19 pounds per ton of clinker is not substantially less than the limit for a greenfield plant. On the contrary, the requested limit is 1½ times the limit of a recent greenfield plant in central Florida and almost 2 times the limit of the new brownfield plant in Miami-Dade County. The difficulties experienced by other plants is Florida have been related to oils in mill scale used as raw material. Tarmac is aware of these problems and does not intend to incorporate such material in the mix design. As a cost effective measure, Tarmac would request that VOC emissions be tested initially to comply with the revised emission limit as conditioned in the existing permit. Continued compliance would be assumed by annual CO emission testing. In the event that initial testing demonstrates the need for continuous VOC emission monitoring, Tarmac would install the monitors.

6. The Florida DEP has advised us that the permit modification should be public-noticed. Significant modification including changes in production rates, emissions, and operating hours constitute this as a separate permitting action from the previous one and because all construction permit Intents to Issue must be noticed per Florida DEP, we will require you to notice our Intent.

The application under review is to revise the existing construction permit to increase the plant production rate. The emission limits and certain operating hours are also revised so that the proposed increased production rate will not result in an increase in facility-wide emissions; as such, the application does not constitute a "modification" as defined in the Florida Administrative Code [FAC]. The requested changes in production rates, emissions, and operating hours [i.e., physical or operational changes] *do not result in an increase in actual emissions.* Therefore, the review is not a separate permitting action from the previous one but a revision to the existing construction permit.

Tarmac does not believe the permit revision warrants a public notice based on the provisions in Rule 62-110, FAC. Before a public notice of a revision is required, the DERM or the State DEP is required to make a finding that the proposed revision would cause *"heightened public concern or a likelihood of a request for administrative proceedings"* because of factors related directly to the revision – primarily the *"potential effect on the environment or natural resources"*. Where a proposed revision is inconsistent with an existing permit condition, but would not constitute a *"modification"*, [i.e., *"reasonably expected to cause new or significant greater adverse environmental impacts"*], then the existing construction permit need only be revised, and no public notice would be necessary or appropriate.

I trust the above provides the necessary information to complete the review of the permit revision. Tarmac would like to be afforded the opportunity to review a "draft" of the permit revision prior to a final agency action. Should you have any questions regarding the above information or need further information please contact me at (954)425-4165.

Sincerely,

Scott Quaas
Corporate Environmental Manager
Environmental Services–Florida Business

cc: H. Johnson
A. Townsend
R. Hawks – EQM
S. Brooks – Brooks Associates
A. Linero – Florida DEP

THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

OCT 28 2005

In the Matter of an
Application for Permit by:

OGC CASE NO.: 04-1739
FDEP Draft Permit No.: 0250020-013-AV

Tarmac America, Inc.
Tarmac Pennsuco Cement Plant
Miami-Dade County, Florida
______________________________/

EIGHTH REQUEST FOR ENLARGEMENT OF TIME

By and through undersigned counsel, Tarmac America, Inc. (Tarmac) hereby requests, pursuant to Florida Administrative Code Rule 62-110.106[illegible] an enlargement of time, to and including January 27, 2006, in whic[illegible] rative Proceedings in the above-styled matter. As good cause for gra[illegible] tes the following:

Stan OGC# 04-1739

1. On or about October [illegible] received from the Department of Environmental Protection ("Depar[illegible] intent to Issue Title V Air Operation Permit Revision" and accompanying "Revised Draft Permit," (Draft Permit No.0250020-013-AV), for the Tarmac Pennsuco Cement Plant, located at 11000 NW 121 Way, Medley, Miami-Dade County, Florida.

2. Based on Tarmac's review, the Revised Draft Permit and associated documents contain several provisions that warrant clarification or corrections.

3. Tarmac and DEP are in the process of discussing possible resolutions to the issues needing clarification or correction.

4. Tarmac filed a Seventh Request for Enlargement of Time on August 19, 2005, extending the time until October 28, 2005; more time is needed to resolve the remaining issues.

5. Accordingly, Tarmac hereby files this Eighth Request for Enlargement of Time until January 27, 2006, in order to resolve remaining issues before the Department.

6. This eighth request is filed simply as a protective measure to avoid waiver of Tarmac's right to challenge certain conditions contained in the Revised Draft Title V Permit. Grant of this request will not prejudice either party, but will further their mutual interest and hopefully avoid the need to file a Petition and proceed to a formal administrative hearing.

WHEREFORE, Tarmac America, Inc. respectfully requests that the time for filing of a Petition for Administrative Proceedings in regard to the Department's Intent to Issue Title V Air Operation Permit Revision No.0250020-013-AV be formally extended to and including January 27, 2006.

RESPECTFULLY SUBMITTED this 28 day of October, 2005.

By: Robert Manning

Robert A. Manning
Florida Bar ID No. 0035173
Hopping Green & Sams, P.A.
123 South Calhoun Street
Post Office Box 6526
Tallahassee, Florida 32314
(850) 222-7500 Telephone
(850) 224-8551 Facsimile

Attorney for Tarmac America, Inc.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished by Hand Delivery to Kathy Carter, Agency Clerk, and Doug Beason, General Counsel, Florida Department of Environmental Protection, 3900 Commonwealth Boulevard, Suite 300, Tallahassee, Florida 32399-3000; and Trina Vielhauer, Florida Department of Environmental Protection, Division of Air Resource Management, 111 S. Magnolia Drive, Suite 23, Tallahassee, Florida 32399 this 28 day of October, 2005.

Robert Manning

Robert A. Manning

Eva 305/372-6926 PUBLIC NOTICE PUBLISHED 7/21/00

Permittee:
Mr. Hardy Johnson
Vice-President , Cement & Ready Mix
Tarmac America, Inc.
1151 Azalea Garden Road
Norfolk, VA 23502

Res

DRAFT Permit No.: 0250020-002-AV
Facility ID No.: 0250020
SIC Nos.: 3241.3271, 3273
Project: Initial Title V Air Operation Permit

This permit is for the operation of the Tarmac Pennsuco Plant. This facility is located at 11000 NW 121 Way, Medley, Miami-Dade County; UTM Coordinates: Zone 17, 562.8 km East and 2861.7 km North; Latitude: 25° 52' 30" North and Longitude: 80° 22' 30" West.

STATEMENT OF BASIS: This Title V air operation permit is issued under the provisions of Chapter 24, Code of Miami-Dade County, Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-213. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the permitting authority, in accordance with the terms and conditions of this permit.

Referenced attachments made a part of this permit:
Appendix I-1, List of Insignificant Emissions Units and/or Activities (dated 12/02/97)
Appendix E-1, List of Exempt Emissions Units and/or Activities
APPENDIX TV-1, TITLE V CONDITIONS (version dated xx/xx/xx)
(only if applicable) APPENDIX SS-1, STACK SAMPLING FACILITIES (version dated xx/xx/xx)
(only if applicable) TABLE 297.310-1, CALIBRATION SCHEDULE (version dated xx/xx/xx)
(only if applicable) FIGURE 1 - SUMMARY REPORT-GASEOUS AND OPACITY EXCESS EMISSION AND MONITORING SYSTEM PERFORMANCE REPORT (version dated xx/xx/xx)

Used to reference - only per Patty
Do not SCAN

Effective Date: [Month day, year]
Renewal Application Due Date: [Month day, year]
Expiration Date: [Month day, year]
(Effective/Expiration dates will be filled in at final permit)

Miami-Dade County
Department of Environmental Resources Management
Air Quality Management Division
Air Facilities Section

Ewart L. Anderson, P.E., Section Chief,
Delegated Local Program

ELA / mek

Section I. Facility Information.

Subsection A. Facility Description.

This facility consists of [description of regulated emissions unit(s)].

Also included in this permit are miscellaneous unregulated/exempt emissions units and/or activities.

Based on the initial Title V permit application received June 19, 1996, this facility is not a major source of hazardous air pollutants (HAPs).

Subsection B. Summary of Emissions Unit ID No(s). and Brief Description(s).

E.U. ID No.	**Brief Description**
-001	Kiln No. 1 with Electrostatic Precipitator
-002	Cooler No. 1 with multiclone & Dual Chamber E.S.P.
-003	Coal Handling System
-004	Kiln No. 2 with double chamber E.S.P.
-005	Cooler No. 2 with cyclone and Dual Chamber E.S.P.
-006	Kiln No. 3 with dropout and Dual Chamber E.S.P.
-007	Cooler No. 3 with dropout box and baghouse
-008	Clinker Handling and Storage system for Kilns Nos. 1 and 2
-009	Clinker Handling and Storage system for Kiln No. 3
-010	Finish Mill No. 1 with Airslide, conveyor and baghouses
-011	Finish Mill No. 2 with Airslide, conveyor and baghouses
-012	Finish Mill No. 3 with Airslide, conveyor and baghouses
-013	Finish Mill No. 4 with Airslide, conveyor and baghouses
-014	Cement Storage Silos No. 1 through 12 serving Mill No. 1 through 4
-015	Cement Distribution-Rail Truck Loadouts
-016	Cement Distribution-Packhouse with 2 baggers
-017	15 Ton Mill for Coal Handling for kiln No. 2
-018	Feed Bin and elevator for 23 TPH Coal Handling System
-019	Hopper and Weight feeder for 23 TPH Coal Handling System
-020	Slag Dryer
-021	Insuflation System
-022	Cement Block Plant
-023	Ready Mix Plant

Kiln
Cooler

Unregulated Emissions Units and/or Activities

CKD/ Waste Piles
300 Gallon Diesel Tank
Ball Sorter
Bottom Dumper, Truck Dumper
Attenuator with cyclone
Diesel Generator (3)
Electrical Driven Air Compressors
Fugitive VOCs from Kiln drive grease
General VOC Usage for maintenance
Kiln Mineral Aggregate Staging Piles
Knockout Box
No. 6 Fuel Oil Tank
Plant Wide Painting
Process Laboratory
Unpaved Roads with SprinKling Water
Horizontal 10,000 gallons Storage Tank Ad Mix # 1
Vertical 15,000 gallons Storage Tank Ad Mix # 2
Vertical 5,000 gallons Storage Tank Ad Mix # 3
6 Petroleum Product Storage Tanks

Please reference the Permit No., Facility ID No., and appropriate Emissions Unit(s) ID No(s). on all correspondence, test report submittals, applications, etc.

Subsection C. Relevant Documents.

The documents listed below are not a part of this permit; however, they are specifically related to this permitting action.

These documents are provided to the permittee for information purposes only:
Table 1-1, Summary of Air Pollutant Standards and Terms
Table 2-1, Summary of Compliance Requirements
Appendix A-1, Abbreviations, Acronyms, Citations, and Identification Numbers
Appendix H-1, Permit History/ID Number Changes

These documents are on file with permitting authority:
Initial Title V Permit Application received June 18, 1996

Additional Information Request dated December 17, 1997
Additional Information Response received March 11, 1998

Section II. Facility-wide Conditions.

The following conditions apply facility-wide:

1. APPENDIX TV-1, TITLE V CONDITIONS, is a part of this permit.
{Permitting note: APPENDIX TV-1, TITLE V CONDITIONS, is distributed to the permittee only. Other persons requesting copies of these conditions shall be provided one copy when requested or otherwise appropriate.}

2. Not federally enforceable. General Pollutant Emission Limiting Standards. Objectionable Odor Prohibited. The permittee shall not cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to an objectionable odor.
[Rule 62-296.320(2), F.A.C.]

3. General Particulate Emission Limiting Standards. General Visible Emissions Standard. Except for emissions units that are subject to a particulate matter or opacity limit set forth or established by rule and reflected by conditions in this permit, no person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20 percent opacity). EPA Method 9 is the method of compliance pursuant to Chapter 62-297, F.A.C.
[Rules 62-296.320(4)(b)1. & 4., F.A.C.]

4. Prevention of Accidental Releases (Section 112(r) of CAA). If required by 40 CFR 68, the permittee shall submit to the implementing agency:

a. a risk management plan (RMP) when, and if, such requirement becomes applicable; and
b. certification forms and/or RMPs according to the promulgated rule schedule.

[40 CFR 68]

5. Unregulated Emissions Units and/or Activities. Appendix U-1, List of Unregulated Emissions Units and/or Activities, is a part of this permit.
[Rule 62-213.440(1), F.A.C.]

6. Not federally enforceable. Reasonable precautions to prevent emissions of unconfined particulate matter at this facility include:

- Paving and maintenance of roads, parking areas and yards.
- Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing.
- Application of asphalt, water, chemicals or other dust suppressants to unpaved roads, yards, open stock piles and similar activities.
- Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent reentrainment, and from buildings or work areas to prevent particulate from becoming airborne.
- Landscaping or planting of vegetation.
- Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter.
- Confining abrasive blasting where possible.
- Enclosure or covering of conveyor systems.

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[Rule 62-296.320(4)(c)2., F.A.C.; Proposed by applicant in the initial Title V permit application received June , 1996.

8. The permittee shall submit all compliance related notifications and reports required of this permit to the Department's Miami-Dade County Office:

Miami-Dade County
Department of Environmental Resources
Air Quality Management Division.
Air Facilities Section
33 SW 2nd Avenue, Suite 900
Miami, Florida 33130-1540

9. Any reports, data, notifications, certifications, and requests required to be sent to the United States Environmental Protection Agency, Region 4, should be sent to:

United States Environmental Protection Agency
Region 4
Air, Pesticides & Toxics Management Division
Operating Permits Section
61 Forsyth Street
Atlanta, Georgia 30303
Telephone: 404/562-9099
Fax: 404/562-9095

Section III. Emissions Unit(s) and Conditions.

Subsection A. This section addresses the following emissions unit(s).

E.U. ID No.	Brief Description
-001	Kiln No. 1 with Electrostatic Precipitator

Emission unit 001 is the wet-process Cement Kiln # 1, fired by natural gas, No. 6 fuel oil and coal except that operation with other fuels is allowed under a valid construction permit for debugging and testing equipment.
[PSD-Fl-050 and AO 13-238048]

Particulate emissions are controlled by an electrostatic precipitator manufactured by Koppers that contains 46,000 ft^2 of collecting plate surface in two chambers. The design gas volume is 120,000 acfm at 525°F and at this volume the specific collection area is 385 ft^2/ 1000 acfm. The superficial velocity is 4.05 ft/sec and the treatment time is 8.6 seconds. The collection plates and discharge electrodes are cleaned by high energy electric rappers.

{Permitting note: Permitting note: Prevention of Significant Deterioration (PSD) dated July 8, 1980.}

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

A.1. Permitted Capacity.

a. Maximum heat input rate is 163 mmBtu/hr
b. Maximum process rate is 41 TPH.
c. Maximum production rate is 25 TPH.
d. Maximum annual rate is 197,100 tons of cement produced.

[PSD-FL-050 dated July 8, 1980]

A.2. Methods of Operation - (i.e., Fuels). Only two kilns will be operated with coal as fuel at the same time. The facility shall maintain a log or logs that show (s), as a minimum; the operational status of all three kilns at any time; when each kiln is placed in service; the clinker, feed, and fuel feed rates to each kiln; and when the kiln is taken out of service.
[PSD-Fl-050 dated July 8, 1980]

A.3. Hours of Operation. This emissions unit is allowed to operate continuously, i.e., 8,760 hours/year.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

Emission Limitations and Standards

Table 1-1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

A.4. Emission of sulfur dioxide from kiln No. 1 shall not exceed 125 pound per hour at the maximum operating rate of 25 tons per hour of clinker produced. At lesser operating rates, emissions shall not exceed 5.0 pounds per ton of clinker produced.
[PSD-FL-050 dated July 8, 1980]

A.5. Emission of nitrogen oxides from kiln No. 1 shall be less than 118 pounds per hour at the maximum operating rate of 25 tons per hour of clinker produced. At lesser operating rates the emissions of nitrogen oxides shall not exceed 4.73 pounds per ton of clinker produced.
[PSD-FL-050 dated July 8, 1980]

A.6. In accordance with the BACT Determination Modification of January 21, 1985 when coal is used as a primary fuel, with the maximum emission rate of SO_2 shall be 125 pounds, and 5 pounds per ton of clinker produced when operating at rates less than maximum.
[AC 13-054054 dated March 22, 1985]

A.7. The coal used to fuel kiln No. 1 shall have a sulfur content of less than 1.75 percent (monthly average) and a 2.0 percent maximum; or the sulfur content, determined by the stack test program described below, if it is consistently meets the revised sulfur dioxide emission standards, whichever sulfur content is more restrictive.
[PSD-FL-050 dated July 8, 1980]

A.8. Emission of particulate matter from kiln No. 1 shall be less than 32.2 pounds per hour at the maximum operating rate of 25 tons per hour clinker produced. At a lesser operating rates the emissions of particulate matter shall not exceed the process weight rate table allowable (Rule 62-296.320(4)(a)).
[PSD-FL-050 dated July 8, 1980]

A.9. Visible emission from kiln No. 1 shall not exceed 20 percent opacity
[PSD-FL-050 dated July 8, 1980 and AO 13-238048 dated December 17, 1993]

Test Methods and Procedures

Permitting note: Table 2-1, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

A.10. Test the emissions from kiln No. 1 exhaust for particulates* and visible emissions on or during the 60 day period prior to March 19, or upon startup and annually thereafter. Testing procedures shall be consistent with the requirements of Rule 62-297, F.A.C.

* The particulate emission stack test may be waived for an alternative visible emissions limitations of 5% opacity or less (Rule 62-297.620(4), F.A.C.)

A.11. Compliance with the emission limitations of Conditions A.4.through A.8. shall be determined by performance tests scheduled in accordance to the General Conditions attached. The performance tests shall be in accordance with the provisions of reference methods in Appendix A of 40 CFR 60, except as provided under 40 CFR 60.8(b) as follows:

a. Method 1 for sample and velocity traverse;
b. Method 2 for velocity and volumetric flow rate;
c. Method 3 for gas analysis;
d. Method 5 for concentration of particulate matter and associated moisture content;
e. Method 6 for concentration of SO_2; and
f. Method 7 for concentration of NO_x. For Method 7 each run shall consist of at least four grab samples taken at approximately 15-minute intervals. The arithmetic mean of the samples shall constitute the run value.
g. For Method 6, the minimum sampling time shall be 20 minutes and the minimum sampling volume 0.02 dscm (0.71 dscf) for each sample. The arithmetic mean of two samples shall constitute one run. Samples shall be taken at approximately 30-minute intervals.

A compliance test shall consist of the average of at least three (3) consecutive runs.

Testing of emissions must be accomplished within 90 to 100% of the permitted capacity [Rule 62-297.310(2), F.A.C.]. Failure to submit the input rates and actual operating conditions may invalidate the test [Rule 52-297.310(2), F.A.C]

These emissions units shall comply with all applicable requirements of Rule 62-297.310 General Test Requirements and 40 CFR 60.8, Subpart A, Performance Tests.

A.12. Should DERM have reason to believe that the particulate matter standards set forth in Table 1-1 are not being met, DERM may require that compliance with the particulate emission standards be demonstrated by testing (applicable emission unit) in accordance with Rule 62-297.620(4) F.A.C.
[Rule 62-297.620(4) and 62-297.310, F.A.C.]

A.13. Operating procedures shall include good operating practices and proper training of all operators and supervisors. The good operating practices shall meet the guidelines and procedures as established by the equipment manufacturers. All operators (including supervisors) of air pollution control devices shall be properly trained in plant specific equipment.
[Rule 62-4.070(3), F.A.C.]

Monitoring of Operations

A.14. Continuous oxygen shall be properly installed, operated and maintained on kiln No. 1. The monitors shall be certified and calibrated in accordance with 40 CFR 60 Appendix B, Performance Specification 3. A record of excess oxygen for each of the coal-fired kilns and fuel/raw feed sulfur input shall be maintained on the premises for viewing during subsequent compliance inspections.
[PSD-FL-050 dated July 8, 1980]

A.15. Proof of compliance with the permit shall be the kiln daily operating log, the SO_x/ NO_x monitor's strip charts and compliance test data. The day, time, type of fuel, fuel feed rate (TPH), sulfur content of the fuel, kiln feed rate (TPH), sulfur content of the kiln feed, oxygen content of the fuel gas and the clinker production rate shall be recorded for each kiln. The time period that each kiln will also be recorded in the operating log. The logs shall be maintained on the premises for viewing during subsequent compliance inspections and shall be kept for a minimum of two (2) years.
[AO 13-238048 dated December 17,1993]

Recordkeeping and Reporting Requirements

A.16. The facility shall maintain a log or logs that show (s), as a minimum;

a. the operational status of all three kilns at any time;
b. when each kiln is placed in service;
c. the clinker, feed, and fuel feed rates to each kiln;
d. And when the kiln is taken out of service.

[PSD-FI-050 dated July 8, 1980]

A.17. The permittee shall create and keep a log of the kiln operating parameters The record log shall contain, at a minimum, one fifteen-second opacity observation per shift by a plant operator, the date and time of the observation, and the person responsible for performing the observation.
[Rule 62-4.070(3), F.A.C.]

Reasonable Assurances

A.18. All reasonable precautions shall be taken to prevent and control generation of unconfined emissions of particulate matter in accordance with the provisions in Rule 62-296.320(4)(c), F.A.C.:

A. Observe the pneumatic conveyors for leaks of fugitive dust. Repair or correct promptly. Stop operation if necessary.
B. Attend to spillages and leaks promptly effectively.

[Rule 62-296.320(4)(c), F.A.C.]

Subsection B. This section addresses the following emissions unit(s).

E.U. ID No.	**Brief Description**
-002	Cooler No. 1 with multiclone & Dual Chamber E.S.P.

The precipitator is manufactured by Koppers and contains three fields. The unit contains 22,000 ft^2 of collection plate surface in two chambers. The design gas volume is 48,000 acfm at 300°F. At this volume the specific collection area is 466.6 ft^2/ 1000 acfm. The superficial velocity is 2.38 ft/sec..

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

B.1. Permitted Capacity.
a. Maximum process rate of clinker is 25 tons per hour.
b. Maximum production rate of cement is 219,000 tons per year
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

B.2. Hours of Operation. This emissions unit is allowed to operate continuously, i.e., 8,760 hours/year.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

Emission Limitations and Standards

Table 1-1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

B.3. The clinker cooler shall be controlled to the extent necessary to limit visible emissions to 20 percent opacity.
[Rule 62-296.414(1), F.A.C.]

B.4. Particulate matter emissions from cooler No. 1 shall be less than 26.5 pounds per hour at the maximum operating rate of 25 tons per hour clinker produced. At a lesser operating rates the emissions of particulate matter shall not exceed the process weight rate table allowable.
[Rule 62-296.320(4)(a)]

Test Methods and Procedures

Permitting note: Table 2-1, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

B.5. Each clinker cooler shall be tested by a certified observer in accordance with DEP Method 9 for a minimum of 30 minutes or, if the operation is normally completed within less than 30 minutes and does not recur within that time, the test shall last for the length of the operation. [F.A.C. Rule 62-297.330(1)(b)1]

The compliance test report shall include results of tests by the following method:

Source/Emission Point	Pollutant	Test Method	Frequency
Cooler No. 1	Visible Emissions	EPA Method 9	Each Year Prior to Renewal

The compliance test report shall be submitted to the DERM in accordance with Rule 62-297.570, F.A.C..

B.6. Compliance with the emission limitations of Conditions B.3. shall be determined using EPA method 9 contained in 40 CFR 60, Appendix A and adopted by reference in Rule 62-297, F.A.C. The minimum requirements for source sampling and reporting, shall be in accordance with Rule 62-297, F.A.C. and 40 CFR 60, Appendix A.
[Rule 62-297, F.A.C.]

B.7. The DERM, Air Facilities Section shall be notified in writing of expected compliance test dates at least fifteen (15) days prior to compliance testing. The notification must include the following information: the date, time, and location of each test; the name and telephone number of the facility's contact person who will be responsible for coordinating the test; and the name, company and telephone number of the person conducting the test.
[Rule 62-297.340(1)(i), F.A.C.]

B.8. Operating procedures shall include good operating practices and proper training of all operators and supervisors. The good operating practices shall meet the guidelines and procedures as established by the equipment manufacturers. All operators (including supervisors) of air pollution control devices shall be properly trained in plant specific equipment.
[Rule 62-4.070(3), F.A.C.]

Recordkeeping and Reporting Requirements

B.9. Reports of the required compliance tests shall be filed with the DERM Air Facilities Section as soon as practical but no later than 45 days after the last test is completed.
[Rule 62-297.570(2), F.A.C.]

The compliance test report shall include the following information on the air pollution control devices and other information as necessary to make a complete report:
[Rule 62-297.570(3), F.AC.]

a. The normal type and amount of fuels used and/or materials processed and the types and amounts of fuels used and/or materials processed during each test run.

b. Type of air pollution control devices installed on the emissions unit, their general condition, normal operating parameters (e.g. flow rate, pressure drops, scrubber gpm, operating current) and the actual operating parameters for each test run, and indicate how each parameter was determined.

c. Notation of any deficiencies or problems with the air pollution control equipment which occur during testing.

B.10. The permittee shall create and keep a log of the clinker cooler operating parameters for each cooler. The record log shall contain, at a minimum, one fifteen-second opacity observation per shift by a plant operator, the date and time of the observation, and the person responsible for performing the observation.
[Rule 62-4.070(3), F.A.C.]

Reasonable Assurances

B.11. All reasonable precautions shall be taken to prevent emissions of unconfined particulate matter. Reasonable precautions shall include, but not be limited to, the following:
[F.A.C. Rule 62-296.310(3)]

a. Paved parking and trafficked areas shall be maintained and kept free of particulate matter build-up.
b. Sprinkling with water shall be used as necessary on paved areas and stockpiles.
c. Facility site shall be kept free of waste concrete from the washout pit or other sources.

[Rule 62-296.320(4)(c), F.A.C.]

Subsection C. This section addresses the following emissions unit(s).

E.U. ID No.	**Brief Description**
-003	23 ton mill for 23 TPH Coal Handling System
-017	15 Ton mill for Coal Handling System for kiln No. 2
-018	Feedbin and elevator for 23 TPH Coal Handling System
-019	Hooper and Weight Feeder for 23 TPH Coal Handling System

These emission units are for the Coal Handling System for unloading and processing of coal. Coal is dumped into the rail car unloading hopper and then conveyed by covered belt conveyors to the material storage gallery. The coal is recovered from the storage gallery by a clamshell bucket, an elevator, and belt conveyors to the coal storage silo. From the silos it is transferred via covered belt conveyors to two coal mills for grinding, drying and pneumatic conveying to the kilns.

The Coal Handling System consisting of:

Source	Baghouse ID	Manufacturer	Model No.	Stack Ht (ft)	Exit Temp. °F	Flow Rate	
						ACFM	DSCFM
Coal Storage Pile	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Undercar Rail Unloading	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader Transfer	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Hopper	G-509	Mikropul	64S-10-20TR	33	77	4,000	3,638
Screening Tower	G-521	Mikropul	81S-10-20TR	38	77	6,000	5,457
Coal Mill Feed Bin	G-527	Mikropul	64S-10-20TR	120	77	4,000	3,638
K3 Coal Bin	G-576 /578/580/ 582	Mikropul	221-10-100TR	117	77	36,000	32,742

{Permitting note: 40 CFR 60, Standards of Performance for New Stationary Sources, Subpart A and 40 CFR 60, Subpart Y- Standards of Performance for Coal Preparation Plants}.

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

C.1. Permitted Capacity. The maximum hourly rate is 23 tons throughput capacity [PSD-FI-050 dated July 8, 1980]

C.2. Hours of Operation. This emissions unit is allowed to operate continuously, i.e., 8,760 hours/year.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

Emission Limitations and Standards

Table 1-1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

C.3. Coal Handling System consisting of the following:

Source	Baghouse ID	Grain Loading (gr/dscf)	Flow Rate		Potential PM Emissions	
			ACFM	DSCFM	(lb/hr)	(TPY)
Coal Storage Pile	N/A	N/A	N/A	N/A	N/A	N/A
Undercar Rail Unloading	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader Transfer	N/A	N/A	N/A	N/A	N/A	N/A
Dump Hopper	G-509	0.01	4,000	3,638	0.3	1.4
Screening Tower	G-521	0.01	6,000	5,457	0.5	2.0
Coal Mill Feed Bin	G-527	0.01	4,000	3,638	0.3	1.4
K3 Coal Bin*	G-576/578/ 580/582	0.01	36,000	32,742	2.8	12.3
Total					3.9	17.1

*System includes a cyclone used for coal transfer to the pulverizer

C.4. Emission of particulate matter from 23 ton mill shall not exceed 0.01 grains per actual cubic foot or 3.1 pounds per hour at the maximum operating rate of 25 tons per hour clinker produced.
[PSD-FL-050 dated July 8, 1980]

C.5. Emission of particulate matter from 15 ton mill shall not exceed 0.01 grains per actual cubic foot or 2.1 pounds per hour at the maximum operating rate of 25 tons per hour clinker produced.
[PSD-FL-050 dated July 8, 1980]

C.6. The coal handling shall be controlled to the extent necessary to limit visible emissions to 20 percent opacity. Visible emissions from any fugitive sources associated with the coal handling system shall be less than 20 percent opacity.
[BACT dated April 8, 1980]

C.7. Emission of particulate matter from the coal handling shall not exceed 0.01 grains/ACF.

[BACT dated April 8, 1980]

C.8. Visible emission from 15 ton mill shall not exceed 20 percent opacity
[PSD-FL-050 dated July 8, 1980 and AO 13-238048 dated December 17, 1993]

Test Methods and Procedures

Permitting note: Table 2-1, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

C.9. Compliance with the emission limitations of Condition C.4 through C.8 shall be determined using EPA methods 5 and 9 contained in 40 CFR 60, Appendix A and adopted by reference in Rule 62-297, F.A.C. The minimum requirements for source sampling and reporting, shall be in accordance with Rule 62-297, F.A.C. and 40 CFR 60, Appendix A.
[Rule 62-297, F.A.C.]

C.10. The visible emissions test shall be conducted by a certified observer and be a minimum of 180 minutes in duration. The test observation shall include the period during which the highest opacity emissions can reasonably be expected to occur
[40 CFR 60.11 and Rule 62-297.310(7), F.A.C.]

C.11. The DERM, Air Facilities Section shall be notified in writing of expected compliance test dates at least fifteen (15) days prior to compliance testing. The notification must include the following information: the date, time, and location of each test; the name and telephone number of the facility's contact person who will be responsible for coordinating the test; and the name, company and telephone number of the person conducting the test.
[Rule 62-297.340(1)(i), F.A.C.]

Monitoring of Operations

C.12. For each of the emissions points of the coal handling system shall be monitored during each compliance test, and a summary of this data shall be included in each emissions test report.
[Rule 62-297.310(8), F.A.C.]

Recordkeeping and Reporting Requirements

C.13. Reports of the required compliance tests shall be filed with the DERM Air Facilities Section as soon as practical but no later than 45 days after the last test is completed.
[Rule 62-297.570(2), F.A.C.]

The compliance test report shall include the following information on the air pollution control devices and other information as necessary to make a complete report:
[Rule 62-297.570(3), F.AC.]

a. The normal type and amount of fuels used and/or materials processed and the types and amounts of fuels used and/or materials processed during each test run.

b. Type of air pollution control devices installed on the emissions unit, their general condition, normal operating parameters (e.g. flow rate, pressure drops, scrubber gpm, operating current) and the actual operating parameters for each test run, and indicate how each parameter was determined.

c. Notation of any deficiencies or problems with the air pollution control equipment which occur during testing.

C.14. The permittee shall create and keep a log of the baghouse operating parameters for each baghouse. The record log shall contain, at a minimum, one fifteen-second opacity observation per shift by a plant operator, the date and time of the observation, and the person responsible for performing the observation.
[Rule 62-4.070(3), F.A.C.]

Reasonable Assurances

C.15. All reasonable precautions shall be taken to prevent emissions of unconfined particulate matter. Reasonable precautions shall include, but not be limited to, the following:
[F.A.C. Rule 62-296.310(3)]

a. Paved parking and trafficked areas shall be maintained and kept free of particulate matter build-up.
b. SprinKilng with water shall be used as necessary on paved areas and stockpiles.
c. Facility site shall be kept free of waste concrete from the washout pit or other sources.

[Rule 62-296.320(4)(c), F.A.C.]

Subsection D. This section addresses the following emissions unit(s).

E.U. ID No.	**Brief Description**
-004	Kiln No. 2 with Dual Chamber E.S.P.

This emission unit is the wet-process Cement Kiln # 2. In wet process cement manufacture, a slurry of filtrate of crushed limerock containing between 20% and 40 % moisture content is introduced into an inclined kiln for calcination into quicklime (calcium oxide) clinker by the application of high thermal energies. At this moment this thermal energy can be fired by natural gas, No. 6 fuel oil and coal, except that operation with other fuels is allowed under a valid construction permit for debugging and testing equipment.

Particulate emissions are controlled by an electrostatic precipitator manufacturer by Koppers and contains 46,000 ft^2 of collecting plate surface in two chambers. The design gas volume is 120,000 acfm at 525°F and at this volume the specific collection area is 385 ft^2/ 1000 acfm. The superficial velocity is 4.05 ft/sec and the treatment time is 8.6 seconds. The collection plates and discharge electrodes are cleaned by high energy electric rappers.

{Permitting note: PSD-Fl-142 & AC 13-169901 dated February 25, 1991 and Consent Order with DERM-Miami Dade County, dated January 30, 1998}.

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

D.1. Permitted Capacity. The maximum raw materials process rate is 40.5 (dry) tons per hour input capacity. The maximum clinker production of kiln No. 2 shall not exceed 25 tons per hour and cement production is limted to 197,100 tons per year, and the maximum firing capacity is 162.5 MMBtu per hour.
[PSD-Fl-142 & AC 13-169901 dated February 25, 1991]

D.2. Methods of Operation - (i.e., Fuels). The coal used for firing kiln No. 2 shall have a maximum sulfur content of 2.0 percent by weight, with the rolling 30-day average sulfur content not exceeding 1.75 percent by weight.
[PSD-Fl-142 & AC 13-169901 dated February 25, 1991]

Only two kilns will be operated with coal as fuel at the same time. The facility shall maintain a log or logs that show (s), as a minimum; the operational status of all three kilns at any time; when each kiln is placed in service; the clinker, feed, and fuel feed rates to each kiln; and when the kiln is taken out of service.

[PSD-FI-050 dated July 8, 1980]

D.3. Hours of Operation. Kiln No. 2 is allowed to operate only coal firing for up to 7,884 hours per year.
[PSD-FL-142 & AC 13-169901 dated February 25, 1991]

Emission Limitations and Standards

Table 1-1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

D.4. Emission of sulfur dioxide from kiln No. 2 shall not exceed 7.8 pounds per ton of clinker produced, 195.0 pounds per hour, 768.7 tons per year.
[PSD-FL-142 & AC 13-169901 dated February 25, 1991]

D.5. Emission of sulfuric acid mist kiln No. 2 shall not exceed 0.23 pound per ton of clinker produced, 5.86 pound per hour, 23.06 tons per year.
[PSD-FL-142 & AC 13-169901 dated February 25, 1991]

D.6. In accordance BACT Determination Modification January 21, 1985 the use coal as a primary fuel, for 125 pound SO_2 per hour maximum emission rate, and at operating rates less than maximum 5.0 pound SO_2 per ton of clinker produced.
[AC 13-054054 dated March 22, 1985]

D.7. Emission of carbon monoxide from kiln No. 2 shall not exceed 346 pound per hour, 1,363 tons per year.
[PSD-FL-142 & AC 13-169901 dated February 25, 1991]

D.8. Emission of particulate matter from kiln No. 2 shall not exceed 14.40 pounds per hour, 56.76 tons per year.
[PSD-FL-142 & AC 13-169901 dated February 25, 1991]

D.9. Emission of VOC from kiln No. 2 shall not exceed 28.8 pounds per hour, 113.5 tons per year.
[PSD-FL-142 & AC 13-169901 dated February 25, 1991]

D.10. Emission of NO_x from kiln No. 2 shall not exceed 220 pound per hour with 240 pound per hour being the maximum on an instantaneous basis, 867.2 tons per year.
[Consent Order with DERM-Miami Dade County, dated January 30, 1998] Executed Feb 2

D.11. Emission of PM_{10} from kiln No. 2 shall not exceed 12.24 pounds per hour, 48.25 tons per year. Compliance for PM_{10} shall be determined by applying a factor of 0.85 to the measured particulate matter emissions.
[PSD-FL-42 & AC 13-169901 dated February 25, 1991]

D.12. The coal used to fuel kiln No. 2 shall have sulfur content of less than 1.75 percent (monthly average) and a 2.0 percent maximum; or the sulfur content, determined once by the

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stack test program described below, consistently meets the revised sulfur dioxide emission standards, whichever ~~sulfur content~~ is most restrictive.
[PSD-FL-142 & AC 13-169901 dated February 25, 1991]

D.13. Visible emissions shall not exceed 20 percent opacity.
[Rule 62-296.310(2)(a), F.A.C]

Test Methods and Procedures

Permitting note: Table 2-1, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

D.14 Compliance with the emission limitations of Condition D.8, D-11 and D.13 shall be determined using EPA methods 5 and 9 contained in 40 CFR 60, Appendix A and adopted by reference in Rule 62-297, F.A.C. The minimum requirements for source sampling and reporting, shall be in accordance with Rule 62-297, F.A.C. and 40 CFR 60, Appendix A.
[Rule 62-297, F.A.C.]

D.15. The visible emissions test shall be conducted by a certified observer and be a minimum of 180 minutes in duration. The test observation shall include the period during which the highest opacity emissions can reasonably be expected to occur
[40 CFR 60.11 and Rule 62-297.310(7), F.A.C.]

D.16. Compliance with the emission limitations shall be determined by performance tests scheduled in accordance to the General Conditions attached. The performance test s shall be in accordance with the provisions of reference methods in Appendix A of 40 CFR 60, except as provided under 40 CFR 60.8(b) as follows:

a. Method 1 for sample and velocity traverse;
b. Method 2 for velocity and volumetric flow rate;
c. Method 3 for gas analysis;
d. Method 5 for concentration of particulate matter and associated moisture content;
e. Method 6 for concentration of SO_2; and
f. Method 7 for concentration of NO_x. For Method 7 each run shall consist of at leat four grab samples taken at approximately 15-minute intervals. The arithmetic mean of the samples shall constitute the run value.
g. For Method 6, the minimum sampling time shall be 20 minutes and the minimum sampling volume 0.02 dscm (0.71 dscf) for each sample. The arithmetic mean of two samples shall constitute one run. Samples shall be taken at approximately 30-minute intervals.
h. Method for sulfur dioxide and acid mist
i. Method 10 for carbon monoxide
j. Method 25 for VOC

A compliance test shall consist of the average of at least three (3) consecutive runs.

Testing of emissions must be accomplished within 90 to 100% of the permitted capacity [Rule 62-297.310(2), F.A.C.]. Failure to submit the input rates and actual operating conditions may invalidate the test
[Rule 52-297.310(2), F.A.C]

These emissions units shall comply with all applicable requirements of Rule 62-297.310 General Test Requirements and 40 CFR 60.8, Subpart A, Performance Tests.

D.17. Should DERM have reason to believe the particulate matter standards set forth in Table 1-1 are not being met, DERM may require that compliance the particulate emission standards be demonstrated by testing (applicable emission unit) in accordance with Rule 62-297.620(4) F.A.C.
[Rule 62-297.620(4) and 62-297.310, F.A.C.]

D.18. Operating procedures shall include good operating practices and proper training of all operators and supervisors. The good operating practices shall meet the guidelines and procedures as established by the equipment manufacturers. All operators (including supervisors) of air pollution control devices shall be properly trained in plant specific equipment.
[Rule 62-4.070(3), F.A.C.]

Monitoring of Operations

D.19. Continuous oxygen shall be properly installed, operated and maintained on kiln No. 2. The monitors shall be certified and calibrated in accordance with 40 CFR 60 Appendix B, Performance Specification 3. A record of excess oxygen for each of the coal-fired kilns and fuel/raw feed sulfur input shall be maintained on the premises for viewing during subsequent compliance inspections.
[PSD-Fl-050 dated July 8, 1980]

D.20. Proof of compliance with the permit shall be the kiln daily operating log, the SO_x/ NO_x monitor's strip charts and compliance test data. The day, time, type of fuel, fuel feed rate (TPH), sulfur content of the fuel, kiln feed rate (TPH), sulfur content of the kiln feed, oxygen content of the fuel gas and the clinker production rate shall be recorded for each kiln. The time period that each kiln will also be recorded in the operating log. The logs shall be maintained on the permises for viewing during subsequent compliance inspections and shall be kept for a minimum of two (2) years..
[AO 13-238048 dated December 17, 1993]

Recordkeeping and Reporting Requirements

D.21. The facility shall maintain a log or logs that show (s), as a minimum;

a. the operational status of all three kilns at any time;
b. when each kiln is placed in service;
c. the clinker, feed, and fuel feed rates to each kiln;
d. And when the kiln is taken out of service.

[PSD-FI-050 dated July 8, 1980]

D.22. The permittee shall create and keep a log of the kiln operating parameters The record log shall contain, at a minimum, one fifteen-second opacity observation per shift by a plant operator, the date and time of the observation, and the person responsible for performing the observation. [Rule 62-4.070(3), F.A.C.]

Reasonable Assurances

D.23. All reasonable precautions shall be taken to prevent emissions of unconfined particulate matter. Reasonable precautions shall include, but not be limited to, the following:
[F.A.C. Rule 62-296.310(3)]

a. Paved parking and trafficked areas shall be maintained and kept free of particulate matter build-up.
b. SprinKilng with water shall be used as necessary on paved areas and stockpiles.
c. ——— Facility site shall be kept free of waste concrete from the washout pit or other sources.

[Rule 62-296.320(4)(c), F.A.C.]

Adequate watering of the coal pile area shall be conducted whenever visible emissions occur in that area. The frequency of watering shall be no more than every half hour.
[PSD-FL-142 & AC 13-169901 dated February 25, 1991]

Subsection E. This section addresses the following emissions unit(s).

E.U. ID No.	**Brief Description**
-005	Cooler No. 2 with cyclone and Dual Chamber E.S.P.

The precipitator is manufactured by Koppers and contains three fields. The unit contains 22,000 ft^2 of collection plate surface in two chambers. The design gas volume is 48,000 acfm at 300°F. At this volume the specific collection area is 466.6 ft^2/ 1000 acfm. The superficial velocity is 2.38 ft/sec.

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

E.1. Permitted Capacity. The maximum hourly production rate is 25 tons of clinker.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

E.2. Methods of Operation - (i.e., Fuels). The maximum annual production rate of cement is 219,000 tons.
[Rule 62-213.410, F.A.C.]

E.3. Hours of Operation. This emissions unit is permitted to operate continuously, i.e., 8,760 hours/year.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

Emission Limitations and Standards

Table 1-1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

E.4. The clinker cooler shall be controlled to the extent necessary to limit visible emissions to 20 percent opacity.
[Rule 62-296.414(1), F.A.C.]

E.5. Emission of particulate matter from cooler No. 2 shall be less than 26.4 pounds per hour at the maximum operating rate of 25 tons per hour clinker produced. At lesser operating rates the emissions of particulate matter shall not exceed the process weight rate table allowable.
[Rule 62-296.320(4)(a)]

Test Methods and Procedures

Permitting note: Table 2-1, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

E.6. Each clinker cooler shall be tested by a certified observer in accordance with DEP Method 9 for a minimum of 30 minutes or, if the operation is normally completed within less than 30 minutes and does not recur within that time, the test shall last for the length of the operation. [F.A.C. Rule 62-297.330(1)(b)1]

The compliance test report shall include results of tests by the following method:

Source/Emission Point	Pollutant	Test Method	Frequency
Cooler No. 2	Visible Emissions	EPA Method 9	Each Year Prior to Renewal

The compliance test report shall be submitted to the DERM in accordance with Rule 62-297.570, F.A.C..

E.7. Compliance with the emission limitations of Conditions E.4.shall be determined using EPA method 9 contained in 40 CFR 60, Appendix A and adopted by reference in Rule 62-297, F.A.C. The minimum requirements for source sampling and reporting, shall be in accordance with Rule 62-297, F.A.C. and 40 CFR 60, Appendix A.
[Rule 62-297, F.A.C.]

E.8. The DERM, Air Facilities Section shall be notified in writing of expected compliance test dates at least fifteen (15) days prior to compliance testing. The notification must include the following information: the date, time, and location of each test; the name and telephone number of the facility's contact person who will be responsible for coordinating the test; and the name, company and telephone number of the person conducting the test.
[Rule 62-297.340(1)(i), F.A.C.]

E.9. Operating procedures shall include good operating practices and proper training of all operators and supervisors. The good operating practices shall meet the guidelines and procedures as established by the equipment manufacturers. All operators (including supervisors) of air pollution control devices shall be properly trained in plant specific equipment. [Rule 62-4.070(3), F.A.C.]

Recordkeeping and Reporting Requirements

E.10. Reports of the required compliance tests shall be filed with the DERM Air Facilities Section as soon as practical but no later than 45 days after the last test is completed.
[Rule 62-297.570(2), F.A.C.]

The compliance test report shall include the following information on the air pollution control devices and other information as necessary to make a complete report:
[Rule 62-297.570(3), F.AC.]

a. The normal type and amount of fuels used and/or materials processed and the types and amounts of fuels used and/or materials processed during each test run.

b. Type of air pollution control devices installed on the emissions unit, their general condition, normal operating parameters (e.g. flow rate, pressure drops, scrubber gpm, operating current) and the actual operating parameters for each test run, and indicate how each parameter was determined.

c. Notation of any deficiencies or problems with the air pollution control equipment which occur during testing.

E.11. The permittee shall create and keep a log of the clinker cooler operating parameters for each cooler. The record log shall contain, at a minimum, one fifteen-second opacity observation per shift by a plant operator, the date and time of the observation, and the person responsible for performing the observation.
[Rule 62-4.070(3), F.A.C.]

Reasonable Assurances

E.12. All reasonable precautions shall be taken to prevent emissions of unconfined particulate matter. Reasonable precautions shall include, but not be limited to, the following:
[F.A.C. Rule 62-296.310(3)]

a. Paved parking and trafficked areas shall be maintained and kept free of particulate matter build-up.
b. Sprinkling with water shall be used as necessary on paved areas and stockpiles.
c. Facility site shall be kept free of waste concrete from the washout pit or other sources.

[Rule 62-296.320(4)(c), F.A.C.]

Subsection F. This section addresses the following emissions unit(s).

E.U. ID No.	**Brief Description**
-006	Kiln No. 3 with dropout and dual chamber E.S.P.

This emission unit is the wet-process Cement Kiln #3. In wet process cement manufacture, a slurry of filtrate of crushed limerock containing between 20% and 40 % moisture content is introduced into an inclined kiln for calcination into quicklime (calcium oxide) clinker by the application of high thermal energies. The cement Kiln # 3, shall be limited to low sulfur (< 2.5%) coal, natural gas, No. 6 fuel oil and used oil meeting EPA specifications for used oil fuel.

Particulate emissions are controlled by an electrostatic precipitator manufacturer by Koppers and contains 272,000 ft^2 of collecting plate surface in two chambers. The design gas volume is 500,000 acfm at 450 °F and at this volume the specific collection area is 544 ft^2/ 1000 acfm. The superficial velocity is 3.95 ft/sec and the treatment time is 11.4 seconds. The collection plates and discharge electrodes are cleaned by high energy electric rappers.

{Permitting notes: NSPS - 40 CFR 60, Subpart F, Standards of Performance for New Stationary Sources, Prevention of Significant Deterioration (PSD) PSD-FI-050, dated July 8, 1990}.

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

F.1. Permitted Capacity.

a. Maximum heat input rate is 552 mmBtu/hr
b. Maximum process rate is 142 TPH relates to dry kiln feed.
c. Maximum production rate is 88 TPH refers to clinker production.
d. Maximum annual rate is 766,500 tons of cement produced.

[PSD-FL-050 dated July 8, 1980]

F.2. Methods of Operation .

FUEL COMBUSTION.

(1) Fuel fired in Kiln # 3 shall not exceed a total heat input rate of 552 MMBtu/hr and shall consist only of:

a. Coal: 25 mmBtu/tons burned
b. No.6 fuel with used oil blend: 139 mmBtu/1,000 gallons burned
c. Natural gas: 1,030 mmBtu/mf^{3}burned

USED OIL

(2) For used oil fuel, the following shall be recorded on the delivery receipt: the use of tamper proof seal(s) on the delivery truck, the volume of fuel delivered, a cross reference to the analyses which established that the used oil meets EPA used oil fuel specifications, the results of the screening analyses, the name of the person performing the test, the specific test kit used, the amount of oil sampled, and the amount and name of the solution used to dilute the oil. Used oil fuel that is delivered without a delivery receipt containing all the above information, or which is not properly sealed, or for which the delivery receipt does not contain the necessary information, is not to be accepted and the Department of Environmental Resources Management, Miami-Dade County, is to be notified by phone immediately (with written confirmation to follow), if such a delivery is attempted. Verification by signature on the delivery receipt shall be provided by plant personnel that the delivery truck arrived on site with all seals intact. As delivered samples of all used oil fuel received shall be accumulated through each quarter for each supplier. Analyses by EPA Recommended Analytical Procedures for used oil fuel shall be performed on each composited sample (identified as to supplier) for sulfur, ash, BTU content and PCB's. The results of the analyses (on the laboratory's letterhead) shall be submitted to the DERM no later than 30 days after the end of each quarter. The unused portion of the used oil fuel sample shall be retained for six months following the submittal of the analyses in case further testing is required. All records, reports and data collected shall be maintained as specified in TV conditions.

(3) The constituents and properties of the *on-spec used oil* shall comply with the following allowable concentration levels, as stipulated and defined in 40 CFR 279.10 (July 1, 1996 version), which is adopted by reference in **Rule 62-730.181, F.A.C.**

Constituent/Property	Allowable Concentration
Cadmium	2 ppm maximum
Arsenic	5 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Total Halogens	1000 ppm maximum
Flash Point	140 ^{o}F minimum

Polychlorinated Byphenyls (PCBs)	Less than 2 ppm

(4) *On-specification used oil* burned at this facility shall not be a hazardous waste as defined by Rule 62-730.030, F.A.C., or 40 CFR Part 261 (July 1, 1996 version). It shall not include fuels or blended fuels consisting in whole or in part of hazardous waste or which include mixture of any solid waste generated from the treatment, storage, or disposal of hazardous waste. The on-spec used oil shall be burned in compliance with Section 403.769(3), F.S.

(5) *The on-specification used oil samples shall be analyzed by EPA Recommended Analytical Procedures for Used Oil for the following constituent/property, associated unit, and using the test methods indicated:*

Constituent/Property	Unit	Test Method
Cadmium	ppm	EPA SW-846(6010)
Arsenic	ppm	EPA SW-846(6010)
Chromium	ppm	EPA SW-846(6010)
Lead	ppm	EPA SW-846(6010)
Total Halogens	ppm	EPA SW-846(9252)
Sulfur	percent	ASTM D129 or ASTM D1552
Flash Point	degree F	EPA SW-846(1010)
Heat of Combustion	Btu/gal	ASTM D240
Density	lbs/gal	
Polychlorinated Byphenyls (PCB's)	ppm	EPA SW-846(0010) and EPA 680
Ash		

NOTE: Other test methods may be used only after receiving written prior approval from the Department.

Emission Limitations and Standards

Table 1-1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

F.3. Emission of nitrogen oxides from kiln No. 3 shall be less than 592 pounds per hour at the maximum operating rate of 87.5 tons per hour of clinker produced. At lesser operating rates the emissions of nitrogen oxides shall not exceed 6.77 pounds per ton of clinker produced.
[PSD-FL-050, dated July 8, 1980]

F.4. Emission of particulate from kiln No. 3 shall not exceed 42.5 pound per hour at the maximum operating rate of 87.5 tons per hour of clinker produced. At lesser operating rates the emissions of particulate matter shall not exceed 0.3 pounds per ton of clinker produced.
[PSD-FL-050, dated July 8, 1980]

F.5. In accordance BACT Determination Modification January 21, 1985, for 400 pound SO_2 per hour maximum emission rate, and at operating rates less than maximum 4.6 pound SO_2 per ton of clinker produced.
[AC 13-054054 dated March 22, 1985]

F.6. Visible emissions from kiln No. 3 shall not exceed 10 % opacity.
[40 CFR 60, Subpart F]

Test Methods and Procedures

Permitting note: Table 2-1, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

F.7. Compliance with the emission limitations of Condition F.4 and F.6 shall be determined using EPA methods 5 and 9 contained in 40 CFR 60, Appendix A and adopted by reference in Rule 62-297, F.A.C. The minimum requirements for source sampling and reporting, shall be in accordance with Rule 62-297, F.A.C. and 40 CFR 60, Appendix A.
[Rule 62-297, F.A.C.]

F.8. The visible emissions test shall be conducted by a certified observer and be a minimum of 180 minutes in duration. The test observation shall include the period during which the highest opacity emissions can reasonably be expected to occur
[40 CFR 60.11 and Rule 62-297.310(7), F.A.C.]

F.9. Compliance with the emission limitations shall be determined by performance tests scheduled in accordance to the General Conditions attached. The performance tests shall be in accordance with the provisions of reference methods in Appendix A of 40 CFR 60, except as provided under 40 CFR 60.8(b) as follows:

a. Method 1 for sample and velocity traverse;
b. Method 2 for velocity and volumetric flow rate;
c. Method 3 for gas analysis;
d. Method 5 for concentration of particulate matter and associated moisture content;
e. Method 6 for concentration of SO_2; and
f. Method 7 for concentration of NO_x. For Method 7 each run shall consist of at leat four grab samples taken at approximately 15-minute intervals. The arithmetic mean of the samples shall constitute the run value.
g. For Method 6, the minimum sampling time shall be 20 minutes and the minimum sampling volume 0.02 dscm (0.71 dscf) for each sample. The arithmetic mean of two samples shall constitute one run. Samples shall be taken at approximately 30-minute intervals.

A compliance test shall consist of the average of at least three (3) consecutive runs.

Testing of emissions must be accomplished within 90 to 100% of the permitted capacity [Rule 62-297.310(2), F.A.C.]. Failure to submit the input rates and actual operating conditions may invalidate the test [Rule 52-297.310(2), F.A.C]

These emissions units shall comply with all applicable requirements of Rule 62-297.310 General Test Requirements and 40 CFR 60.8, Subpart A, Performance Tests.

F.10. Should DERM have reason to believe the particulate matter standards set forth in Table 1-1 are not being met, DERM may require that compliance the particulate emission standards be demonstrated by testing (applicable emission unit) in accordance with Rule 62-297.620(4) F.A.C.
[Rule 62-297.620(4) and 62-297.310, F.A.C.]

F.11. Operating procedures shall include good operating practices and proper training of all operators and supervisors. The good operating practices shall meet the guidelines and procedures as established by the equipment manufacturers. All operators (including supervisors) of air pollution control devices shall be properly trained in plant specific equipment.
[Rule 62-4.070(3), F.A.C.]

Monitoring of Operations

F.13. Proof of compliance with the permit shall be the kiln daily operating log, the SO_x/ NO_x monitor's strip charts and compliance test data. The day, time, type of fuel, fuel feed rate (TPH), sulfur content of the fuel, kiln feed rate (TPH), sulfur content of the kiln feed, oxygen content of the fuel gas and the clinker production rate shall be recorded for each kiln. The time period that each kiln will also be recorded in the operating log. The logs shall be maintained on the permises for viewing during subsequent compliance inspections and shall be kept for a minimum of two (2) years..
[AO 13-238048 dated December 17, 1993]

F.14. The permittee will continue the use of the SO_2/NO_x monitor to measure the concentrations of SO_2 and NO_x in the stack for kiln No.3. The measured concentrations, as demonstrated by the SO_2 / NO_x strip chart recording, shall not be used to determine compliance with applicable emission limitations. However, whenever the strip chart recording indicates as SO_2 concentration greater than 350 ppm or a NO_x concentration more than 500 ppm, the permittee shall notify the Department by telephone. The Department may then determine whether a stack test will be necessary to confirm the status of kiln No. 3 emissions for the parameter exceeding the above stated thresholds. The permittee shall note on the daily log whether or not threshold values were exceeded. If exceeded, the time the Department was notified shall be noted
[AO 13-238048 dated December 17, 1993]

Recordkeeping and Reporting Requirements

F.15. The facility shall maintain a log or logs that show (s), as a minimum;

a. the operational status of all three kilns at any time;
b. when each kiln is placed in service;
c. the clinker, feed, and fuel feed rates to each kiln;
d. And when the kiln is taken out of service.

[PSD-FL-050, dated July 8, 1980]

F.16. The permittee shall create and keep a log of the kiln operating parameters The record log shall contain, at a minimum, one fifteen-second opacity observation per shift by a plant operator, the date and time of the observation, and the person responsible for performing the observation. [Rule 62-4.070(3), F.A.C.]

Reasonable Assurances

F.17. All reasonable precautions shall be taken to prevent and control generation of unconfined emissions of particulate matter in accordance with the provisions in Rule 62-296.320(4)(c), F.A.C.:

C. Observe the pneumatic conveyors for leaks of fugitive dust. Repair or correct promptly. Stop operation if necessary.
D. Attend to spillages and leaks promptly effectively.

[Rule 62-296.320(4)(c), F.A.C.]

F.18. Any other operating parameters (including control equipment operating parameters) established during compliance testing and/or inspection that will confirm the proper operation of each emission unit shall be included in the operating permit
[Rule 62-297.310, F.A.C. and 62-4.070(3), F.A.C.]

Subsection G. This section addresses the following emissions unit(s).

E.U. ID No.	**Brief Description**
-007	Cooler No. 3 with dropout box and baghouse

This emission unit is the wet-process Cooler # 3, fired by oil, gas, coal, and/or petroleum coke.

Particulate emissions from the cooler are controlled by a settling chamber and a pulse-jet fabric filter. The baghouse is a Fuller plenum pulse with 28 compartments in two chambers. The design gas volume is 122,000 acfm at 300 °F. The filter area is 23,326 ft^2 and at design gas volume, the air to cloth ratio is 5.25 acfm/ft^2.

{Permitting notes: NSPS - 40 CFR 60, Subpart F, Standards of Performance for Portland Cement Plants}.

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

G.1. Permitted Capacity. The maximum hourly rate is 88 tons of cement produced.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

G.3. Hours of Operation. This emissions unit is allowed to operate continuously, i.e., 8,760 hours/year.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

Emission Limitations and Standards

Table 1-1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

G.4. The clinker cooler shall be controlled to the extent necessary to limit visible emissions to 10 percent opacity.
[NSPS 40 CFR 60.62(b)(2)]

G.5. Emission of particulate matter from cooler No. 3 shall be 14.2 pounds per hour at the maximum production rate of 62.2 tons per hour dry kiln feed.
[NSPS 40 CFR 60.62(b)]

G.6. Particulate matter emissions shall not exceed 0.1 pound per ton of dry kiln feed.
[NSPS 40 CFR 60.62(b)]

Test Methods and Procedures

Permitting note: Table 2-1, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

G.7. Each clinker cooler shall be tested by a certified observer in accordance with DEP Method 9 for a minimum of 30 minutes or, if the operation is normally completed within less than 30 minutes and does not recur within that time, the test shall last for the length of the operation.
[F.A.C. Rule 62-297.330(1)(b)1]

The compliance test report shall include results of tests by the following method:

Source/Emission Point	Pollutant	Test Method	Frequency
Cooler No. 3	Visible Emissions	EPA Method 9	Prior to Renewal

The compliance test report shall be submitted to the DERM in accordance with Rule 62-297.570, F.A.C..

G.8. Compliance with the emission limitations of Conditions G.4.shall be determined using EPA method 9 contained in 40 CFR 60, Appendix A and adopted by reference in Rule 62-297, F.A.C. The minimum requirements for source sampling and reporting, shall be in accordance with Rule 62-297, F.A.C. and 40 CFR 60, Appendix A.
[Rule 62-297, F.A.C.]

G.9. The DERM, Air Facilities Section shall be notified in writing of expected compliance test dates at least fifteen (15) days prior to compliance testing. The notification must include the following information: the date, time, and location of each test; the name and telephone number of the facility's contact person who will be responsible for coordinating the test; and the name, company and telephone number of the person conducting the test.

[Rule 62-297.340(1)(i), F.A.C.]

G.10. Operating procedures shall include good operating practices and proper training of all operators and supervisors. The good operating practices shall meet the guidelines and procedures as established by the equipment manufacturers. All operators (including supervisors) of air pollution control devices shall be properly trained in plant specific equipment.
[Rule 62-4.070(3), F.A.C.]

Recordkeeping and Reporting Requirements

G.11. Reports of the required compliance tests shall be filed with the DERM Air Facilities Section as soon as practical but no later than 45 days after the last test is completed.
[Rule 62-297.570(2), F.A.C.]

The compliance test report shall include the following information on the air pollution control devices and other information as necessary to make a complete report: [Rule 62-297.570(3), F.AC.]

a. The normal type and amount of fuels used and/or materials processed and the types and amounts of fuels used and/or materials processed during each test run.

b. Type of air pollution control devices installed on the emissions unit, their general condition, normal operating parameters (e.g. flow rate, pressure drops, scrubber gpm, operating current) and the actual operating parameters for each test run, and indicate how each parameter was determined.

c. Notation of any deficiencies or problems with the air pollution control equipment which occur during testing.

G.12. The permittee shall create and keep a log of the clinker cooler operating parameters for each cooler. The record log shall contain, at a minimum, one fifteen-second opacity observation per shift by a plant operator, the date and time of the observation, and the person responsible for performing the observation.
[Rule 62-4.070(3), F.A.C.]

Reasonable Assurances

G.13. All reasonable precautions shall be taken to prevent emissions of unconfined particulate matter. Reasonable precautions shall include, but not be limited to, the following:
[F.A.C. Rule 62-296.310(3)]

a. Paved parking and trafficked areas shall be maintained and kept free of particulate matter build-up.
b. Sprinkling with water shall be used as necessary on paved areas and stockpiles.
c. Facility site shall be kept free of waste concrete from the washout pit or other sources.

[Rule 62-296.320(4)(c), F.A.C.]

Subsection H. This section addresses the following emissions unit(s).

E.U. ID No.	**Brief Description**
-008	Clinker Handling and Storage system for Kiln No. 1 and 2
-009	Clinker Handling and Storage system for Kiln No. 3

The particulate emissions from the clinker handling and storage system for kiln No. 1 and 2 consisting of:

Source	Baghouse ID	Manufacturer	Model No.	Flow Rate (acfm)	Cloth Area (ft^2)	Air to Cloth Ratio
Handling Line 1	K-247	Norblo	120 AMST	3,000	1,650	1.8
Handling Line 2	K-147	Norblo	120 AMST	3,000	1,650	1.8
Handling Line 3	K-347	Norblo	11-BE-88	5,000	1,100	4.5
Handling Line 3	K-447	Norblo	HE-2-6	5,000	500	3.0
Clinker Silo 4, 18	K-521	Norblo	HE-2-6	1,500	500	3.0
Clinker Silo 11,19,20	K-522	Norblo	11-BE-88	1,500	1,100	4.5
Clinker Silo 21-23, 26-28	K-633	Norblo	HE-66	1,500	1,040	1.4

{Permitting note: Prevention of Significant Deterioration (PSD) PSD-FL-236 dated July 1, 1998, 40 CFR 52.21, and 40 CFR 60, Subpart F.}

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

H.1. Permitted Capacity. The maximum process is the following:

Source Description	Number of Baghouses	Throughput Maximum (TPH)	(TPY)	
Clinker Handling System –Kiln # 1	2	25	219,000	Limited by Cooler No. 1
Clinker Handling System- Kiln # 2	2	25	219,000	Limited by Cooler No.2
Clinker Handling System- Kiln # 3	2	87.5	766,500	Limited by Cooler No. 3
Slag Dryer Transfer	N/A	125	300,000	Limited by Slag Dryer
Total		262.5	1,504,500*	

Note: * reflects transfer of clinker, not cement.

H.2. Hours of Operation. This emissions unit is allowed to operate continuously, i.e., 8,760 hours/year.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

Emission Limitations and Standards

Table 1-1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

H.3. The conveyor transfer points associated with slag processing (baghouse K-447 and K-347) shall be controlled to the extent necessary to limit visible emissions to 10 percent opacity.
[PSD-FL-236 dated July 1, 1998]

H.4. The clinker silos 21-23 and 26-28, controlled by baghouse K-633 shall be controlled to the extent necessary to limit visible emissions to 5 percent opacity.
[BACT dated October 15, 1979 and PSD-FL-236 dated July 1, 1998]

H.5 The clinker handling line 1, clinker handling line 2, clinker silo 4 and 18, clinker silo 11,19 and 20 shall be controlled to the extent necessary to limit visible emissions to 20 percent.
[Rule 62-296.320(4)(b)]

H.6. Particulate emission shall not exceed the following table:

Emission Unit	Baghouse Id.	Maximum Process Rate (TPH)	PM/PM10 Emission Factor	PM/PM10 Emission Factor	
				lb/hr	(TPY)
Handling Line 3	K-347	125	0.01 gr/acf	0.43	1.88
Handling Line 3	K-447	125	0.01 gr/acf	0.43	1.88
Clinker Silos 21,22,23,26,27,28	K-633	237.5	0.01 gr/acf	0.13	0.56

<u>Test Methods and Procedures</u>

Permitting note: Table 2-1, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

H.7. Compliance with the emission limitations of Conditions H.4. through H.6 shall be determined using EPA method 9 contained in 40 CFR 60, Appendix A and adopted by reference in Rule 62-297, F.A.C. The minimum requirements for source sampling and reporting, shall be in accordance with Rule 62-297, F.A.C. and 40 CFR 60, Appendix A.
[Rule 62-297, F.A.C.]

H.8. The visible emissions test shall be conducted by a certified observer and be a minimum of 180 minutes in duration. The test observation shall include the period during which the highest opacity emissions can reasonably be expected to occur
[40 CFR 60.11 and Rule 62-297.310(7), F.A.C.]

H.9. The DERM, Air Facilities Section shall be notified in writing of expected compliance test dates at least fifteen (15) days prior to compliance testing. The notification must include the following information: the date, time, and location of each test; the name and telephone number of the facility's contact person who will be responsible for coordinating the test; and the name, company and telephone number of the person conducting the test.

[Rule 62-297.340(1)(i), F.A.C.]

Monitoring of Operations

H.10. For each baghouse, the pressure drop across the baghouse shall be monitored during each compliance test, and a summary of this data shall be included in each emissions test report.
[Rule 62-297.310(8), F.A.C.]

Recordkeeping and Reporting Requirements

H.11. Reports of the required compliance tests shall be filed with the DERM, Air Facilities Section as soon as practical but no later than 45 days after the last test is completed.
[Rule 62-297.570(2), F.A.C.]

The compliance test report shall include the following information on the air pollution control devices and other information as necessary to make a complete report:
[Rule 62-297.570(3), F.AC.]

a. The normal type and amount of fuels used and/or materials processed and the types and amounts of fuels used and/or materials processed during each test run.

b. Type of air pollution control devices installed on the emissions unit, their general condition, normal operating parameters (e.g. flow rate, pressure drops, scrubber gpm, operating current) and the actual operating parameters for each test run, and indicate how each parameter was determined.

c. Notation of any deficiencies or problems with the air pollution control equipment which occur during testing.

H.10. The permittee shall create and keep a log of the baghouse operating parameters for each baghouse. The record log shall contain, at a minimum, one fifteen-second opacity observation per shift by a plant operator, the date and time of the observation, and the person responsible for performing the observation.
[Rule 62-4.070(3), F.A.C.]

Reasonable Assurances

H.11. All reasonable precautions shall be taken to prevent emissions of unconfined particulate matter. Reasonable precautions shall include, but not be limited to, the following:
[F.A.C. Rule 62-296.310(3)]

a. Paved parking and trafficked areas shall be maintained and kept free of particulate matter build-up.
b. Sprinkling with water shall be used as necessary on paved areas and stockpiles.
c. Facility site shall be kept free of waste concrete from the washout pit or other sources.

[Rule 62-296.320(4)(c), F.A.C.]

Subsection I. This section addresses the following emissions unit(s).

E.U. ID No.	**Brief Description**
-010	Finish Mill No. 1 with Airslide, conveyor and baghouses
-011	Finish Mill No. 2 with Airslide, conveyor and baghouses
-012	Finish Mill No. 3 with Airslide, conveyor and baghouses
-013	Finish Mill No. 4 with Airslide, conveyor and baghouses

These emissions unit consists of the following: air particulate separator, cement pump, dust collectors and associated material handling equipment. The particulate emissions are controlled by associated baghouses for each finish mills feed material and the finishes mills itself.

The particulate emissions from the Finishes Mills Feed are controlled by:

Finish Mill	Baghouse ID	Manufacturer	Model No.	Flow Rate (acfm)	Cloth Area (ft^2)	Air to Cloth Ratio
# 1	F-130	Norblo	468 AMT	12,000	1,977	6.1
# 1	F-113	Mikropul	16FF-10-20	11,800	2,100	5.6
# 2	F-230	Norblo	468-AMT	12,000	6,450	1.9
# 2	F-213	Mikropul	16FF-10-20	11,800	2,100	5.6
# 3	F-330	Norblo	702 AMT	20,000	9,477	2.1
# 3	F-332	Norblo	390 AMT	13,500	5,465	2.6
# 3	F-313	Mikropul	196S-10-20	8,000	2,300	3.5
# 4	F-432	Fuller	5 zone #48	17,000	2,510	6.8
# 4	F-605	Mikropul	645-10-30	4,000	753	5.3
# 4	F-603	Mikropul	121S-10-20	8,000	1,424	5.6
# 4	F-430	Fuller	6 zone #96	30,000	6,028	5.0
# 4	F-604	Mikropul	121S-10-20	8,000	1,424	5.6

{Permitting note: Finish Mill # 4 is subject to the following: NSPS 40 CFR 52.21, Prevention of Significant Deterioration of Air Quality, and 40 CFR 60, Subpart F, Standards of Performance for Portland Cement Plant}.

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

I.1. Permitted Capacity. The maximum process rate of cement is 258.5 TPH. Refer to individual capacities on below table.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

Finish Mill	Baghouse	Process Rate (TPH)	Total Air Flow (acfm)
# 1	F-130/F-113	25	23,800
# 2	F-230/F-213	25	23,800
# 3	F-313/F-330/F-332	83.5	41,500
# 4	F-430/F-432/F-603/ F-604/F-605	125	67,000
Total		258.5	156,000

I.2. Hours of Operation. This emissions unit is allowed to operate continuously, i.e., 8,760 hours/year.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

Emission Limitations and Standards

Table 1-1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

I..3. The silo(s), hopper and other storage or conveying equipment shall be controlled to the extent necessary to limit visible emissions to 20 percent opacity.
[Rule 62-296.414(1), F.A.C.]

I.4. Particulate Matter emissions from Finish Mill 1, 2, and 3 shall not exceed the process weight table.
[Rule 62-296.310(2)(a)]

Finish Mill	Allowable Emission by Process Weight Table (lb/hr) (a)	(TPY)
# 1	26.4	115.7
# 2	26.4	115.7
# 3	35.1	153.9

Notes:

(a) The process weight standards formulas applied are as follow:
For finish mills 1, 2 (TPH < 30) lb/hr= 3.59 x Process Rate (TPH)^0.62
For finish mills 3, 4 (TPH > 30) lb/hr = 17.31 x Process Rate (TPH)^0.62

I.5. Particulate Matter emission (total PM and PM_{10}) from the Finish Mill # 4 shall not exceed any of the following limits listed on table below:

Finish Mill No. 4	Maximum Process Rate	PM/PM_{10} Emission Factor	PM/PM_{10} Emissions (lb/hr)	(TPY)
Ball Mill/Mill sweep	125	0.01 gr/acf	2.57	11.26
Belt conveyor/ separator/ cement	125	0.01 gr/acf	1.46	6.38
Clinker/gypsum conveyors	125	0.01 gr/acf	0.69	3.0
Clinker/gypsum conveyors	125	0.01 gr/acf	0.69	3.0
Clinker/gypsum conveyors	125	0.01 gr/acf	0.34	1.50

[PSD-FL-028 dated March 19, 1980]

Note: Emissions are based on 0.01 gr/acf; lb/hr; limits by permit PSD-FL-236 dated July 1, 1998]

I.6. Visible emission from Finish Mill No. 4 shall not exceed 5 percent opacity.
[BACT dated October 15, 1979, 0250020-001-AC and PSD-FL0236 dated July 1, 1998]

I.7. Finish Mills No. 1, 2, and 3 shall conduct EPA method 5*.

* Visible emissions testing demostrating opacity does not exceed 5 percent opacity (EPA Method 9) may be submitted in lieu of particulate testing.
[AO 13-238048 dated December 17, 1993]

I.8. The baghouses that control the following: finish mill No. 1 (F-130) and finish mill No. 2 (F-230) shall be required to conduct EPA Method 9.
[AO 13-238048 dated December 17, 1993]

Test Methods and Procedures

Permitting note: Table 2-1, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

I.9. Compliance with the emission limitations of Conditions I.3, I.4, I.5., I.6., I.7., and I.8 shall be determined using EPA method 5 and 9 contained in 40 CFR 60, Appendix A and adopted by reference in Rule 62-297, F.A.C. The minimum requirements for source sampling and reporting, shall be in accordance with Rule 62-297, F.A.C. and 40 CFR 60, Appendix A.
[Rule 62-297, F.A.C.]

I.10. The visible emissions test shall be conducted by a certified observer and be a minimum of 180 minutes in duration. The test observation shall include the period during which the highest opacity emissions can reasonably be expected to occur
[40 CFR 60.11 and Rule 62-297.310(7), F.A.C.]

I.11. The DERM, Air Facilities Section shall be notified in writing of expected compliance test dates at least fifteen (15) days prior to compliance testing. The notification must include the following information: the date, time, and location of each test; the name and telephone number of the facility's contact person who will be responsible for coordinating the test; and the name, company and telephone number of the person conducting the test. [Rule 62-297.340(1)(i), F.A.C.]

Monitoring of Operations

I.12. For each baghouse, the pressure drop across the baghouse shall be monitored during each compliance test, and a summary of this data shall be included in each emissions test report.
[Rule 62-297.310(8), F.A.C.]

Recordkeeping and Reporting Requirements

I.13. Reports of the required compliance tests shall be filed with the DERM Air Facilities Section as soon as practical but no later than 45 days after the last test is completed.
[Rule 62-297.570(2), F.A.C.]

The compliance test report shall include the following information on the air pollution control devices and other information as necessary to make a complete report:
[Rule 62-297.570(3), F.AC.]

a. The normal type and amount of fuels used and/or materials processed and the types and amounts of fuels used and/or materials processed during each test run.

b. Type of air pollution control devices installed on the emissions unit, their general condition, normal operating parameters (e.g. flow rate, pressure drops, scrubber gpm, operating current) and the actual operating parameters for each test run, and indicate how each parameter was determined.

c. Notation of any deficiencies or problems with the air pollution control equipment which occur during testing.

I.14. The permittee shall create and keep a log of the baghouse operating parameters for each baghouse. The record log shall contain, at a minimum, one fifteen-second opacity observation per shift by a plant operator, the date and time of the observation, and the person responsible for performing the observation.
[Rule 62-4.070(3), F.A.C.]

Reasonable Assurances

I.15. All reasonable precautions shall be taken to prevent emissions of unconfined particulate matter. Reasonable precautions shall include, but not be limited to, the following:
[F.A.C. Rule 62-296.310(3)]

a. Paved parking and trafficked areas shall be maintained and kept free of particulate matter build-up.
b. Sprinkling with water shall be used as necessary on paved areas and stockpiles.
c. Facility site shall be kept free of waste concrete from the washout pit or other sources.

[Rule 62-296.320(4)(c), F.A.C.]

Subsection J. This section addresses the following emissions unit(s).

E.U. ID No.	**Brief Description**
-014	Cement Storage Silos # 1- 12 serving mills # 1-4
-015	Cement Distribution -Rail and Truck loadouts
-016	Cement Distribution – Packhouse with 2 Baggers

The particulate emissions from cement storage/loadout/ packhouse are controlled by:

Source	Baghouse ID	Manufacturer	Model No.	Flow Rate (acfm)	Cloth Area (ft^2)	Air to Cloth Ratio
Cement Silos 1-6	F-511	Fuller	2 zone #78	18,000	1,625	11.1
Cement Silos 7-9	F-512	Norblo	156 AMT	10,000	2,142	4.7
Cement Silo 10	F-513	Mikropul	121S-10-20B	5,000	1,424	3.5
Cement Silo 11	F-514	Mikropul	121S-10-20B	5,000	1,424	3.5
Cement Silo 12	F-515	Mikropul	121S-10-20B	5,000	1,424	3.5
Bulk Loadout Unit 1	B-110	Norblo	120 AMT	3,000	1,650	1.8
Bulk Loadout Unit 2	B-210	Norblo	120 AMT	3,000	1,650	1.8

Bulk Loadout Unit 3 Line 1	B-372	Mikropul	36S-8-30-C	2,000	340	5.9
Bulk Loadout Unit 3 Line 2	B-374	Mikropul	36S-8-30-C	2,000	340	5.9
Bulk Loadout Unit 3 Airside	B-382	Mikropul	121S-10-20B	5,000	1,424	3.5
Packhouse	B-621	Fuller	2 zone #78	12,000	1,632	7.4

{Permitting note: Cement Silo 7-9 and Bulk Cement Loadout Units 1 and 2 are subject to the following: NSPS 40 CFR 52.21, Prevention of Significant Deterioration of Air Quality, and 40 CFR 60, Subpart F, Standards of Performance for Portland Cement Plant.}

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

J.1. Permitted Capacity.

The cement silos each handling a total of 500 tons per hour. Particulates from silo filling and distribution are controlled by individual baghouses each emitting a total of 7.9 tons per year.

One rail and two truck loadout operations handling a total of 500 tons per hour with particulates controlled by individual baghouses to a total of 2.8 tons per year each.

Packhouse handling 85 tons per hour of cement with particulates controlled by individual baghouses to a total of 0.6 ton per year from cement and masonry airslides emitted separately 55.0 feet above ground level and 10.4 ton per year total from cement and masonry packing operations emitted separately 78.0 feet above ground level.
[AC 13-21098 dated November 2, 1979]

J.3. Hours of Operation. This emissions unit is allowed to operate continuously, i.e., 8,760 hours/year.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

Emission Limitations and Standards

Table 1-1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

J.4. Particulate emissions for Cement Storage, Packhouse and Loadout:

Source	Baghouse ID	Flow Rate (acfm)	Grain Loading (gr/acf)	Potential Emissions	
				(lb/hr)	(TPY)
Cement Silos 1-6	F-511	18,000	0.01	1.54	6.76
Cement Silos 7-9	F-512	10,000	0.01	0.86	3.75
Cement Silo 10	F-513	5,000	0.01	0.43	1.88
Cement Silo 11	F-514	5,000	0.01	0.43	1.88
Cement Silo 12	F-515	5,000	0.01	0.43	1.88
Bulk Loadout Unit 1	B-110	3,000	0.01	0.26	1.13
Bulk Loadout Unit 2	B-210	3,000	0.01	0.26	1.13

Continue Table……

Source	Baghouse ID	Flow Rate (acfm)	Grain Loading (gr/acf)	Potential Emissions	
				(lb/hr)	(TPY)
Bulk Loadout Unit 3 Line 1	B-372	2,000	0.01	0.17	0.75
Bulk Loadout Unit 3 Line 2	B-374	2,000	0.01	0.17	0.75
Bulk Loadout Unit 3 Airside	B-382	5,000	0.01	0.43	1.88
Packhouse (a)	B-621	12,000	-	1.19	5.20
Total				6.2	27.0

Note: (a) Emissions reflect permit limits established in PSD-FL-028 dated March 19, 1980

J.5. Particulate Matter emission from Cement Silo 7-9, Bulk Cement Loadout 1 and 2 shall not exceed any of the following limits listed on table below:

Emissions Unit	Baghouse ID.	Maximum Process Rate (TPH)	PM/PM_{10} Emission Factor	PM/PM_{10} Emissions	
				(lb/hr)	(TPY)

Cement Silos 1-9 Cement Silos 7-9	 F-512	 125	 0.01 gr/acf	 0.86	 3.75
Bulk cement Loadout Units 1 & 2 Railcar/Truck Unit 1 Truck Unit 2	 B-110 B-210	 250 250	 0.01 gr/acf 0.01 gr/acf	 0.26 0.26	 1.13 1.13

[PSD-FL-028 dated March 19, 1980]

J.6. The cement storage silos 1-6 equipment shall be controlled to the extent necessary to limit visible emissions to 20 percent opacity.
[Rule 62-296.310(2), F.A.C.]

J.7. The cement storage silos 7-9 equipment shall be controlled to the extent necessary to limit visible emissions to 5 percent opacity.
[PSD-FL-236 dated July 1, 1998]

J.8. The cement storage silos 10-12 and bulk cement loadout unit 3 equipment shall be controlled to the extent necessary to limit visible emissions to 5 percent opacity.
[BACT dated October 15, 1979, AC 13-21098 dated November 2, 1979]

J.9. Bulk cement (railcar/truck) loadout units 1, bulk cement (truck) loadout unit 2 equipped with baghouses B-110, B-210 respectively, exhaust particulate emissions to the interior of enclosed areas. Fugitive emissions shall be contained in this manner as not to exceed 5 percent opacity from the vents, door, etc.
[PSD-FL-236 dated July 1, 1998]

J.10. The cement packhouse shall be controlled to the extent necessary to limit visible emissions to 5 percent opacity.
[PSD-FL-028 dated March 19, 1980]

Test Methods and Procedures

Permitting note: Table 2-1, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

J.11. Compliance with the emission limitations of Conditions J.6 through J-10.shall be determined using EPA method 9 contained in 40 CFR 60, Appendix A and adopted by reference in Rule 62-297, F.A.C. The minimum requirement for source sampling and reporting, shall be in accordance with Rule 62-297, F.A.C. and 40 CFR 60, Appendix A.

[Rule 62-297, F.A.C.]

J.12. The visible emissions test shall be conducted by a certified observer and be a minimum of 180 minutes in duration. The test observation shall include the period during which the highest opacity emissions can reasonably be expected to occur
[40 CFR 60.11 and Rule 62-297.310(7), F.A.C.]

J.13. The DERM, Air Facilities Section shall be notified in writing of expected compliance test dates at least fifteen (15) days prior to compliance testing. The notification must include the following information: the date, time, and location of each test; the name and telephone number of the facility's contact person who will be responsible for coordinating the test; and the name, company and telephone number of the person conducting the test.
[Rule 62-297.340(1)(i), F.A.C.]

Monitoring of Operations

J.14. The pressure drop across each baghouse shall be monitored during each compliance test, and a summary of this data shall be included in each emissions test report.
[Rule 62-297.310(8), F.A.C.]

Recordkeeping and Reporting Requirements

J.15. Reports of the required compliance tests shall be filed with the DERM Air Facilities Section as soon as practical but no later than 45 days after the last test is completed.
[Rule 62-297.570(2), F.A.C.]

The compliance test report shall include the following information on the air pollution control devices and other information as necessary to make a complete report:
[Rule 62-297.570(3), F.AC.]

a. The normal type and amount of fuels used and/or materials processed and the types and amounts of fuels used and/or materials processed during each test run.

b. Type of air pollution control devices installed on the emissions unit, their general condition, normal operating parameters (e.g. flow rate, pressure drops, scrubber gpm, operating current) and the actual operating parameters for each test run, and indicate how each parameter was determined.

c. Notation of any deficiencies or problems with the air pollution control equipment which occur during testing.

J.16. The permittee shall create and keep a log of the baghouse operating parameters for each baghouse. The record log shall contain, at a minimum, one fifteen-second opacity observation per shift by a plant operator, the date and time of the observation, and the person responsible for performing the observation.
[Rule 62-4.070(3), F.A.C.]

Reasonable Assurances

J.17. All reasonable precautions shall be taken to prevent emissions of unconfined particulate matter. Reasonable precautions shall include, but not be limited to, the following:
[F.A.C. Rule 62-296.310(3)]

a. Paved parking and trafficked areas shall be maintained and kept free of particulate matter build-up.
b. Sprinkling with water shall be used as necessary on paved areas and stockpiles.
c. Facility site shall be kept free of waste concrete from the washout pit or other sources.

[Rule 62-296.320(4)(c), F.A.C.]

Subsection K. This section addresses the following emissions unit(s).

E.U. ID No.	**Brief Description**
-020	Slag Dryer

The major components of the slag dryer processing operation is 10,000 gallon fuel storage tank, a 125 TPH dryer with a baghouse, a dry slag conveyor with baghouse. The slag processing operation will use the portland cement plant's existing Clinker Silos Nos. 21, 22, 23,26,27 and 28 for dried storage, Cement Silos Nos. 7, 8, and 9 for the ground slag storage, No. 4 Finish Mill, and Bulk Cement Loadout Units Nos. 1 and 2.

The Slag Dryers air emissions are controlled by a baghouse: Manufacturer Flex-Kleen, Model 84UDLM288M216XLA, Air Flow Rate: 22,000 acfm, Exit temperature: 450 °F maximum, Cloth Area: 3,391 ft^{2}, Air to Cloth Ratio: 6.5, Cloth Type: 4 oz. Nomex felt, Cleaning method: Pulse Jet

{Permitting note(s): 40 CFR 52.21, Prevention of Significant Deterioration of Air Quality, and 40 CFR 60, Subpart F, Standards of Performance for Portland Cement Plants.}

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

K.1. Permitted Capacity. The maximum wet blast furnace slag input rate to the dryer shall not exceed 125 TPH. The facility shall not process more than 300,000 tons of blast furnace slag during any calendar year.
[02500020-001-AC, PSD-FL-236]

K.2. Methods of Operation - (i.e., Fuels). Only natural gas and low sulfur No. 2 fuel oil shall be burned in the blast furnace slag drier. The sulfur content of the fuel shall not exceed 0.2 percent. The maximum heat input to the dryer shall not exceed 57.5 MMBtu/hr (approximately 410.6 GPH of oil or 57,000 CFH of gas). The maximum fuel consumption shall not exceed 1,281,000 GPY of oil or 178 MMCFPY of gas.

Parameter	No. 2 Fuel Oil	Natural Gas
Heat Input Rate	57.5 MMBtu/hr	57.5 MMBtu/hr
Heat Value	140,000 MMBtu/gal	1,000 Btu/scf
Hourly Fuel Use	410.6 gal/hr	57.48 MMscf/hr
Annual Fuel Use	1,280,983 gal/yr	179,338 MMscf/yr
Maximum Sulfur Content	0.2 Wt%	0.01 gr/scf

[02500020-001-AC, PSD-FL-236, Rule 62-213.410, F.A.C.]

K.3. Hours of Operation. The dryer shall not operate more than 3,120 hours per calendar year. The permittee shall maintain records of the hours of operation for the dryer each year.. [025000020-001-AC, PSD-FL-236]

Emission Limitations and Standards

Table 1-1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

K.4. Particulate Matter Emissions: Emissions of particulate matter (total PM and PM_{10}) from the baghouse serving the slag dryer shall not exceed any of the following: 0.02 gr/dscf, 4.8 lbs/hr, 7.44 TPY. This standard may be modified if compliance tests show that the baghouse has an air to cloth ratio of 4.5:1 or larger and the filtering area is unable to meet a standard of 0.02 gr/dscf.
[025000020-001-AC, PSD-FL-236]

K.5. Maximum Emissions on fuel used for the slag dryer:

Fuel Oil			
		Maximum Emission	
Pollutant	Emission Factor b	lb/hr	TPY
SO2	142*S lb/Mgalc	11.66	18.19
NOx	20 lb/Mgal	8.21	12.81
CO	5 lb/Mgal	2.05	3.20
NMVOC	0.2 lb/Mgal	0.082	0.13
Sulfuric Acid Mist	0.1225 lb/Mgal	0.050	0.08
Lead-Total	8.9E-06 lb/MMBtu	5.12E-04	7.98E-04
Mercury	3.0E-06 lb/MMBtu	1.72E-04	2.69E-04
Beryllium	2.5E-06 lb/MMBtu	1.44E-04	2.24E-04

Natural Gas			
		Maximum Emission	
Pollutant	Emission Factor b	lb/hr	TPY
SO2	0.6 lb/MMscf	0.034	0.054
NOx	140 lb/MMscf	8.05	12.55
CO	35 lb/MMscf	2.01	3.14
NMVOC	3.83 lb/MMscf	0.22	0.34
Sulfuric Acid Mist	NA	-	-
Lead-Total	NA	-	-
Mercury	NA	-	-
Beryllium	NA	-	-

Note: NA = not applicable

a- Fuel oil use is based on 140,000 Btu/gal for 0.2% S oil. Heat Input Rate is based on 0.48 MMBtu/ton and 150 ton/hr throughput.

b- Emission factors are based on AP-42 5th edition, Tables 1.3-2, 1.3-4, and 1.3-11 for oil use and 1.4-1 and 1.4-3 for gas. NMVOC factor for gas is reduced by 34% to reflect presence of methane.

c- "S" denotes the weight % sulfur in fuel oil; maximum sulfur content = 0.2%.

K.6. Particulate Matter Emissions: Visible emissions from the slag dryer shall not exceed 10 percent opacity
[025000020-001-AC, PSD-FL-236]

K.7. Bulk Cement (railcar/truck) Loadout Unit 1, Bulk Cement (truck) Loadout Unit 2 and Transfer Pump Hopper (under Silos 10-12), equipped with Baghouse B-110, B-210, and B-323 respectively, exhaust particulate emissions to the interior of enclosed areas. Fugitive emissions shall be contained in this manner so as not to exceed 5 percent opacity from the vents, doors, etc.

K.8. Visible emissions from the blast furnace processing facility shall not exceed any of the following:

A. Yard Storage/Handling Fugitive dust shall not be observed leaving the plant area.
B. Each Clinker/Cement Silo: 5 % opacity
C. Each Conveyer 10 % opacity
D. No. 4 Finish Mill 5 % opacity
E. Bulk Cement Loadout Units 1 & 2 10 % opacity

Test Methods and Procedures

Permitting note: Table 2-1, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

K.9. Compliance with the emission limitations shall be determined using EPA method 9 contained in 40 CFR 60, Appendix A and adopted by reference in Rule 62-297, F.A.C. The minimum requirements for source sampling and reporting, shall be in accordance with Rule 62-297, F.A.C. and 40 CFR 60, Appendix A.
[Rule 62-297, F.A.C.]

K.10. The visible emissions test shall be conducted by a certified observer and be a minimum of 180 minutes in duration. The test observation shall include the period during which the highest opacity emissions can reasonably be expected to occur
[40 CFR 60.11 and Rule 62-297.310(7), F.A.C.]

K.11. Compliance with the emission limitations for PM_{10} (assuming all PM is PM_{10}) shall be determined by performance tests scheduled in accordance to the General Conditions attached. The performance test s shall be in accordance with the provisions of reference methods in Appendix A of 40 CFR 60, except as provided under 40 CFR 60.8(b) as follows:

a. Method 1 for sample and velocity traverse;
b. Method 2 for velocity and volumetric flow rate;
c. Method 3 for gas analysis;
d. Method 5 for concentration of particulate matter and associated moisture content;

A compliance test shall consist of the average of at least three (3) consecutive runs.

K.12. Compliance testing of emissions from the slag dryer shall be conducted with the dryer operating at permitted capacity. Permitted capacity is defined as 90-100 percent of the maximum operating rate allowed by the permit. It is impracticable to test at permitted capacity, then sources may be tested at less that capacity; in this case subsequent source operation is limited to 110 percent of the test load until a new test is conducted. Once the unit is so limited, then operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the permitted capacity in the permit.

These emissions units shall comply with all applicable requirements of Rule 62-297.310 General Test Requirements and 40 CFR 60.8, Subpart A, Performance Tests.

K.13. The DERM, Air Facilities Section shall be notified in writing of expected compliance test dates at least fifteen (15) days prior to compliance testing. The notification must include the following information: the date, time, and location of each test; the name and telephone number of the facility's contact person who will be responsible for coordinating the test; and the name, company and telephone number of the person conducting the test.
[Rule 62-297.340(1)(i), F.A.C.]

<u>Monitoring of Operations</u>

K.14. The pressure drop across each baghouse shall be monitored during each compliance test, and a summary of this data shall be included in each emissions test report.
[Rule 62-297.310(8), F.A.C.]

Recordkeeping and Reporting Requirements

K.15. Reports of the required compliance tests shall be filed with the DERM Air Facilities Section as soon as practical but no later than 45 days after the last test is completed.
[Rule 62-297.570(2), F.A.C.]

The compliance test report shall include the following information on the air pollution control devices and other information as necessary to make a complete report:
[Rule 62-297.570(3), F.AC.]

a. The normal type and amount of fuels used and/or materials processed and the types and amounts of fuels used and/or materials processed during each test run.

b. Type of air pollution control devices installed on the emissions unit, their general condition, normal operating parameters (e.g. flow rate, pressure drops, scrubber gpm, operating current) and the actual operating parameters for each test run, and indicate how each parameter was determined.

c. Notation of any deficiencies or problems with the air pollution control equipment which occur during testing.

K.16. The permittee shall create and keep a log of the baghouse operating parameters for each baghouse. The record log shall contain, at a minimum, one fifteen-second opacity observation per shift by a plant operator, the date and time of the observation, and the person responsible for performing the observation.
[Rule 62-4.070(3), F.A.C.]

Reasonable Assurances

K.17. All reasonable precautions shall be taken to prevent emissions of unconfined particulate matter. Reasonable precautions shall include, but not be limited to, the following: **[F.A.C. Rule 62-296.310(3)]**

a. Paved parking and traffic areas shall be well maintained and kept free of particulate matter build-up. Vacuum type sweeper(s) shall be used to clean the paved areas. Sweeper(s) shall be maintained and operated such that visible emissions form the sweeper(s) do not exceed 5 percent opacity.

b. Water sprinklers shall be used when necessary to control unconfined particulate matter emissions from unpaved roads and work areas..

c. Facility site shall be kept free of waste concrete from the washout pit or other sources

d. Water sprinklers and wind breaks, enclosures, or covers shall be used to control unconfined PM emissions from the yard.

[Rule 62-296.320(4)(c), F.A.C.]

Subsection L. This section addresses the following emissions unit(s).

E.U. ID No.	**Brief Description**
-021	Insufflation System

Kilns System 1 and 2 contain a common dust insufflation systems which can return captured particulate to the kiln firing hoods. The dust handling equipment for the insufflation system includes a surge bin (for each kiln precipitator) and a common dust bin controlled by baghouse (K-118) emitting particulate 103 A.G.L.

Kiln System 3 contains a dust insufflation system which can return captured particulate to the kiln firing hood. The dust handling equipment for the insufflation system includes a scoop bin and a dust bin for the kiln precipitator controlled by baghouses (K-383 and K-396 respectively) emitting particulate 100 feet A.G.L.

Source	Baghouse ID	Manufacturer	Model No.	Flow Rate (acfm)	Cloth Area (ft^2)	Air to Cloth Ratio
Kiln # 1/ Kiln # 2 Waste Bin	K-181	Mikropul	168-F8-20H	3,000	2,375	1.3
Scoop Bin	K-383	Norblo	11-BE-88	5,000	1,100	4.5
Kiln 2 Waste Bin	K-396	Norblo	HE-6-6	5,000	1,035	4.8

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

L.1. Permitted Capacity. The maximum throughout rate is 50 TPH of CKD into the system.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

L.2. Hours of Operation. This emissions unit is allowed to operate continuously, i.e., 8,760 hours/year.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

Emission Limitations and Standards

Table 1-1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

L.3. The insufflation system visible emissions shall be limited to 20 percent opacity.
[AO 13-238048 dated December17, 1998]

Test Methods and Procedures

Permitting note: Table 2-1, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

L.4. Compliance with the emission limitations of Conditions L.3.shall be determined using EPA method 9 contained in 40 CFR 60, Appendix A and adopted by reference in Rule 62-297, F.A.C. The minimum requirements for source sampling and reporting, shall be in accordance with Rule 62-297, F.A.C. and 40 CFR 60, Appendix A.
[Rule 62-297, F.A.C.]

L.5. The visible emissions test shall be conducted by a certified observer and be a minimum of 180 minutes in duration. The test observation shall include the period during which the highest opacity emissions can reasonably be expected to occur
[40 CFR 60.11 and Rule 62-297.310(7), F.A.C.]

L.6. The DERM, Air Facilities Section shall be notified in writing of expected compliance test dates at least fifteen (15) days prior to compliance testing. The notification must include the following information: the date, time, and location of each test; the name and telephone number of the facility's contact person who will be responsible for coordinating the test; and the name, company and telephone number of the person conducting the test.
[Rule 62-297.340(1)(i), F.A.C.]

Monitoring of Operations

L.7. For each baghouse, the pressure drop across the baghouse shall be monitored during each compliance test, and a summary of this data shall be included in each emissions test report.
[Rule 62-297.310(8), F.A.C.]

Recordkeeping and Reporting Requirements

L.8. Reports of the required compliance tests shall be filed with the DERM Air Facilities Section as soon as practical but no later than 45 days after the last test is completed.
[Rule 62-297.570(2), F.A.C.]

The compliance test report shall include the following information on the air pollution control devices and other information as necessary to make a complete report:
[Rule 62-297.570(3), F.AC.]

a. The normal type and amount of fuels used and/or materials processed and the types and amounts of fuels used and/or materials processed during each test run.

b. Type of air pollution control devices installed on the emissions unit, their general condition, normal operating parameters (e.g. flow rate, pressure drops, scrubber gpm, operating current) and the actual operating parameters for each test run, and indicate how each parameter was determined.

c. Notation of any deficiencies or problems with the air pollution control equipment which occur during testing.

L.9. The permittee shall create and keep a log of the baghouse operating parameters for each baghouse. The record log shall contain, at a minimum, one fifteen-second opacity observation per shift by a plant operator, the date and time of the observation, and the person responsible for performing the observation.
[Rule 62-4.070(3), F.A.C.]

Reasonable Assurances

L.10. All reasonable precautions shall be taken to prevent emissions of unconfined particulate matter. Reasonable precautions shall include, but not be limited to, the following: **[F.A.C. Rule 62-296.310(3)]**

a. Paved parking and trafficked areas shall be maintained and kept free of particulate matter build-up.
b. Sprinkling with water shall be used as necessary on paved areas and stockpiles.
c. Facility site shall be kept free of waste concrete from the washout pit or other sources.

[Rule 62-296.320(4)(c), F.A.C.]

Subsection M. This section addresses the following emissions unit(s).

E.U. ID No.	**Brief Description**
-022	Two Cement Block Plant

This emission unit consist of two concrete block plants:

a. Plant # 1: Concrete block plant 2,000 blocks per hour or approximately 35 ton per hour of concrete- emissions from the cement storage silo and cement weigh hopper controlled by separate baghouses.
b. Plant # 2: Concrete block plant 1,000 blocks per hour or approximately 17.5 tons per hour of concrete - emissions form the cement storage silo and cement weigh hopper controlled by separate baghouses.

Source	Manufacturer	Model No.	Flow Rate (acfm)	Cloth Area (ft^2)	Air to Cloth Ratio
Cement Silo Unit #1	Merts	250 SF	1,250	250	5:1
Weigh Hopper Unit #1	Merts	156 SF	780	156	5:1
Cement Silo Unit #2	Griffin Environmental	36-J	920	125	9:1
Weigh Hopper Unit #2	Griffin Environmental	18-VD	200	18	5:1

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

M.1. Permitted Capacity. The maximum hourly production for :
c. Plant # 1 is 35 ton per hour and
d. Plant # 2 is 17.5 ton per hour.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

M.2. Hours of Operation. This emissions unit is allowed to operate 4,992 hours/year.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

Emission Limitations and Standards

Table 1-1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

M.3. The silo(s), hopper and other storage or conveying equipment shall be controlled to the extent necessary to limit visible emissions to 20 percent opacity.
[Rule 62-296.414(1), F.A.C.]

Test Methods and Procedures

Permitting note: Table 2-1, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

M.4. Compliance with the emission limitations of Conditions M.3 shall be determined using EPA method 9 contained in 40 CFR 60, Appendix A and adopted by reference in Rule 62-297, F.A.C. The minimum requirements for source sampling and reporting, shall be in accordance with Rule 62-297, F.A.C. and 40 CFR 60, Appendix A.
[Rule 62-297, F.A.C.]

M.5. The visible emissions test shall be conducted by a certified observer and be a minimum of 180 minutes in duration. The test observation shall include the period during which the highest opacity emissions can reasonably be expected to occur
[40 CFR 60.11 and Rule 62-297.310(7), F.A.C.]

M.6. The DERM, Air Facilities Section shall be notified in writing of expected compliance test dates at least fifteen (15) days prior to compliance testing. The notification must include the following information: the date, time, and location of each test; the name and telephone number of the facility's contact person who will be responsible for coordinating the test; and the name, company and telephone number of the person conducting the test. [Rule 62-297.340(1)(i), F.A.C.]

Monitoring of Operations

M.7. The pressure drop across each baghouse shall be monitored during each compliance test, and a summary of this data shall be included in each emissions test report.
[Rule 62-297.310(8), F.A.C.]

Recordkeeping and Reporting Requirements

M.8. Reports of the required compliance tests shall be filed with the DERM Air Facilities Section as soon as practical but no later than 45 days after the last test is completed. [Rule 62-297.570(2), F.A.C.]

The compliance test report shall include the following information on the air pollution control devices and other information as necessary to make a complete report: [Rule 62-297.570(3), F.AC.]

a. The normal type and amount of fuels used and/or materials processed and the types and amounts of fuels used and/or materials processed during each test run.

b. Type of air pollution control devices installed on the emissions unit, their general condition, normal operating parameters (e.g. flow rate, pressure drops, scrubber gpm, operating current) and the actual operating parameters for each test run, and indicate how each parameter was determined.

c. Notation of any deficiencies or problems with the air pollution control equipment which occur during testing.

M.9. The permittee shall create and keep a log of the baghouse operating parameters for each baghouse. The record log shall contain, at a minimum, one fifteen-second opacity observation per shift by a plant operator, the date and time of the observation, and the person responsible for performing the observation.
[Rule 62-4.070(3), F.A.C.]

Reasonable Assurances

M.10. All reasonable precautions shall be taken to prevent emissions of unconfined particulate matter. Reasonable precautions shall include, but not be limited to, the following: **[F.A.C. Rule 62-296.310(3)]**

a. Paved parking and trafficked areas shall be maintained and kept free of particulate matter build-up.
b. Sprinkling with water shall be used as necessary on paved areas and stockpiles.
c. Facility site shall be kept free of waste concrete from the washout pit or other sources.

[Rule 62-296.320(4)(c), F.A.C.]

Subsection N. This section addresses the following emissions unit(s).

E.U. ID No.	**Brief Description**
-023	Ready Mix Plant

This emission unit consist of a 130 cubic yard/hour ready mix concrete batch plant (243.75 ton/yr). The facility has three cement storage silos with emissions controlled by dust collectors. The weigh hopper's emissions are controlled by a separate dust collector.

Source	Manufacturer	Model No.	Flow Rate (acfm)	Cloth Area (ft^2)	Air to Cloth Ratio
Cement/Flyash Silo #1	Griffin Environmental	JA-80-SA	3,000	720	4:1
Cement/Flyash Silo #2	MTW	SV-170	650	170	4:1
Cement/Flyash Silo #3	MTW	SV-170	650	170	4:1
Weigh Hopper	MTW	BFV-15	90	15	4:1

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

N.1. Permitted Capacity. The maximum hourly production of cement is 243.75 ton per hour for the ready mix plant.
[AC 13-158138 dated February 28, 1990]

N.2. Hours of Operation. This emissions unit is allowed to operate 3,120 hours/year.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

Emission Limitations and Standards

Table 1-1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

N.3. The silo(s), hopper and other storage or conveying equipment shall be controlled to the extent necessary to limit visible emissions to 20 percent opacity.
[Rule 62-296.414(1), F.A.C.]

Test Methods and Procedures

Permitting note: Table 2-1, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

N.4. Compliance with the emission limitations of Conditions N.3 shall be determined using EPA method 9 contained in 40 CFR 60, Appendix A and adopted by reference in Rule 62-297, F.A.C. The minimum requirement for source sampling and reporting, shall be in accordance with Rule 62-297, F.A.C. and 40 CFR 60, Appendix A.
[Rule 62-297, F.A.C.]

N.5. The visible emissions test shall be conducted by a certified observer and be a minimum of 180 minutes in duration. The test observation shall include the period during which the highest opacity emissions can reasonably be expected to occur
[40 CFR 60.11 and Rule 62-297.310(7), F.A.C.]

N.6. The DERM, Air Facilities Section shall be notified in writing of expected compliance test dates at least fifteen (15) days prior to compliance testing. The notification must include the following information: the date, time, and location of each test; the name and telephone number of the facility's contact person who will be responsible for coordinating the test; and the name, company and telephone number of the person conducting the test. [Rule 62-297.340(1)(i), F.A.C.]

Monitoring of Operations

N.7. The pressure drop across each baghouse shall be monitored during each compliance test, and a summary of this data shall be included in each emissions test report.
[Rule 62-297.310(8), F.A.C.]

Recordkeeping and Reporting Requirements

N.8. Reports of the required compliance tests shall be filed with the DERM Air Facilities Section as soon as practical but no later than 45 days after the last test is completed.
[Rule 62-297.570(2), F.A.C.]

The compliance test report shall include the following information on the air pollution control devices and other information as necessary to make a complete report:
[Rule 62-297.570(3), F.AC.]

a. The normal type and amount of fuels used and/or materials processed and the types and amounts of fuels used and/or materials processed during each test run.

b. Type of air pollution control devices installed on the emissions unit, their general condition, normal operating parameters (e.g. flow rate, pressure drops, scrubber gpm, operating current) and the actual operating parameters for each test run, and indicate how each parameter was determined.

c. Notation of any deficiencies or problems with the air pollution control equipment which occur during testing.

N.9. The permittee shall create and keep a log of the baghouse operating parameters for each baghouse. The record log shall contain, at a minimum, one fifteen-second opacity observation per shift by a plant operator, the date and time of the observation, and the person responsible for performing the observation.
[Rule 62-4.070(3), F.A.C.]

Reasonable Assurances

N.10. All reasonable precautions shall be taken to prevent emissions of unconfined particulate matter. Reasonable precautions shall include, but not be limited to, the following: **[F.A.C. Rule 62-296.310(3)]**

a. Paved parking and trafficked areas shall be maintained and kept free of particulate matter build-up.
b. Sprinkling with water shall be used as necessary on paved areas and stockpiles.
c. Facility site shall be kept free of waste concrete from the washout pit or other sources.

[Rule 62-296.320(4)(c), F.A.C.]

Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

August 18, 2000

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Ms. Mallika Muthiah, P.E.
Chief, Air Facilities Section
Miami-Dade County Department
of Environmental Resources Management
33 SW 2nd Avenue, Suite 900
Miami, Florida 33130-1540

Re: Comments on DRAFT Permit No. 0250020-002-AV
Tarmac America, Miami-Dade County

Dear Ms. Muthiah:

The Bureau of Air Regulation received the DRAFT Title V permit prepared by Miami-Dade Department of Environmental Resources Management (DERM) for the Tarmac-America facility in Medley. Pursuant to the public notice published on July 21, 2000, the following are our comments for your consideration regarding the draft permit:

1. Cement Kiln No. 2 is not operating in compliance with construction permit AC 13-169901, clerked on February 27, 1991 and does not comply with the Final Order dated December 7, 1990 (clerked on December 10, 1990). In particular the unit does not comply with the range of nitrogen oxides (NO_X) limits given in those documents. The limits required by these documents are not embodied in the draft permit.
2. The higher limits in the draft Title V permit are based on the Agreement dated January 30, 1998 between Tarmac and DERM that gave Tarmac reasonable amounts of time to either: 1) fix the NO_X problem and comply with the permit; 2) shut down the kiln; or, 3) operate it with adjusted NO_X limits until completion of a facility modernization project. This was a reasonable settlement of the matter that included a penalty and continuous emission monitoring requirements.
3. On February 10, 1999 we issued Permit 0250020-007-AC to Tarmac to implement a project at Kiln No. 2 to switch to indirect firing. The purpose of that project was to bring Kiln No. 2 into compliance with the Department's permit. Tarmac allowed the permit to expire without implementation and chose to pursue the modernization option.
4. Based on the subsequent DERM Permit 0250020-008-AC, issued October 21, 1999 Tarmac has until October 21, 2002 to complete the modernization project while operating Kiln No. 2 in accordance with the Agreement. This date is about 8 (eight) years after Tarmac completed the project on Kiln No. 2 for which AC 13-169901 was issued and almost 5 (five) years after the Agreement with the County was signed.

5. A compliance plan should be included in the Title V permit based on the Agreement. It should specifically provide for a date-certain of October 21, 2002 for the shutdown of Kiln No. 2 (as implied by our reading of the Agreement). It should provide no opportunities for continued operation past October 21, 2002. Rule 62-213.440(2), F.A.C., contains the requirements for compliance plans. Rule 62-213.440(2), F.A.C. should be cited for the regulatory basis for the compliance plan.

6. The draft Title V permit added petroleum coke as a fuel. The existing facility does not have a permit allowing use of petroleum coke. A separate construction permit would be required for that activity. The modernization permit allows use of petroleum coke when the new kiln is built, however the modernization is not incorporated into the draft Title V permit. Therefore this fuel should be removed from the authorized fuel slate, i.e., methods of operation.

7. Placard page, List of attachments. It was not intended for APPENDIX H-1 to be part of the permit. Delete APPENDIX H-1 from the list of attachments. APPENDIX H-1 is a document on file.

8. The permits should be signed by the Air Program Head or higher.

9. Use new RMP language:

   4. Prevention of Accidental Releases (Section 112(r) of CAA).

      a. The permittee shall submit its Risk Management Plan (RMP) to the Chemical Emergency Preparedness and Prevention Office (CEPPO) RMP Reporting Center when, and if, such requirement becomes applicable; and,

      b. The permittee shall submit to the permitting authority Title V certification forms or a compliance schedule in accordance with Rule 62-213.440(2), F.A.C. [40 CFR 68]

10. Recommend changing all references of "particulate emissions" to "particulate matter emissions".

11. Subsection III.A. Good description.

12. Conditions A.5., A.6., B.7., and B.8. Remove all "Emission Factor" references, these are emission limits.

13. Condition A.31. and B.36. Delete the AOR requirement here because it's already contained in APPENDIX TV-3.

14. You reference APPENDIX C, 40 CFR 60, Subpart Y, Coal Preparation Plants as a part of the permit on the placard page but, it's not referenced in Subsection C. for the coal handling sources Recommend adding APPENDIX C, 40 CFR 60, Subpart Y to Condition C.1. Also, recommend adding to the permitting notes where appropriate in Subsection C.

15. All references to "Title V DRAFT Permit" (cover page, headers, etc.) should be changed to "Title V Revised DRAFT Permit".

16. Consider removing Condition II.5. since no unregulated units are included in this permit.

17. Is Condition III.A.10. missing? If not, please renumber remainder of section.

18. In the Test Methods tables for Kilns 1, 2, and 3, are you trying to impose Methods 5 and 8 for sulfuric acid mist? Consider adding another line to the tables.
19. Conditions III.A.14. and III.B.16. require an annual test for CO and VOC. These are not reflected in the tables or in the following conditions that describe the test methods.
20. All references to sulfur percentage limitations for coal and oil should be specified as "by weight".
21. Condition III.B.12. needs a rule citation.
22. Section III, Subsections C. and D. contain tables listing air-to-cloth ratios for the baghouses. Several of these ratios appear to be incorrect. Please check all of them for accuracy.
23. Conditions III.C.5. and D.6. have allowable emissions for the coal handling system in terms of gr/ACF, while the limits for the Slag Dryer are in terms of gr/dscf. Are these reflective of the limits in the respective PSD permits? Also, there is a statement that the standard may be modified if tests show an air-to-cloth ratio of 4.5:1 or larger, and the filtering area is unable to meet the standard of 0.02 gr/dscf. This is not an acceptable condition for a Title V permit. Changes to the standard would require a construction permit and a Title V permit revision.
24. Condition III.D.6. has a PM limit for the slag dryer of 4.8 lbs/hr and 7.44 TPY. Is this from the PSD permit? (4.8 lbs/hr X 8760 hours / 2000 lbs/ton = 21.02 TPY)
25. Correct typo on Page 7 in the permitting note PSD-FIL-142.
26. Condition A.6. Add footnotes to the corresponding limits shown in the table.
27. Condition B.7. The reference to "***See Permit" is ambiguous.
28. Condition B.8. Make appropriate edits to the "****" footnote for better understanding.

Additional comments pertaining to formatting and corrected air-to-cloth ratios are being sent in a marked-up copy of the revised Draft permit. Thank you for providing us with the opportunity to comment. If you have any questions, please contact Scott M. Sheplak at 850/921-9532 or A. A. Linero at 850/921-9523.

Sincerely,

CH Fancy

C. H. Fancy, P.E., Chief
Bureau of Air Regulation

Cc: H. Patrick Wong
J. Goldman, DEP SED

SUMMARY OF TARMAC KILN NO. 2 COMPLIANCE

1982. Kiln No. 2 and probably Kiln No. 1 shut down due to low demand. Each has capacity of roughly 25 tons per hour by wet process and fired on natural gas and No. 6 fuel oil.

August 1989. Received application to convert Kiln No. 2 to coal firing. **KBN proposed NO_X limit of 169 lb/hr and 6.77 lb/ton of clinker.**

January 1990. Kiln No. 2 scheduled to restart on natural gas and fuel oil. This may have triggered PSD if Tarmac failed to conduct routine repair, maintenance, and replacement when the kiln was shut down. Compare for example with Piney Point.

February 1991. Permit issued for Kiln 2 conversion project in accordance with a Stipulation for Dismissal of a Petition. **NO_X limits were 114 lb/hr and 4.55 lb/ton** clinker with upward adjustment allowed to 169 lb/hr and 6.77 lb/ton clinker based on tests and with Public Notice.

March 1992. Tarmac advised that Kiln 2 had not yet restarted on gas and fuel. Looks like it was down for 10 years. They asked for an extension for the coal conversion project.

March 1994. Submitted Certificate of Completion on coal conversion.

June 1994. Submitted tests showing 417 lb/hr of NO_X.

January 1997. Submitted almost three years of data. NO_X emissions ranged from 177 to 450 lb/hr and from 8 to 21.5 lb/ton of clinker.

April 1997. Referred the matter to Miami-Dade DERM.

June 1997. DERM issued Notice of Violation.

February 1998. Consent Order. Rinker pays \$200,000 or \$150,000 plus continuous monitoring. Tarmac must either: stop burning coal in Kiln 2 and go back to gas and fuel oil by May 1, 1998; apply to convert Kiln 2 to indirect firing and actually do it within 12 months of receiving a permit; or apply to modernize to a dry process and actually do it within 36 months after "receiving the required permits." In the meantime, Kiln 2 can emit 240 lb NO_X/hr.

February 1999. Tarmac received permit to convert Kiln 2 to indirect firing. Permit lapsed.

October 1999. Tarmac received **AC** permit to modernize facility. Permit will expire October 2002.

July 2000. DERM issues draft Title V Permit. It includes the defunct Kiln 1. Limits for Kiln 2 are given as 240 lb NO_X/hr versus the BACT limit of 114 lb/hr (to 169 lb/hr). Appears to allow Kiln 2 to operate in perpetuity with no federally enforceable limit or shutdown requirement.

August 2000. We submit comments to DERM stressing need to have date certain for Kiln 2 shutdown. They advised that Tarmac interprets "the required permits" as including local building permit. They had not even applied for this permit as of August 31. That means 36-month clock has not even started.

September 2000. We advised DERM that Kiln 1 should not be permitted. DERM agrees. DERM advises they will give Tarmac until October 2002 to comply with our limits on Kiln 2. The project to comply with BACT limits would require conversion to indirect firing. They should have done this already by the permit we issued.

Conclusion. I don't see how this permit can be issued without reference to and early adherence to our BACT limits. Expect EPA objection and possible enforcement.

OK
CMR 9/6/00

On the date that this compliance plan was drafted (September 7, 2000) Cement Kiln No. 2 was not operating in compliance with the federally enforceable emission nitrogen oxides (NO_X) emission limits given in Florida DEP Construction Permit AC 13-169901.

The applicable limits in accordance with AC 13-169901 are based a determination of Best Available Control Technology and a PSD Permit dated February 25, 1991. The applicable values in the permit are 113.8 pounds per hour (lb/hr) and 4.55 pounds per ton of clinker.

The Agreement between Tarmac and Miami-Dade DERM dated February 2, 1998 is incorporated into this compliance plan. By this agreement, the emission limit is 240 lb/hr while Tarmac pursues a number of options including modernization of the facility to a lower-emitting dry process.

In October 1999, Tarmac received from DERM an **Air Construction** permit for the modernization. Because Tarmac has not applied for all of the "required permits" (including **local building permits**) to modernize the facility it is not possible to set a specific date by which Kiln 2 must comply with the original emission limits of Permit AC 13-169901 (or shut down).

In order to enforce the requirements of a proper PSD permit and BACT determination in a timely manner, DERM, Florida DEP, and EPA require that Kiln 2 demonstrate compliance with the NO_X emission limit given in AC 13-169901 or shut down by October 31, 2001.

Alternatively, Tarmac may demonstrate that it will in fact complete the facility modernization by October 31, 2002, in which case Kiln 2 may continue to operate at the temporary limit of 240 lb/hr until October 31, 2002.

Kiln 1 was shut down in 1982. Tarmac must obtain a PSD permit and Title V Operation Permit modification prior to operation of Kiln 1.

7. Compliance Plan.

a. NOx Emission Limit Compliance

1. On the date that this compliance plan was drafted (September 7, 2000) Cement Kiln No. 2 was not operating in compliance with the federally enforceable emission nitrogen oxides (NO_X) emission limits given in Florida DEP Construction Permit AC 13-169901 dated February 25, 1991.
2. The applicable limits in accordance with Permit AC 13-169901 are based on a determination of Best Available Control Technology and a PSD Permit dated February 25, 1991. The applicable values in the permit are 113.8 pounds of NO_X per hour (lb/hr) and 4.55 pounds per ton of clinker.
3. A Consent Agreement between Tarmac and Miami-Dade County DERM signed on February 2, 1998 is incorporated into this compliance plan. By this agreement, the emission limit is 220 lb/hr (monthly average) and 240 lb/hr (instantaneous) while Tarmac pursues options including the following:.

   i. To facilitate compliance with the NO_X limit, the previously-issued permit 0250020-008-AC to convert Kiln 2 to indirect firing is hereby extended until October 31, 2001.

   ii. Alternatively, Tarmac may demonstrate that it will in fact complete the facility modernization by October 31, 2002, in which case Kiln 2 may continue to operate at the temporary limit of 220 lb/hr (monthly average) and 240 lb/hr (instantaneous) until October 31, 2002. (In October 1999, Tarmac received from DERM Air Construction Permit 0250020-008-AC for the modernization project.)

b. Kiln No. 1.

Kiln No. 1 and Cooler No. 1 have been shutdown since 1982, a period greater than 10 years. In accordance with Rule 62-210.300(2)(a)(3)(c), F.A.C., the reactivation of the units shall require a construction permit pursuant to Rule 62-210.300(1), F.A.C., and New Source Review for the Prevention of Significant Deterioration pursuant to Rule 62-212.400(5), F.A.C.

[Rule 62-213.440(2)]

What DERM included

MIAMI-DADE COUNTY, FLORIDA

MIAMI-DADE

DERM

ENVIRONMENTAL RESOURCES MANAGEMENT
AIR QUALITY MANAGEMENT DIVISION
33 S.W. 2nd AVENUE
SUITE 900
MIAMI, FLORIDA 33130-1540
TELEPHONE: (305) 372-6925
FAX: (305) 372-6954

December 13, 2000

CERTIFIED MAIL 7000 060027 7981 5833
Return Receipt Requested

Mr. Hardy Johnson
President, Florida Division
Tarmac America, Inc.
455 Fairway Drive
Deerfield Drive
Fl, 33441

SUBJECT: Air Application-Construction Permit Modification - 0250020

Dear Mr. Johnson:

The department is in receipt of the application for a construction permit dated November 2000. Staff members identified items requiring clarification following a thorough review of the application. In an effort to resolve these issues Courtney Pitters and Ray Gordon of my staff, along with Al Linero of FDEP met with Scott Quass, Environmental Manager. We now have a better understanding of the modifications to the previous construction permit and have reason to believe that these can be incorporated into the permit without triggering PSD review by the Florida DEP. However, we require further documentation of some of these changes in order to provide reasonable assurance per Rule 62-4.070, Standards for Issuing and Denying Permits. Therefore the application is incomplete pending receipt of the following information or agreement on the following issues.

1. Please provide an explanation of how annual sulfur dioxide emissions will be maintained at an annual level equal to or less than given in the present permit without any additional controls. Sulfur dioxide emissions are directly related to annual clinker production, which will be over 1.6 million instead of 1.4 million as presently allowed. (Rules 62-4.070, and 62-212.400, F.A.C., to net out of PSD).

2. Please provide the particulars of the Fuller Low NOx In-line Calciner and the Polysius Multi-stage Calciner that are being considered for the project, specifically addressing how these units will meet the revised long-term nitrogen oxides emissions limit of 2.38 pounds per ton of clinker. (Rules 62-4.070, and 62-212.400, F.A.C. to net out of PSD)

3. Provide similar information from both companies regarding the main kiln burner and the calciner burners. (Rules 62-4.070 and 62-212.400, F.A.C. to net out of PSD)

4. We agree that the MACT rules for greenfield plants do not apply to the Tarmac project. Rather the MACT for new kilns at brownfield sites applies. Therefore, a VOC (THC)

emission limit of 50 ppm does not apply to this project. (40CFR63, Subpart LLL adopted in Rule 62-204.800, F.A.C.)

5. The department finds that the THC (VOC) monitor is necessary to demonstrate compliance with the emissions limit of 0.19 pounds per ton of clinker. We believe the need to monitor continuous compliance with the lower value is constituted by the fact that the emissions limit is substantially less than the limit for a greenfield plant, which also requires THC (VOC) monitoring. Additionally, the Florida DEP has advised us that several plants are having difficulty meeting VOC limits and they are requiring THC (VOC) monitors at all new kilns, whether or not they are at greenfield sites. (Rule 62-4.070, F.A.C.)

6. The Florida DEP has advised us that the permit modification should be public-noticed. Significant modifications including changes in production rates, emissions, and operating hours constitute this as a separate permitting action from the previous one and because all construction permit Intents to Issue must be noticed per Florida DEP, we will require you to notice our Intent.

If you have any questions regarding this matter, please contact Courtney Pitters at 305/372-6925. You may also contact Al Linero at 850/921-9523 regarding the Florida DEP public notice and monitoring requirements.

Sincerely

Mallika Muthiah

Mallika Muthiah, P.E., Chief
Air Facilities Section
Air Quality Management Division

Copy: Scott Quass, Environmental Management, Tarmac America, Inc.
Al Linero, Florida Department of Environmental Protection

Department of
Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

February 10, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Scott Quaas
Environmental Manager
Tarmac America Inc.
455 Fairway Drive
Deerfield Beach, Florida 33441

Re: DEP File No. 0250020-007-AC (PSD-FL-142A)
Tarmac Pennsuco Portland Cement Plant, Miami-Dade County
Modification of Coal Conversion Project - Kiln No. 2

Dear Mr. Quaas:

The Department reviewed the application received on February 18, 1998 by the Miami-Dade Department of Environmental Resources Management (DERM). By agreement with DERM, the Department is acting on your request.

Kiln No. 2 was previously converted from gas to *direct-fired* coal burning. Tarmac proposes to switch to *indirect firing* for the purpose of reducing nitrogen oxides emissions. Primary air will be introduced to the kiln independently of the coal or secondary air. Secondary air will continue to be drawn from the clinker cooler. This greater control over the primary air to the kiln is expected by Tarmac to result in substantial NO_X reductions for the purpose of complying with the original permit conditions applicable to the conversion of Kiln No. 2 to coal burning.

A new pulverized coal bin will be added downstream of the coal mill. Air from the coal mill will be exhausted through a new baghouse serving the coal bin. Pulverized coal from the coal bin and a small portion of air will be conveyed to the kiln, separately from the primary combustion air.

The existing coal handling system for the cement plant will be utilized for the Kiln No. 2 indirect system, including the coal mill. New screw feeders, weigh feeders, coal blower, and burner pipe will also be installed for the proposed modification. Particulate emissions from the pulverized coal bin will be controlled by a new baghouse.

The existing construction permit numbered AC13-169901 (PSD-FL-142) is hereby modified (amended) as follows:

Permit Expiration: Permit PSD-FL-142 (AC13-169901) is hereby extended to July 1, 2000.

NEW SPECIFIC CONDITIONS

16. Nitrogen Oxides Emissions: Nitrogen oxides emissions shall be controlled by combustion controls including implementation of indirect-firing. **[Tarmac - DERM Agreement signed January 30 and February 2, 1998]**

17. Construction: Construction related to the implementation of indirect firing, including the new coal bin and baghouse, shall be completed within 12 months after issuance of this permit modification. **[Tarmac - DERM Agreement signed January 30 and February 2, 1998]**

18. General Visible Emissions Standard: Except for emissions units that are subject to a particulate matter or opacity limit set forth or established by rule and reflected by conditions in this permit, no person shall cause, let, permit, suffer, or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density if which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20% opacity). The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C. Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C. **[Rule 62-296.320(4)(b)1, F.A.C.]**

19. Coal Bin and Baghouse Emissions: The maximum permitted allowable particulate emission rate from the new coal bin and baghouse shall not exceed 0.94 pounds per hour and 3.7 tons per year. **[Applicant, Rule 62-4.070(3) F.A.C.]**

20. Coal Bin and Baghouse Opacity: The permittee may demonstrate compliance with the allowable permitted emission rate by adhering to an opacity limit of 5% or less in lieu of particulate stack tests. If the Department has reason to believe that the particulate weight emission standard applicable to such an emissions unit is not being met, it may require that compliance be demonstrated by the test method specified in the applicable rule. **[Rule 62-297.620(4), F.A.C.]**

21. Test Methods: Compliance with the allowable emission limiting standards listed in Specific Condition 20 and 21 shall be determined by using the following reference methods as described in 40 CFR 60, Appendix A (1997, version) adopted by reference in Chapter 62-204, F.A.C.

    Method 9 Visual Determination of the Opacity of Emissions from Stationary Sources initially and annually thereafter.

    Method 5 Determination of Particulate Matter Emissions from Stationary Sources (if required).

This permit modification is issued pursuant to Chapter 403, Florida Statutes. Any party to this order (permit modification) has the right to seek judicial review of the permit 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.

A copy of this letter shall be filed with the referenced permit and shall become part of the permit.

Sincerely,

Howard L. Rhodes

Howard L. Rhodes, Director
Division of Air Resources
Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this PERMIT MODIFICATION was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 2-12-99 to the person(s) listed:

Scott Quaas, Tarmac*
Hardy Johnson, Tarmac
Gregg Worley, EPA
Isidore Goldman, DEP SED
H. Patrick Wong, DERM
Donna Edwards, DERM
David Buff, P.E., Golder Associates

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) 2-12-99
(Date)

FINAL DETERMINATION

Tarmac America Inc.
Portland Cement Manufacturing Facility
Modification of Kiln No. 2 Coal Conversion Project

Miami-Dade County

DEP File No. 0250020-007-AC (PSD-FL-142A)

An Intent to Issue an air construction permit, authorizing the modification of Kiln No.2 at the Tarmac America Inc facility was distributed on December 22, 1998. This facility is located at 455 Fairway Drive, Deerfield Beach in Miami, Dade County, Florida.

The Public Notice of Intent to Issue Air Construction Permit was published in the Miami Daily Business Review on January 13, 1999.

No comments were received as a result of the public notice.

The final action of the Department will be to issue the permit as noticed.

P 265 659 421

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

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

Sent to Scott Quaas	
Street & Number Jarmac America	
Post Office, State, & ZIP Code Deerfield Bch, FL	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 2-12-99 0250020-007-AC P50-F1-142A	

PS Form **3800**, April 1995

SENDER:

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

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

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

Consult postmaster for fee.

3. Article Addressed to:
Mr. Scott Quaas, Env. Mgr.
Jarmac America, Inc
455 Fairway Drive
Deerfield Bch, Fl
33441

4a. Article Number P265 659 421

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

7. Date of Delivery 2/16/99

5. Received By: *(Print Name)*

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

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

PS Form **3811**, December 1994 102595-97-B-0179 Domestic Return Receipt

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

Memorandum

Florida Department of
Environmental Protection

TO: Howard L. Rhodes

THRU: Clair Fancy
Al Linero aaj 2/9

FROM: Teresa Heron T.H.

DATE: February 9, 1999

SUBJECT: Tarmac Pennsucco Cement Plant
Kiln No. 2 Coal Conversion Project Modification
DEP File 0250020-007-AC (PSD-FL-142A)

Attached is a construction permit modification for Kiln No. 2 at the Tarmac's Portland Cement Manufacturing facility in Medley, Miami-Dade County. This permit modification addresses revisions to Permit PSD-FL-142 (AC13-169901) that allowed conversion from gas to coal burning. The modification is to install a new coal bin, baghouse, and ducting to convert Kiln No. 2 from direct to indirect firing.

Conversion to indirect firing is one of three options available to Tarmac in order to comply with an Agreement with Miami-Dade DERM. The Agreement required payment of approximately $200,000 as well as achievement of the permit NO_X limits by indirect firing, conversion to dry pyroprocessing, or shutdown of Kiln No. 2.

Tarmac also submitted an application to convert to dry pyroprocessing. DERM is acting on the non-PSD request with the Department's assistance on MACT requirements. Tarmac is pursuing permitting of two options and has not made a final determination on which one will be implemented.

We recommend your approval and signature.

AAL/th

Attachments

RECEIVED

FEB 08 1999

BUREAU OF
AIR REGULATION

Tarmac

Tarmac America, Inc.
455 Fairway Drive
Deerfield Beach, FL 33441
(954) 481-2800
Fax (954) 421-0296
URL www.tarmacamerica.com

Environmental Department
Direct line (954) 425-4167
Direct fax (954) 480-9352

CERTIFIED MAIL
Z 256 490 202

4 February 1999

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

RE: **Proof of Publication**
DEP File No. 0250020-007-AC (PSD-FL-142A)
Modification of Coal Conversion Project

Dear Mr. Fancy,

Please find enclosed a newspaper affidavit regarding the publication of the Public Notice of Intent to Issue Air Construction Permit Modification. If any further information is necessary, please feel free to call.

Sincerely,

Julie Bethke

Julie Bethke
Assistant Environmental Administrator
Tarmac America, Inc.

EPA
SED
Dade Co.

MIAMI DAILY BUSINESS REVIEW

Published Daily except Saturday, Sunday and
Legal Holidays
Miami, Dade County, Florida.

STATE OF FLORIDA
COUNTY OF DADE:

Before the undersigned authority personally appeared Octelma V. Ferbeyre, who on oath says that she is the Supervisor, Legal Notices of the Miami Daily Business Review f/k/a Miami Review, a daily (except Saturday, Sunday and Legal Holidays) newspaper, published at Miami in Dade County, Florida; that the attached copy of advertisement, being a Legal Advertisement of Notice in the matter of

NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION DEP FILE NO. 0250020-007-AC (PSD-FL-142A) TARMAC AMERICA INC.

in the XXXXX Court,

was published in said newspaper in the issues of
Jan 13, 1999

Affiant further says that the said Miami Daily Business Review is a newspaper published at Miami in said Dade County, Florida, and that the said newspaper has heretofore been continuously published in said Dade County, Florida, each day (except Saturday, Sunday and Legal Holidays) and has been entered as second class mail matter at the post office in Miami in said Dade County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that she has neither paid nor promised any person, ~~firm~~ or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

[signature]

Sworn to and subscribed before me this 13 day of January, A.D. 1999

[signature]

(SEAL)

Octelma V. Ferbeyre personally known to me.

OFFICIAL NOTARY SEAL
MARIELA ROMERO
COMMISSION NUMBER
CC777419
MY COMMISSION EXPIRES
SEPT 22,2002
NOTARY PUBLIC STATE OF FLORIDA

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION
STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEP FILE NO. 0250020-007-AC (PSD-FL-142A)
TARMAC AMERICA INC. PORTLAND CEMENT MANUFACTURING FACILITY
MODIFICATION OF KILN NO. 2 COAL CONVERSION PROJECT
MIAMI-DADE COUNTY

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit modification to Tarmac America Inc. The permit is to modify the previously approved natural gas to coal conversion project for Kiln No. 2 at Tarmac's portland cement manufacturing facility in Medley, Miami-Dade County. A Best Available Control Technology (BACT) determination was not required pursuant to Rule 62-212.400, F.A.C. The applicant's name and address are Tarmac America, Inc. 455 Fairway Drive, Deerfield Beach, Florida 33441.

The modification includes installation of a new coal bin, baghouse, and ducting to support indirect firing to reduce nitrogen oxides emissions from Kiln No. 2. Kiln No. 2 already burns coal through direct firing and Tarmac is required by an agreement with the Miami-Dade Department of Environmental Resources Management to implement this project modification.

The Department will issue the FINAL permit modification 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 14 (fourteen) days from the date of publication of "Public Notice of Intent to Issue Air Construction Permit Modification." 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 FINAL permit modification 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 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 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, as well as the rules and statutes which entitle the petitioner to relief; and (f) A demand for relief.

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.

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	Miami-Dade Department of Environmental Resources Mgt.	Department of Environmental Protection
Bureau of Air Regulation	Air Quality Division	Southeast District Office
111 S. Magnolia Drive, Suite 4	33 SW Second Avenue, Suite 900	400 North Congress Avenue
Tallahassee, Florida, 32301	Miami, Florida 33130-1540	West Palm Beach, Florida 33401
Telephone: 850/488-0114	Telephone: 305/372-6925	Telephone: 407/681-6600
Fax: 850/922-6979	Fax: 305/372-6954	Fax: 407/681-6755

The complete project file includes the application, Draft Permit Modification, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, New Resource Review Section at 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301, or call 850/488-0114, for additional information.

1/13 99-4-011367M

Department of
Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

December 21, 1998

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Scott Quaas, Environmental Manager
Tarmac America, Inc.
455 Fairway Drive
Deerfield Beach, Florida 33441

Re: DEP File No. 0250020-007-AC (PSD-FL-142A)
Modification of Coal Conversion Project

Dear Mr. Quaas:

Enclosed is one copy of the Draft Air Construction Permit Modification for Tarmac America's coal conversion project at 11000 NW 121 Way, Medley, Miami-Dade County. The Department's Intent to Issue Air Construction Permit Modification, the DRAFT Permit Modification, and the "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION" are also included.

The "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION" must be published as soon as possible in a newspaper of general circulation in the area affected (NW Dade County). Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within 7 (seven) days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

Please note that Tarmac is required to implement this project in accordance with its Agreement with the Miami-Dade Department of Environmental Resources Management (DERM). This permit modification was already delayed largely by the time it took Tarmac to respond to the Department's Request for Additional Information in March as well as to the reminder sent to Tarmac in September. We urge the prompt publication of the Notice, followed by implementation of the project to comply with both the Agreement and the Department's BACT Determination.

Please submit any written comments you wish to have considered concerning the Department's proposed action to A. A. Linero, P.E., Administrator, New Source Review Section at the above letterhead address. If you have any questions, please contact Ms. Teresa Heron at 850/921-9529 or Mr. Linero at 850/921-9523.

Sincerely,

C. H. Fancy, P.E., Chief,
Bureau of Air Regulation

CHF/th

Enclosures

In the Matter of an
Application for Permit Modification by:

Tarmac America, Inc.
1151 Azalea Garden Road
Norfolk, VA 23502
/

DEP File No. 0250020-007-AC (PSD-FL-142A)
Portland Cement Manufacturing Plant
Modification of Coal Conversion Project
Dade County

INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit modification (copy of DRAFT Permit Modification attached) for the proposed permit revisions, detailed in the application specified above, for the reasons stated below.

The applicant, Tarmac America Inc, applied on February 18, 1998 to the Miami-Dade Department of Environmental Resources Management (DERM) for modification of its existing air construction permit for the conversion of Kiln No. 2 to coal burning at the Tarmac facility in Medley, Miami-Dade County. The request is to install further equipment and perform modifications to accomplish the approved coal burning by indirect firing. By agreement with DERM, the Department is acting on this request.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. The Department has determined that a permit modification is required to perform the described work at Tarmac's facility.

The Department intends to issue this air construction permit modification based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1., F.A.C., you (the applicant) are required to publish at your own expense the enclosed "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION". The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. 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 Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax 850/ 922-6979). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in section 50.051, F.S. to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the FINAL Permit Modification, in accordance with the conditions of the enclosed DRAFT Permit Modification 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 DRAFT Permit Modification issuance action for a period of 14 (fourteen) days from the date of publication of "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION." Written comments should be provided to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 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 DRAFT Permit Modification and require, if applicable, another Public Notice.

The Department will issue the permit modification 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 for this action.

A person whose substantial interests are affected by the Department's 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 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, as well as the rules and statutes which entitle the petitioner to relief; and (f) A demand for relief.

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.

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.

Executed in Tallahassee, Florida.

C. H. Fancy
C. H. Fancy, P.E., Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION (including the PUBLIC NOTICE, and the DRAFT Permit Modification) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 12-22-98 to the person(s) listed:

Scott Quaas, Tarmac*
Hardy Johnson, Tarmac
Gregg Worley, EPA
Isidore Goldman, SED
H. Patrick Wong, DERM
Donna Edwards, DERM
David Buff, P.E., Golder Associates

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.

[signature] 12-22-98
(Clerk) (Date)

Z 333 612 576

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

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

Sent to Scott Quass	
Street & Number Iarmac America	
Post Office, State, & ZIP Code Deerfield Bch. Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 0250020-007-AC P5D-F1-142A	12-22-98

PS Form **3800**, April 1995

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

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

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

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

Consult postmaster for fee.

3. Article Addressed to:
Mr. Scott Quass, EM
IARMAC America
455 Fairway Dr.
Deerfield Bch, Fl
33441

4a. Article Number
Z 333 612 576

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

7. Date of Delivery

5. Received By: *(Print Name)*

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 102595-97-B-0179 Domestic Return Receipt

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File No. 0250020-007-AC (PSD-FL-142A)

Tarmac America Inc.
Portland Cement Manufacturing Facility
Modification of Kiln No. 2 Coal Conversion Project

Miami-Dade County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit modification to Tarmac America Inc. The permit is to modify the previously approved natural gas to coal conversion project for Kiln No. 2 at Tarmac's portland cement manufacturing facility in Medley, Miami-Dade County. A Best Available Control Technology (BACT) determination was not required pursuant to Rule 62-212.400, F.A.C. The applicant's name and address are Tarmac America, Inc. 455 Fairway Drive, Deerfield Beach, Florida 33441.

The modification includes installation of a new coal bin, baghouse, and ducting to support indirect firing to reduce nitrogen oxides emissions from Kiln No. 2. Kiln No. 2 already burns coal through direct firing and Tarmac is required by an agreement with the Miami-Dade Department of Environmental Resources Management to implement this project modification.

The Department will issue the FINAL permit modification 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 14 (fourteen) days from the date of publication of "Public Notice of Intent to Issue Air Construction Permit Modification." 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 FINAL permit modification 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 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 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, as well as the rules and statutes which entitle the petitioner to relief; and (f) A demand for relief.

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.

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	Miami-Dade Department of Environmental Resources Mgt.	Department of Environmental Protection
Bureau of Air Regulation	Air Quality Division	Southeast District Office
111 S. Magnolia Drive, Suite 4	33 SW Second Avenue, Suite 900	400 North Congress Avenue
Tallahassee, Florida, 32301	Miami, Florida 33130-1540	West Palm Beach, Florida 33401
Telephone: 850/488-0114	Telephone: 305/372-6925	Telephone: 407/681-6600
Fax: 850/922-6979	Fax: 305/372-6954	Fax: 407/681-6755

The complete project file includes the application, Draft Permit Modification, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, New Resource Review Section at 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301, or call 850/488-0114, for additional information.

January XX, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Scott Quaas
Environmental Manager
Tarmac America Inc.
455 Fairway Drive
Deerfield Beach, Florida 33441

Re: DEP File No. 0250020-007-AC (PSD-FL-142A)
Tarmac Pennsuco Portland Cement Plant, Miami-Dade County
Modification of Coal Conversion Project - Kiln No. 2

Dear Mr. Quaas:

The Department reviewed the application received on February 18, 1998 by the Miami-Dade Department of Environmental Resources Management (DERM). By agreement with DERM, the Department is acting on your request.

Kiln No. 2 was previously converted from gas to *direct-fired* coal burning. Tarmac proposes to switch to *indirect firing* for the purpose of reducing nitrogen oxides emissions. Primary air will be introduced to the kiln independently of the coal or secondary air. Secondary air will continue to be drawn from the clinker cooler. This greater control over the primary air to the kiln is expected by Tarmac to result in substantial NO_X reductions for the purpose of complying with the original permit conditions applicable to the conversion of Kiln No. 2 to coal burning.

A new pulverized coal bin will be added downstream of the coal mill. Air from the coal mill will be exhausted through a new baghouse serving the coal bin. Pulverized coal from the coal bin and a small portion of air will be conveyed to the kiln, separately from the primary combustion air.

The existing coal handling system for the cement plant will be utilized for the Kiln No. 2 indirect system, including the coal mill. New screw feeders, weigh feeders, coal blower, and burner pipe will also be installed for the proposed modification. Particulate emissions from the pulverized coal bin will be controlled by a new baghouse.

The existing construction permit numbered AC13-169901 (PSD-FL-142) is hereby modified (amended) as follows:

<u>Permit Expiration</u>: Permit PSD-FL-142 (AC13-169901) is hereby extended to July 1, 2000.

<u>NEW SPECIFIC CONDITIONS</u>

16. <u>Nitrogen Oxides Emissions</u>: Nitrogen oxides emissions shall be controlled by combustion controls including implementation of indirect-firing. **[Tarmac - DERM Agreement signed January 30 and February 2, 1998]**

17. Construction: Construction related to the implementation of indirect firing, including the new coal bin and baghouse, shall be completed within 12 months after issuance of this permit modification. **[Tarmac - DERM Agreement signed January 30 and February 2, 1998]**

18. General Visible Emissions Standard: Except for emissions units that are subject to a particulate matter or opacity limit set forth or established by rule and reflected by conditions in this permit, no person shall cause, let, permit, suffer, or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density if which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20% opacity). The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C. Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C. **[Rule 62-296.320(4)(b)1, F.A.C.]**

19. Coal Bin and Baghouse Emissions: The maximum permitted allowable particulate emission rate from the new coal bin and baghouse shall not exceed 0.94 pounds per hour and 3.7 tons per year. **[Applicant, Rule 62-4.070(3) F.A.C.]**

20. Coal Bin and Baghouse Opacity: The permittee may demonstrate compliance with the allowable permitted emission rate by adhering to an opacity limit of 5% or less in lieu of particulate stack tests. If the Department has reason to believe that the particulate weight emission standard applicable to such an emissions unit is not being met, it may require that compliance be demonstrated by the test method specified in the applicable rule. **[Rule 62-297.620(4), F.A.C.]**

21. Test Methods: Compliance with the allowable emission limiting standards listed in Specific Condition 20 and 21 shall be determined by using the following reference methods as described in 40 CFR 60, Appendix A (1997, version) adopted by reference in Chapter 62-204, F.A.C.

    Method 9 Visual Determination of the Opacity of Emissions from Stationary Sources initially and annually thereafter.

    Method 5 Determination of Particulate Matter Emissions from Stationary Sources (if required).

This permit modification is issued pursuant to Chapter 403, Florida Statutes. Any party to this order (permit modification) has the right to seek judicial review of the permit 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.

A copy of this letter shall be filed with the referenced permit and shall become part of the permit.

Sincerely,

Howard L. Rhodes, Director
Division of Air Resources
Management

CERTIFICATE OF SERVICE

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

Scott Quaas, Tarmac*
Hardy Johnson, Tarmac
Gregg Worley, EPA
Isidore Goldman, DEP SED
H. Patrick Wong, DERM
Donna Edwards, DERM
David Buff, P.E., Golder Associates

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) (Date)

Memorandum

Florida Department of
Environmental Protection

TO: Clair Fancy

THRU: Al Linero 12/21

FROM: Susan DeVore-Fillmore

DATE: December 17, 1998

SUBJECT: Tarmac Pennsucco Cement Plant
Kiln No. 2 Coal Conversion Project Modification
DEP File 0250020-007-AC (PSD-FL-142A)

Attached is a construction permit modification for Kiln No. 2 at the Tarmac's Portland Cement Manufacturing facility in Medley, Miami-Dade County. This permit modification addresses revisions to Permit PSD-FL-142 (AC13-169901) that allowed conversion from gas to coal burning. The modification is to install a new coal bin, baghouse, and ducting to convert Kiln No. 2 from direct to indirect firing.

Conversion to indirect firing is one of three options available to Tarmac in order to comply with an Agreement with Miami-Dade DERM. The Agreement required payment of approximately $200,000 as well as achievement of the permit NO_X limits by indirect firing, conversion to dry pyroprocessing, or shutdown of Kiln No. 2.

Tarmac also submitted an application to convert to dry pyroprocessing. DERM is acting on the non-PSD request with the Department's assistance on MACT requirements. Tarmac is pursuing permitting of two options and has not made a final determination on which one will be implemented.

I recommend your approval and signature.

AAL/sd

Attachments

Golder Associates Inc.

6241 NW 23rd Street, Suite 500
Gainesville, FL 32653-1500
Telephone (352) 336-5600
Fax (352) 336-6603

Golder Associates

November 6, 1998

9651002

Administrator, New Source Review Section
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Fl 32399-2400

RECEIVED

NOV 09 1998

BUREAU OF
AIR REGULATION

Attention: Mr. A. A. Linero, P.E.

RE: KILN NO. 2 INDIRECT FIRING MODIFICATION
TARMAC FLORIDA, INC.
PENNSUCO PLANT

Dear Mr. Linero:

Tarmac Florida, Inc., has received the Department's letters dated March 5, 1998 and September 21,1998, regarding the conversion of Kiln No. 2 at Pennsuco to indirect firing. This correspondence is in response to those letters.

Tarmac is currently under a consent order with the Dade County Department of Environmental Resources Management (DERM). The consent order requires compliance with the existing Kiln No. 2 permit limit for NO_x , or that the kiln cease burning coal.

The Department's letter dated March 5 alludes to a new construction permit for this conversion ,since the expiration date of permit no. AC13-169901 has passed. However, we believe that permit no. AC13-169901 is still in effect. This permit was extended by the Department until May 31, 1996 (see attached correspondence). According to Rule 2-213.420(1)(a)4, the expiration dates of all air construction permits for Title V sources that expire between September 1, 1995 and November 1, 1996, are extended to the later of November 1, 1996, or 240 days after commencing operations. Since the subject permit expiration date of May 31, 1996, was between these two dates, and the kiln conversion has not yet been completed (commenced operations), the permit is automatically extended until 240 days after commencing operations under the indirect firing conversion. Therefore, the original air construction permit should still be in effect. The Department can simply amend the original construction permit, as necessary, to require performance tests after the retrofit is completed.

In so far as providing additional information regarding complete pollutant information, drawings, and a detailed description of the work to be performed, this is also considered unnecessary. All pollutant allowable emission rates and maximum emissions reflected in the current construction permit and previous application remain unchanged. In this regard, it is unnecessary to once again provide this same information. All that was being addressed in Tarmac's February submittal was a new coal bin and baghouse, plus the physical change to indirect firing on Kiln No. 2.

The physical change to indirect firing is portrayed in the attached flow diagrams. In the present direct firing method (Figure 1), coal from the coal mill is sent directly to Kiln No. 2 via the primary air fan. The primary air volume, which is a high volume flow, is determined by the amount of air needed to pneumatically convey the coal through the coal mill. The primary air cannot be adjusted to result in lower emissions. Secondary air for the kiln is drawn from the clinker cooler.

In the proposed indirect firing method (Figure 2), a pulverized coal bin (new) is added downstream of the coal mill. The air from the coal mill is exhausted through a baghouse (new) serving the coal bin. Pulverized coal from the coal bin is then sent to the kiln, separate from the primary combustion air. Although some air is needed for transporting the coal to the kiln, it is small compared to the air entering the kiln with the coal in the direct firing method. Primary air enters the kiln independently, and is controlled independently of the coal input or the secondary air input. Secondary air continues to be drawn from the clinker cooler. This greater control over the primary air to the kiln should result in substantial NO_x reductions.

No detailed engineering information is yet available for the proposed indirect firing method. However, the attached flow diagrams show the major changes.

The conversion of Kiln No. 2 to indirect firing will clearly lower NO_x emissions, but may not lower NO_x emissions enough to meet the current permit limits. The most relevant NO_x emissions information upon which to base a judgement are data from Kiln No. 3 at Pennsuco. Although Kiln No. 3 is much large than Kiln No. 2, it is an indirect coal-fired kiln. An indirect firing system installed on Kiln No. 2 would be very similar in nature and operation to the Kiln No. 3 system. Historic NO_x emissions data from Kiln No. 3 demonstrate NO_x emissions in the range of 0.6 to 2.3 lb/MMBtu, with an average of about 1.2 lb/MMBtu. This level of NO_x emissions is higher than would be allowed under Tarmac's construction permit (0.70 lb/MMBtu, with provisions to raise up to 1.0 lb/MMBtu). As a result, there is no guarantee that conversion to indirect firing will result in compliance with the NO_x emissions limit. Additional control measures may be required, or Tarmac may have to cease coal firing in Kiln No. 2.

A corrected page III.Part 9b-1 is attached. Thank you for consideration of this information. Please call if you have any questions concerning this information.

Sincerely,

GOLDER ASSOCIATES INC.

David A. Buff

David A. Buff, P.E.
Principal Engineer
Florida P.E. #19011
SEAL

DB/tyf

cc: Scott Quaas
Jim Alves
File (2)

J:\DP\PROJECTS\96\9651\9651002A\05\#05ltr.doc

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section __2__
Coal Handling System

Pollutant Potential Estimated Emissions: Pollutant 1

1. Pollutant Emitted: **PM**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: 0.94 lb/hour 3.70 tons/year
4. Synthetically Limited? [ ] Yes [ ] No
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 ________ to ________ tons/yr
6. Emission Factor: Reference: BACT of 4/8/80
7. Emissions Method Code: [ ] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters): 10,914 dscfm x 0.01 gr/dscf x 60 min/hr ÷ 7,000 gr/lb = 0.94 lb/hr; 0.94 lb/hr x 7,884 hr/yr ÷ 2,000 lb/ton = 3.70 TPY
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):

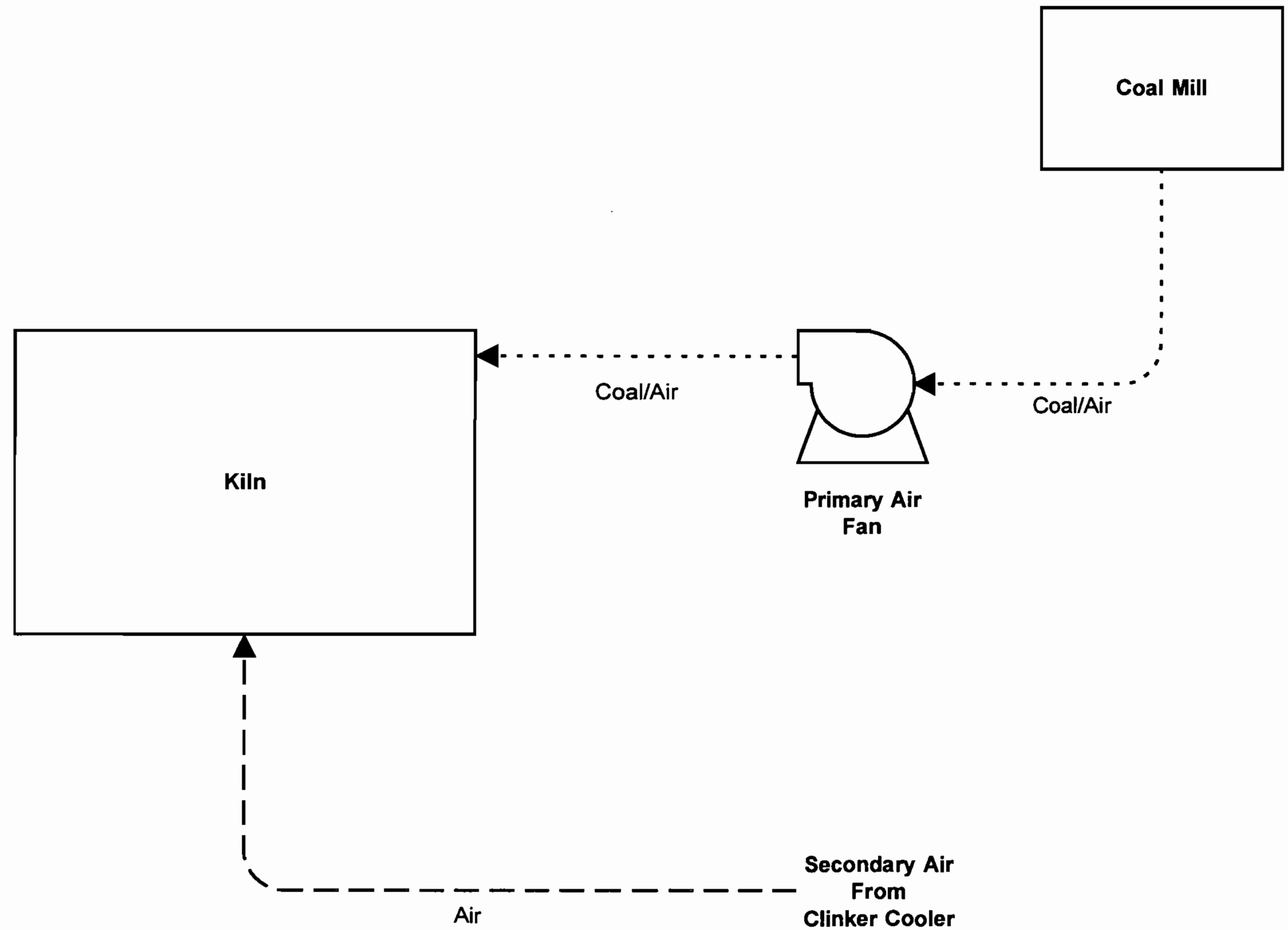

Figure 1: Direct Firing	Process Flow Legend: Air Coal Air/Coal	Flow Diagram of Kiln #2 *Filename:* KILNFLOW.VSD *Latest Revision Date:* 10/27/98	Golder Associates

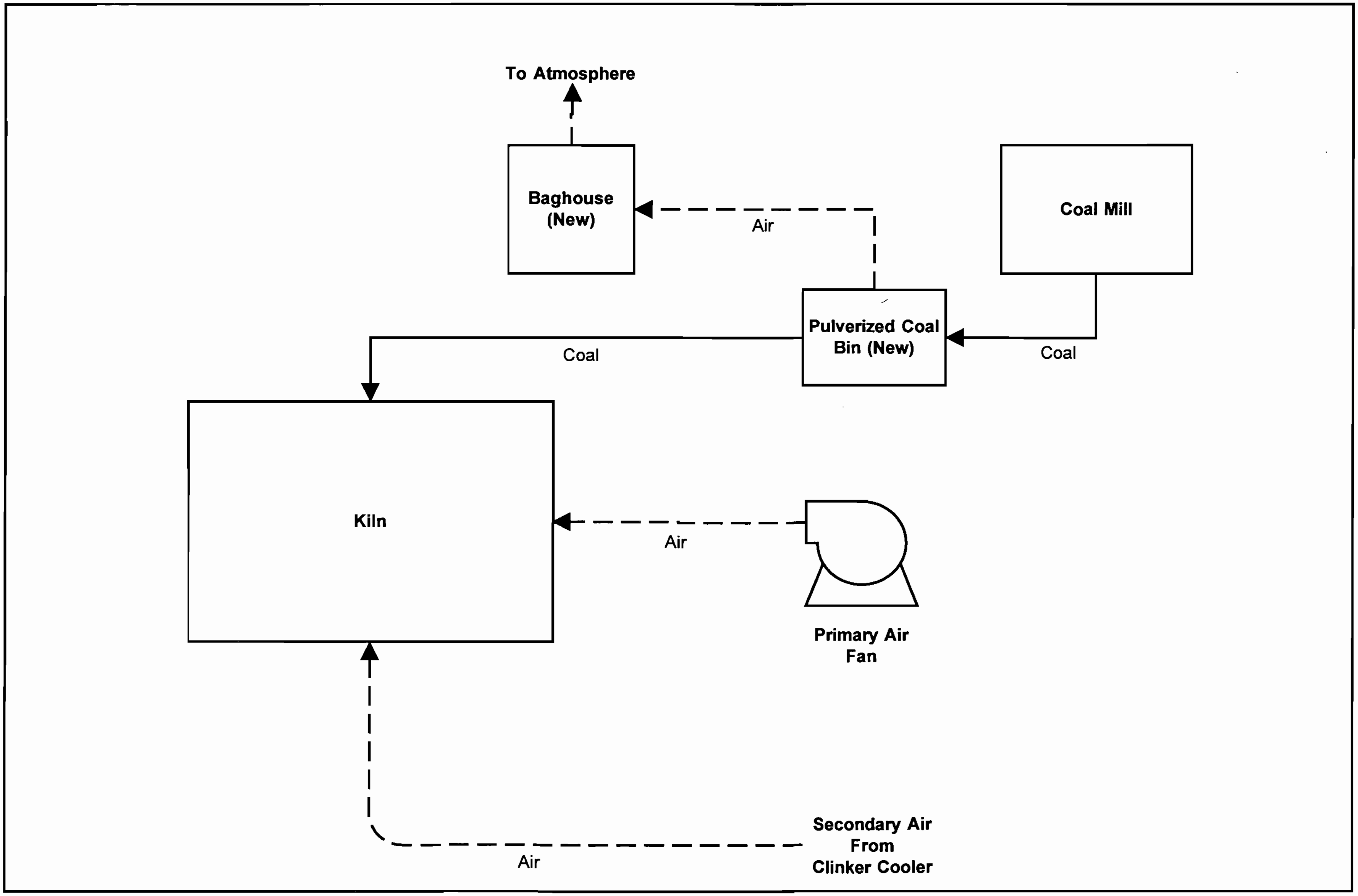

Figure 2: Indirect Firing

Process Flow Legend:
Air
Coal
Air/Coal

Flow Diagram of Kiln #2

Filename: KILNFLOW.VSD

Latest Revision Date: 10/27/98

Golder Associates

Department of Environmental Protection

Lawton Chiles
Governor

September 21, 1998

Virginia B. Wetherell
Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Scott Quaas, Environmental Manager
Tarmac America, Inc.
455 Fairway Drive
Deerfield Beach, Florida 33441

Re: Kiln No. 2 Indirect Firing Modification
DEP File 0250020-007-AC (PSD-FL-142A)

Dear Mr. Quaas:

On March 5 the Department requested submittal of additional information to process the referenced application request. To-date we have not received a response. Please note that per Rule 62-~~5~~4.055(1):

"The applicant shall have ninety days after the Department mails a timely request for additional information to submit that information to the Department. If an applicant requires more than ninety days in which to respond to a request for additional information, the applicant may notify the Department in writing of the circumstances, at which time the application shall be held in active status for one additional period of up to ninety days. Additional extensions shall be granted for good cause shown by the applicant. A showing that the applicant is making a diligent effort to obtain the requested information shall constitute good cause. Failure of an applicant to provide the timely requested information by the applicable date shall result in denial of the application."

Over two ninety-day periods have transpired since our request for additional information. Because the rule provision was not in-effect when we requested the additional information, it will not be used at this time to deny the permit request. The nature of the information is such that a diligent effort would have yielded it by now and would certainly yield it in the next thirty days. Therefore, we are providing Tarmac a period of an additional 30 days from today to provide the requested information or show good cause that an extension is required.

If you have any questions regarding this matter, please call me at 850/921-9523 or John Reynolds at 850/921-9536.

Sincerely,

A. A. Linero 9/21

A. A. Linero, P.E. Administrator
New Source Review Section

AAL/aal

cc: Isidore Goldman, DEP/SED
Patrick Wong, DERM
Sharon Crabtree, DERM
David Buff, Golder Assoc.

Department of
Environmental Protection

Lawton Chiles
Governor

September 21, 1998

Virginia B. Wetherell
Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Scott Quaas, Environmental Manager
Tarmac America, Inc.
455 Fairway Drive
Deerfield Beach, Florida 33441

Re: Kiln No. 2 Indirect Firing Modification
DEP File 0250020-007-AC (PSD-FL-142A)

Dear Mr. Quaas:

4

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If you have any questions regarding this matter, please call me at 850/921-9523 or John Reynolds at 850/921-9536.

Sincerely,

A A Linero 9/21

A. A. Linero, P.E. Administrator
New Source Review Section

AAL/aal

cc: Isidore Goldman, DEP/SED
Patrick Wong, DERM
Sharon Crabtree, DERM
David Buff, Golder Assoc.

Z 333 612 513

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Sent to Scott Quass	
Street & Number Jarmac America	
Post Office, State, & ZIP Code Deerfield Bch, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 9-21-98 0250020-007-AC PSD-Fl-142A	

PS Form **3800**, April 1995

Fold at line over top of envelope to

Is your **RETURN ADDRESS** completed on the reverse side?

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

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

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

Consult postmaster for fee.

3. Article Addressed to:
Mr. Scott Quass
Jarmac America
455 Fairway Dr
Deerfield Bch, Fl
33441

4a. Article Number
Z 333 612 513

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

7. Date of Delivery
9/23/98

5. Received By: *(Print Name)*

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

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

Thank you for using Return Receipt Service.

PS Form 3811, December 1994 102595-97-B-0179 Domestic Return Receipt

METROPOLITAN DADE COUNTY, FLORIDA

METRO-DADE

DERM

ENVIRONMENTAL RESOURCES MANAGEMENT
AIR QUALITY MANAGEMENT DIVISION
SUITE 900
33 S.W. 2nd AVENUE
MIAMI, FLORIDA 33130-1540
(305) 372-6925

RECEIVED
AUG 05 1998
BUREAU OF
AIR REGULATION

July 29, 1998

CERTIFIED MAIL –P 343 640 310
RETURN RECEIPT REQUESTED

Mr. Scott Quaass
Environmental Manager
Tarmac America, Inc.
455 Fairway Drive
Deerfield Beach, Florida 33441

File No.: 0250020-008-AC
County: Miami-Dade
Project: Tarmac America, Inc.
Tarmac Pennsuco
New Dry Process Plant

Re: Additional Information Regarding New Dry Process Plant
Tarmac America – Tarmac Pennsuco

Dear Mr. Johnson:

The Department received your application for the modernization of the existing cement plant in Miami-Dade County, Florida. Based on a technical review, the application is incomplete. Pursuant to Rules 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297, F.A.C., please submit the following information, including all assumptions, reference materials and calculations:

Facility Wide

1. A copy of the application has been forwarded to EPA-Region IV, Florida Department of Environmental Protection in Tallahassee, and National Parks Service (attached letter dated July 7, 1998).

2. The application is signed by Mr. Scott Quaass, Environmental Manager. In accordance with 62-213.200(244), the application form must be signed by either an officer of the corporation, any other person who performs similar policy or decision-making functions, or a duly authorized representative of such person if the representative is responsible for the overall operation of one ore more manufacturing, production, or operating facilities. Please provide a letter of authorization from one of the corporate officers stating that Mr. Quaass performs one of the described operations.

3. Pursuant to Rule 62-212.400 (2)(e), F.A.C., please recalculate the net emission increases (sum of all 5 year contemporaneous creditable increases and decreases in the actual emissions of the facility) for all affected PSD pollutants listed in Table 62-212.400-2, F.A.C., to determine PSD applicability.

4. Pursuant to Rule 62-212.400(2)(d)4.(ii), F.A.C., if the facility to be modified is within 10 km of a Class I area and if the proposed modification results in a net emission increase (as set forth in Rule 62-212.400 (2) (e)1., F.A.C.) of any pollutant regulated under the Act, which increase would have an impact on the affected *Class I area* equal to or greater than 1.0 microgram per cubic meter (24-hour

average), this modification shall be subject to the preconstruction review requirements of the PSD regulations. Calculate the impact of any emission increase on the Everglades National Park.

5. Submit existing test data (last five years) for NOx, SO_2, PM/PM10, Sulfuric Acid Mist, CO, and VOC, Pb , as well any non-criteria PSD pollutants for kilns No.1, No. 2 and 3. This is necessary to calculate all contemporaneous emissions changes.

6. This facility has going through several PSD reviews have these been considered in the calculations.

4. Submit existing data for all other HAPs pollutants that have been tested at this facility in the past five years. Include dates, baseline conditions, production rates and fuel burned.

5. Does this facility comply with the Miami-Dade County air pollution control regulations?

6. How does the facility propose to address the case-by-case MACT pursuant to 40 CFR 63.44(d) for HCL?

7. In reviewing estimation of HAPs for the new cement plant (Table 2-3) it is mentioned that data was used from testing Kiln No. 3 in December 1992, the following is noticed:

   a. Was the test run at the same rate as the new kiln? If there is a change of emissions please provide new calculations.
   b. Is there a reason for using a Kiln No. 3 data only in certain cases?

8. There is no consistency between the Annual Baseline 1996-1997 Emission From Kilns in Table 3-2, sometimes there is data from other years, please clarify.

   a. How is the excess emission for nitrogen oxides considered for PSD review.

9. Provide documentation for emission factor mentioned where Vendor Information is mentioned.

10. Provide documentation to ensure that materials proposed for use in the industrial process are non-hazardous.

11. Describe procedures used to startup and shutdown of the process equipment to minimize excess emissions.

12. Provide manufacturers specifications on the new baghouses that will be installed.

13. Calculate the flow (dscfm) for each baghouse. Show any estimates used in these calculations.

14. Perform an expanded Air Quality Related Values analysis to address impacts of the proposed changes on soils, vegetation, and visibility in the Class II area in the vicinity of the plant.

15. Describe good combustion practices to minimize NOx, CO, and VOC emissions from the kiln.

16. Type of Emission Unit:

Why are all the emission units for the entire application are classified as unregulated units?

17. Segment (Process/Fuel) Information:

    Provide detail emission calculations on the segment of process/fuel sections for each of the products involved in the entire application.

18. Submit a detailed analysis of specifications, quantities of the different fuels and its emission calculations to be burned at each combustion source at this facility. Discuss any blending of fuel types.

19. Explain how the fuels are going to be used (start up, main, supplementary or emergency fuels) and the proposed annual heat input usage (20%, 40 %, etc.).

20. Submit for this facility an operation and maintenance plan for the particulate control devices, the collection systems, and the processing systems. The Operation and Maintenance plan shall also include identification of control device(s) for each emissions unit (manufacturer, model name, number, etc.).

Coal Handling

EMISSION UNIT INFORMATION

21. Describe how captured dust from the baghouse (coal handling) is removed and disposed from the system. What precautions are used to minimize unconfined emissions while handling the dust?

22. Provide separate calculations for Coal and Petroleum Coke.

EMISSION POLLUTANT DETAIL INFORMATION:

23. Please clarify why the information given on emission point (stack/vent) information on the actual volumetric flow is different than the one used for the calculations on the emission pollutant detail information.

24. The potential emissions provided for PM in Item No. 3 do not match emission calculations provided in item No. 8 of page 28.

25. The potential emissions provided for PM10 in Item No. 3 do not match emission calculations provided in item No. 8 of page 28.

Raw Mill and Pyroprocessing Unit

EMISSION UNIT INFORMATION

26. Provide manufacturer specifications on the new preheater/calciner, kiln and cooler that will be installed in the facility.

27. Provide a manufacturer's certification that will confirm that the maximum design capacity of the kiln is 266 tons per hour of dry kiln feed and maximum production rate of 160 TPH.

28. Submit a detailed analysis of the components of all feedstreams. Indicate the precise mix proportion for the raw mill feed.

29. Please clarify why the information given on emission point (stack/vent) information on the maximum dry standard flow rate on file is different than the one used for the calculations on the emission pollutant detail information, please clarify.

EMISSION UNIT POLLUTANT DETAIL INFORMATION

30. Provide the reason for considering some of pollutants mentioned in the pollutant emitted as NS.

31. Estimate fugitive emissions from emission unit No. 1, Raw Materials Handling, (unloading of produced and purchased materials from truck and conveyor systems).

32. Submit a detailed analysis of the components of all feedstreams. Indicate the precise mix proportion for the raw mill feed.

33. Provide detail emissions calculations for PM, PM10, Sulfur dioxide and others mentioned in Maximum Annual Emissions for New Raw Mill/ Preheater/Calciner/ Kiln System-Table 2-2.

34. In Table 3-6 Quantifiable Fugitive Emissions was based on which year or years?

35. In Table 3-7 Net Change in Emissions and PSD Significant Emission Rates provide the following information

    a. Was the Coal Handling System considered, vehicular traffic and others.

    b. Detail emission calculations considered for: Material Handling Point and Material Handling Fugitive.

Clinker Handling

36. Please clarify why the information given on emission point (stack/vent) information on the maximum dry standard flow rate on file is different than the one used for the calculations on the emission pollutant detail information, please clarify.

Cement Storage, Packhouse and Loadout

37. Please clarify why two sets of calculations have been provided this emission unit.

38. Please clarify why the information given on emission point (stack/vent) information on the actual volumetric flow rate on file is different than the one used for the calculations on the emission pollutant detail information.

We will resume processing the application after the requested information is received. If you have any questions regarding this matter, please call Eva Kunath at (305) 372-6926.

Sincerely,

M. Eva Kunath
Air Permitting Engineer
Air Facilities Section
Air Quality Management Division

Enclosure

copy to:
A.A. Linero, P.E., Administrator, New Resource Review Section
David A. Buff, P.E., Golder Associates, Inc.

METROPOLITAN DADE COUNTY, FLORIDA

METRO-DADE

DERM

ENVIRONMENTAL RESOURCES MANAGEMENT
AIR QUALITY MANAGEMENT DIVISION
SUITE 900
33 S.W. 2nd AVENUE
MIAMI, FLORIDA 33130-1540
(305) 372-6925

July 7, 1998

RECEIVED

JUL 13 1998

BUREAU OF
AIR REGULATION

Mr. Doug Neeley, Chief
Air Programs Branch
U.S. – EPA Region IV
APTMD – 12th Floor
Atlanta Federal Center
100 Alabama Street, S.W.
Atlanta, GA 30303

Re: Conversion to Dry Process Cement
TARMAC AMERICA, Inc.
File No. 0250020-008-AC

Dear Mr. Neeley:

Attached are two copies of the application to replace the existing three wet process kilns for a new dry process kiln system. Please provide your comments in the following areas:

1. Applicability of PSD. Note that the project is similar in scope to that described in the Puerto Rico Cement Division.

2. Applicability of NSPS. At first glance, the project appears to meet the reconstruction definition given in 40 CFR 60.15.

3. Applicability of MACT. As a major source of hydrogen chloride, the facility could be subject to the recently proposed regulations

If you have any questions regarding this matter, please call Eva Kunath at (305) 372-6926.

Sincerely,

M. Eva Kunath,
Permitting Engineer
Air Facilities Section
Air Quality Management Division

cc. Lennon Anderson, BAR
John Glunn, DDO

cc: David A. Buff, PE
John Bunyak, NPS
Scott Quaas
Cindy Philips
Theresa Heron

Department of
Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

March 5, 1998

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Scott Quaas, Environmental Manager
Tarmac America, Inc.
455 Fairway Drive
Deerfield Beach, Florida 33441

Re: Permit Application for Kiln No. 2 Indirect Firing Modification (0250020-007-AC)

Dear Mr. Quaas:

The Department's Bureau of Air Regulation in Tallahassee will be processing Tarmac's application to install a pulverized coal bin with associated transfer equipment and a baghouse for the conversion of Kiln No. 2 to indirect firing.

According to the agreement between Metro-Dade DERM and Tarmac, the BACT limits in permit AC 13-169901 (PSD-FL-142) will apply when the indirect firing retrofit project has been completed. Therefore, there is no need to do another BACT determination and the emission limits will be the same as before. An event that would trigger a PSD application and a new BACT determination would be a modification such as a production increase resulting in PSD-significant increases in emissions. The new coal bin baghouse emissions will be well below PSD-significant levels.

Since the expiration date of AC 13-169901 has passed, the new construction permit should encompass the entire Kiln No. 2 operation (i.e., more than just the new coal bin and baghouse) so that performance tests are required to demonstrate compliance after the retrofit is done. This means that the application must show complete pollutant information and should contain more drawings and a detailed description of the work to be performed. We note a minor error in the calculation of emissions on page III. Part 9b-1 field 8 (3.94 lb/hour should be 0.94 lb/hour). Amendments to the Title V permit will be required as well. As far as the fee is concerned, it is sufficient for the new baghouse emission increase (less than five tons per year) and since we are not requiring a new BACT review there is no need for a higher fee.

Processing of the application will be continued upon receipt of the requested information. If any further input is required we will advise you by March 17. If there are any further questions, please contact me or John Reynolds at 850/488-1344.

Sincerely,

3/5

A. A. Linero, P.E. Administrator
New Source Review Section

AAL/JR
c: I. Goldman, SED
B. Beals, EPA
D. Buff, Golder Assoc.

P 265 659 302

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail (See reverse)

Sent to Scott Quaas	
Street & Number Tarmac America	
Post Office, State, & ZIP Code Deerfield Bch, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 3-6-98 0250020-007-AC	

PS Form **3800**, April 1995

Is your RETURN ADDRESS completed on the reverse side?

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

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

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

Consult postmaster for fee.

3. Article Addressed to:
Mr. Scott Quaas, Env. Mgr.
Tarmac America
455 Fairway Dr.
Deerfield Bch, Fl
33441

4a. Article Number
P 265 659 302

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

7. Date of Delivery
3/9/98

5. Received By: *(Print Name)*

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

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

Thank you for using Return Receipt Service.

PS Form **3811**, December 1994

Domestic Return Receipt

METROPOLITAN **DADE** COUNTY, FLORIDA

METRO-DADE

ERM

ENVIRONMENTAL RESOURCES MANAGEMENT
AIR QUALITY MANAGEMENT DIVISION
SUITE 900
33 S.W. 2nd AVENUE
MIAMI, FLORIDA 33130-1540
(305) 372-6925

March 5, 1998

Mr. John Reynolds
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Mail Station 5505

File No.: 0250020-007-AC
County: Miami-Dade
Project: Tarmac America, Inc.
Modify Coal Handling for Klin # 2 from Direct Firing to an Indirect Fired System

RE: Transfer of Permit Application to Tallahassee

Dear Mr. Reynolds:

As per your memo dated March 4, 1998, we are sending you the requested materials:

- Hard copy of the application,
- Original signatures
- Original diskette "ELSA".
- In addition, a copy of the letter sent to Mr. Scott Quaas of Tarmac America, Inc. notifying him of the transfer of the Permit Application

If you have any questions, please contact Eva Kunath at (305) 372-6926. When referring to this project, please use the file number indicated.

Sincerely,

M. ~~Eva~~ Kunath, Engineer I
Air Facilities Section
Air Quality Management Division

cc: SEO

RECEIVED
MAR 11 1998
BUREAU OF
AIR REGULATION

METROPOLITAN DADE COUNTY, FLORIDA

METRO-DADE

DERM

ENVIRONMENTAL RESOURCES MANAGEMENT
AIR QUALITY MANAGEMENT DIVISION
SUITE 900
33 S.W. 2nd AVENUE
MIAMI, FLORIDA 33130-1540
(305) 372-6925

CERTIFIED MAIL P 343 639 725
RETURN RECEIPT REQUESTED

Date: March 5, 1998

Mr. Scott Quaas
Environmental Manager
Tarmac America, Inc.
455 Fairway Drive
Deerfield Beach, Florida 33441

File No.: 0250020-007-AC
County: Miami-Dade
Project: Tarmac America, Inc.
Modify Coal Handling for Klin # 2
from Direct Firing to Indirect Fired
System

RE: Transfer of Permit Application to Tallahassee

Dear Mr. Quaas:

We have reviewed your application for a permit to modify Klin # 2 from direct firing to an indirect firing system. It was determined that your construction is subject to Prevention of Significant Deterioration (PSD). We have forwarded the application to the Department of Environmental Protection in Tallahassee for processing.

If you have any questions, please contact Eva Kunath at (305) 372-6926. When referring to this project, please use the file number indicated.

Sincerely,

M. Eva Kunath, Engineer I
Air Facilities Section
Air Quality Management Division

cc: David A. Buff, P.E., Golder Associates

RECEIVED

FEB 18 1998

Air Quality
Management Division

VIA AIRBORNE EXPRESS

13 February 1998

Tarmac

Tarmac America, Inc.
455 Fairway Drive
Deerfield Beach, FL 33441
(954) 481-2800
Fax (954) 421-0296
http://www.tarmacamerica.com

Environmental Department
Direct line (954) 425-4165
Direct fax (954) 480-9352

H. Patrick Wong, Chief
Air Section
Metro-Dade County Environmental Resources Management
33 SW 2nd Avenue — Suite 900
Miami, Florida 33130-1540

RE: **Pennsuco Cement**
Dade County - AP
Facility ID# 0250020

Dear Mr. Wong:

In accordance with the *Agreement* executed February 2, 1998 between Tarmac and the DERM and specifically paragraph 20, please find enclosed an *Application For Air Permit—Long Form*. The application is submitted on one (1) 3½" diskette [ELSA ver1.3b] along with two (2) each signature pages, attachments, and figures to convert the coal handling system for kiln #2 to indirect firing. A check in the amount of $250.00 [check# 119960] is also enclosed for the application processing fee. Should you have any questions or need further information please call me at the number above.

Sincerely,

Scott Quaas
Environmental Manager
Technical Services–Florida Region

cc: R. Pluta
M. Unger
J. Alves
S. Crabtree-DERM

4. Professional Engineer Statement :

I, the undersigned, hereby certified, except as particularly noted herein, that :*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollutant control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [ ] if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [X] if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ] if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

David A. Buff
Signature

2/13/98
Date

REGISTERED ENGINEER STATE OF FLORIDA DAVID A. BUFF

*Attach any exception to certification statement.

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official :

Name : Scott Quaas
Title : Environmental Manager

2. Owner or Authorized Representative or Responsible Official Mailing Address :

Organization/Firm : Tarmac America, Inc.
Street Address : 455 Fairway Drive
City : Deerfield Beach
State : FL Zip Code : 33441-____

3. Owner/Authorized Representative or Responsible Official Telephone Numbers :

Telephone : (954)425-4165 Fax : (954)480-9352

4. Owner/Authorized Representative or Responsible Official Statement :

I, the undersigned, am the owner or authorized representative of the non-Title V source addressed in this Application for Air Permit or the responsible official, as defined in Rule 62-210.200, F.A.C., of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions units.*

Signature FEB 13 1998
Date

* Attach letter of authorization if not currently on file.

ATTACHMENT A

PROJECT DESCRIPTION

Tarmac America, Inc. (Tarmac) is proposing to modify the coal handling system for kiln #2 from the existing direct fired system to an indirect fired system. The existing coal handling system for the cement plant will be utilized for the kiln #2 indirect system, including the coal mill. A new pulverized coal bin, screw feeders, weigh feeders, coal blower, and burner pipe will be installed for the proposed modification. Particulate emissions from the pulverized coal bin will be controlled by a new baghouse. Pertinent data for the proposed baghouse is described below.

ATTACHMENT B

Air flow rate: 12,000 acfm (10,900 dscfm)
Gas temperature: 77°F
Cloth area: 2,400 ft^2
Air/cloth ratio: 5:1

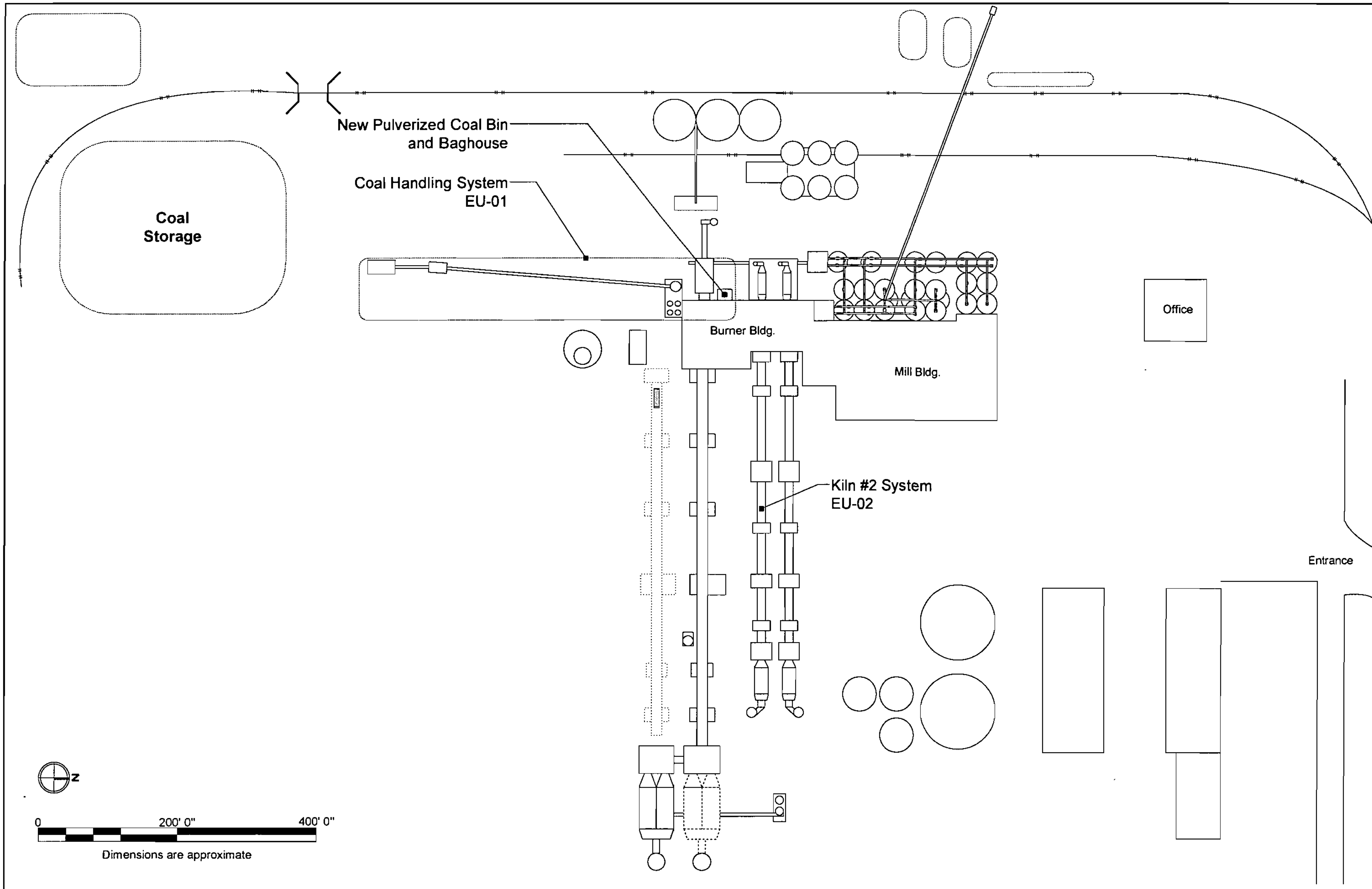
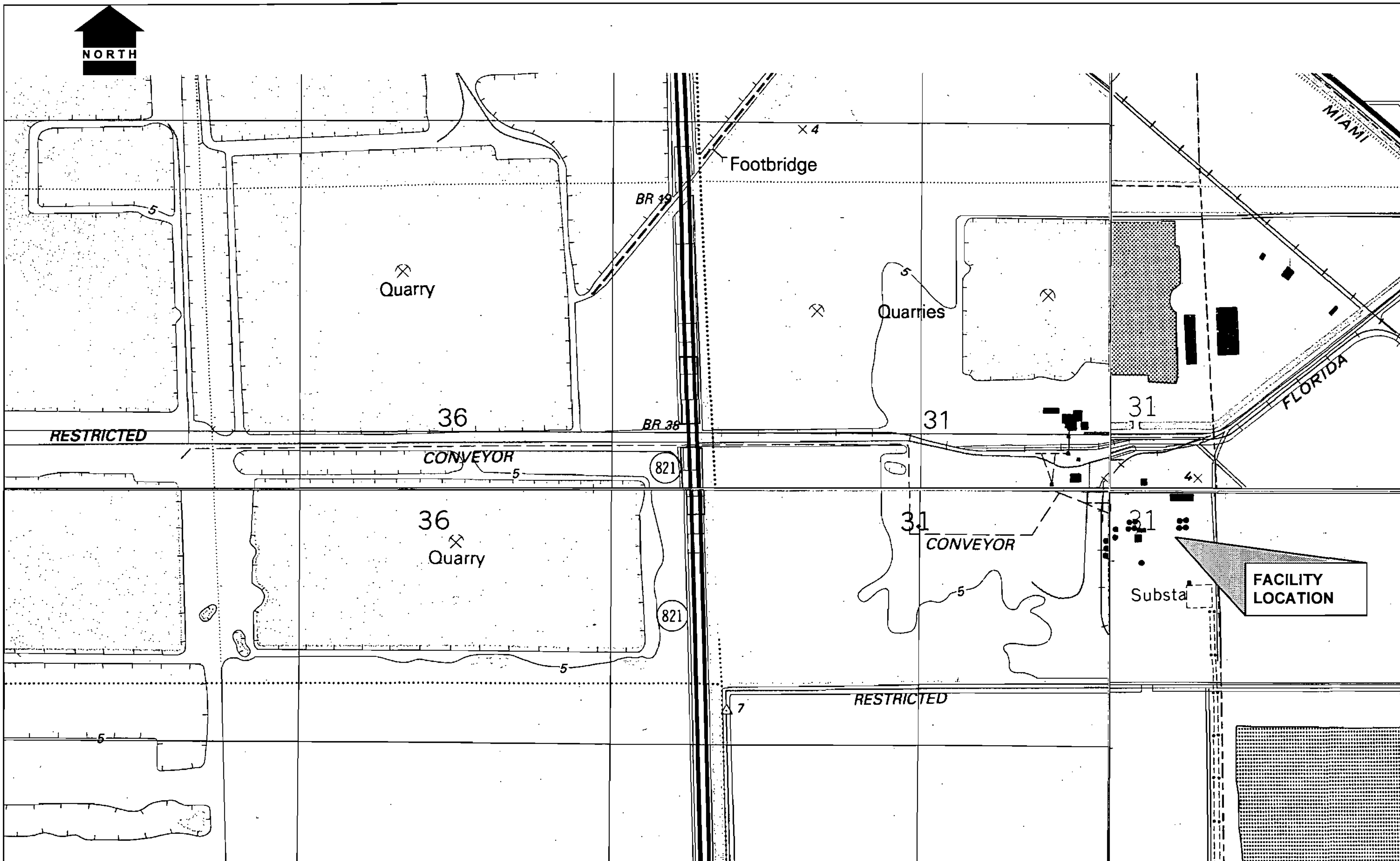


FIGURE 2-2
Kiln #2 Indirect Fire
Facility Plot Plan

FACILITY:		
Pennsuco Cement		
ID # **0250020**	FacID # **FL007-04**	DATE **FEB98**

Tarmac

Tarmac America, Inc.
455 Fairway Drive
Deerfield Beach, FL 33441

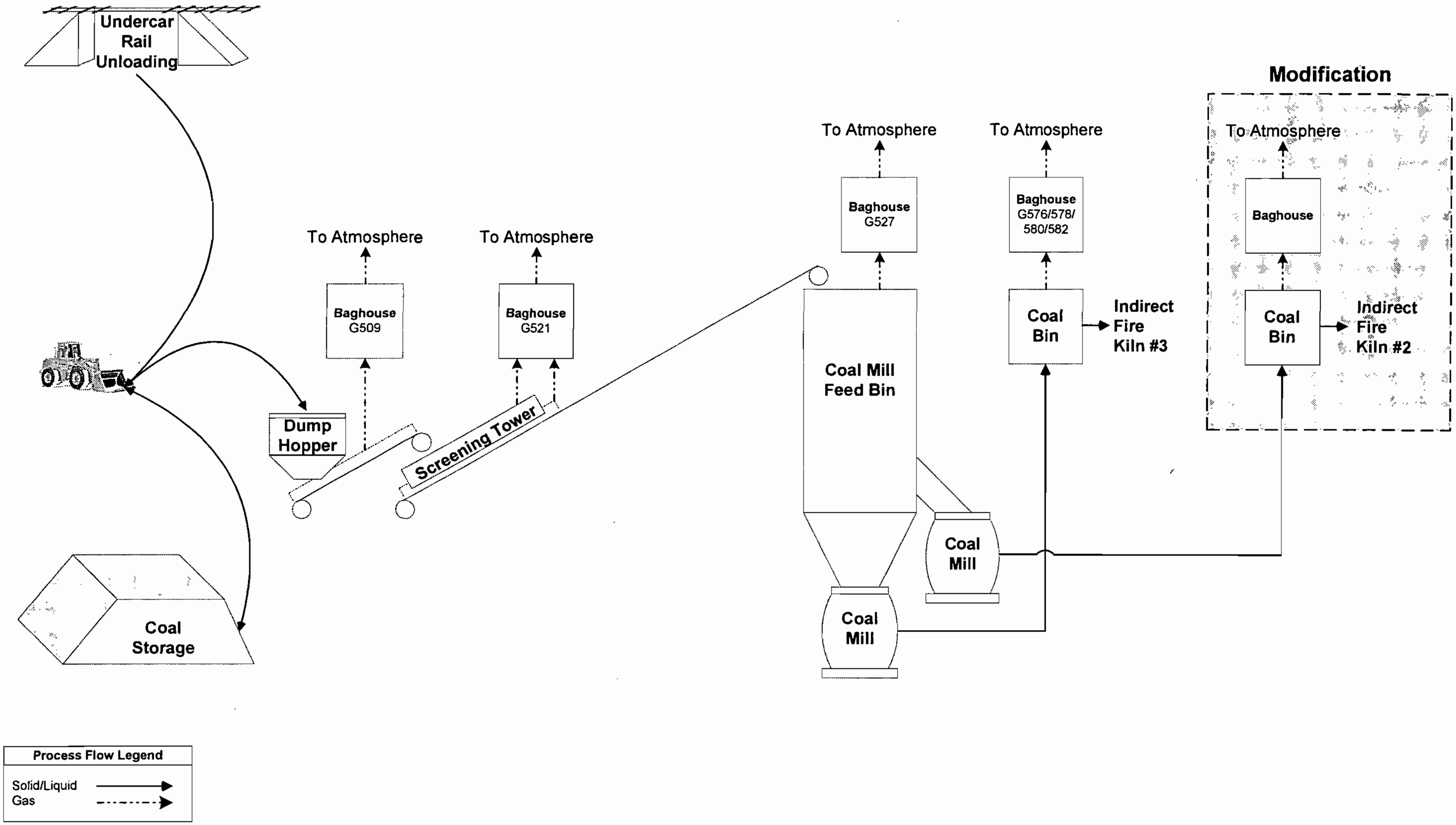


Source: USGS Quadrangles 1962 & 1988

Figure 2-1 Kiln #2 Indirect Fire Area Map	FACILITY: **Pennsuco Cement**		
	ID # 0250020	FacID# FL007-04	DATE FEB98

Tarmac

Tarmac America, Inc.
455 Fairway Drive
Deerfield Beach, FL 33441



Coal Handling System [EU-01]

Figure 2-3 Kiln #2 Indirect Fire Process Flow Diagram	FACILITY: Pennsuco Cement		
	ID # 0250020	FacID# FL007-04	DATE FEB98

Tarmac

Tarmac America, Inc.
455 Fairway Drive
Deerfield Beach, FL 33441

Department of
Environmental Protection

DIVISION OF AIR RESOURCES MANAGEMENT

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Identification of Facility Addressed in This Application

1. Facility Owner/Company Name : Tarmac America, Inc.	
2. Site Name : Tarmac Pennsuco	
3. Facility Identification Number : 0250020	* [ ] Unknown
4. Facility Location : Pennsuco Cement Street Address or Other Locator : 11000 NW 121 Way City : Medley County : Dade Zip Code : 33178-	
5. Relocatable Facility? [ ] Yes [X] No	6. Existing Permitted Facility? [X] Yes [ ] No

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official :	
Name :	Scott Quaas
Title :	Environmental Manager
2. Owner or Authorized Representative or Responsible Official Mailing Address :	
Organization/Firm :	Tarmac America, Inc.
Street Address :	455 Fairway Drive
City :	Deerfield Beach
State :	FL Zip Code : 33441-____
3. Owner/Authorized Representative or Responsible Official Telephone Numbers :	
Telephone :(954)425-4165	Fax : (954)480-9352
4. Owner/Authorized Representative or Responsible Official Statement :	
I, the undersigned, am the owner or authorized representative of the non-Title V sourc*	
Signature	Date

* Attach letter of authorization if not currently on file.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type
No Id *	Coal Handling System +	AC1F

Purpose of Application and Category

Category I : All Air Operation Permit Applications Subject to Processing Under Chapter 62-213, F.A.C.

This Application for Air Permit is submitted to ob

[ ] Initial air operation permit under Chapter 62-213, F.A.C., for an existing facility which is classified as a Title V source.

[ ] Initial air operation permit under Chapter 62-213, F.A.C., for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number :

[ ] Air operation permit renewal under Chapter 62-213, F.A.C., for a Title V source.

Operation permit to be renewed :

[ ] Air operation permit revision for a Title V source to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number :

Operation permit to be revised :

[ ] Air operation permit revision or administrative correction for a Title V source to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application.

Operation permit to be revised/corrected :

[ ] Air operation permit revision for a Title V source for reasons other than construction or modification of an emissions unit.

Operation permit to be revised :

Reason for revision :

Category II : All Air Operation Permit Applications Subject to Processing Under Rule 62-210.300(2)(b), F.A.C.

This Application for Air Permit is submitted to obtain :

[ ] Initial air operation permit under Rule 62-210.300(2)(b), F.A.C., for an existing facility seeking classification as a synthetic non-Title V source.

Current operation/construction permit number(s) :

[ ] Renewal air operation permit under Fule 62-210.300(2)(b), F.A.C., for a synthetic non-Title V source.

Operation permit to be renewed :

[ ] Air operation permit revision for a synthetic non-Title V source.

Operation permit to be revised :

Reason for revision :

Category III : All Air Construction Permit Applications for All Facilities and Emissions Units

This Application for Air Permit is submitted to obtain :

[X] Air construction permit to construct or modify one or more emissions units within a facility (including any facility classified as a Title V source).

Current operation permit number(s), if any :
AO13-238048

[ ] Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

Current operation permit number(s) :

[ ] Air construction permit for one or more existing, but unpermitted, emissions units.

Category IV : All Non-Federally Enforceable Air Operation

This Application for Air Permit is submitted to ob

[ ] Initial air operation permit for one or more existing, but previously unpermitted, emissions units.

[ ] Initial air operation permit for one or more newly constructed or modified

Current construction permit number :

[ ] Air operation permit revision to address one or more newly constructed or modified emissions units.

Current construction permit number :

Operation permit to be revised :

[ ] Air operation permit renewal.

Operation permit to be renewed :

Application Processing Fee

Check one :

[X] Attached - Amount : $250.00 [ ] Not Applicable.

Construction/Modification Information

1. Description of Proposed Project or Alterations : Modify coal handling system for Klin # 2	
2. Projected or Actual Date of Commencement of Construction :	01-Jul-1998
3. Projected Date of Completion of Construction :	01-Jul-1999

Professional Engineer Certification

1. Professional Engineer Name : David A. Buff Registration Number : 19011	
2. Professional Engineer Mailing Address : Organization/Firm : Golder Associates Street Address : 6241 NW 23 Street City : Gainesville	State : FL Zip Code : 32653-1500
3. Professional Engineer Telephone Numbers : Telephone : (352)336-5600	Fax : (352)336-6603

4. Professional Engineer Statement :

I, the undersigned, hereby certified, except as particularly noted herein, that :*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollutant control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [ ] if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [ ] if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ] if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature | Date

(seal)

* Attach any exception to certification statement.

Application Contact

1. Name and Title of Application Contact : Name : Scott Quaas Title : Environmental Manager
2. Application Contact Mailing Address : Organization/Firm : Tarmac America, Inc. Street Address : 455 Fairway Drive City : Deerfield Beach State : FL Zip Code : 33441-
3. Application Contact Telephone Numbers : Telephone : (954)425-4165 Fax : (954)480-9352

Application Comment

This application involes modification of the kiln #2 coal handling system to a indirect coal fired system. The structure of this application compliments the Title V Operating Permit application submitted in June 1996. The emision points and units are consistent with the Title V application.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility, Location, and Type

1. Facility UTM Coordinates : Zone : 17 East (km) : 562.80 North (km) : 2861.70			
2. Facility Latitude/Longitude : Latitude (DD/MM/SS) : 25 52 30 Longitude (DD/MM/SS) : 80 22 30			
3. Governmental Facility Code : 0	4. Facility Status Code : A	5. Facility Major Group SIC Code : 32 +	6. Facility SIC(s) :
7. Facility Comment :			
DEP Facility Comment +			

Facility Contact

1. Name and Title of Facility Contact : Scott Quaas Environmental Manager
2. Facility Contact Mailing Address : Organization/Firm : Tarmac America, Inc. Street Address : 455 Fairway Drive City : Deerfield Beach State : FL Zip Code : 33441-____
3. Facility Contact Telephone Numbers : Telephone : (954)425-4165 Fax : (954)480-9352

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility, Location, and Type

1. Facility UTM Coordinates : Zone : East (km) : North (km) :			
2. Facility Latitude/Longitude : Latitude (DD/MM/SS) : Longitude (DD/MM/SS) :			
3. Governmental Facility Code :	4. Facility Status Code :	5. Facility Major Group SIC Code : +	6. Facility SIC(s) :
7. Facility Comment :			
DEP Facility Comment : +			

Facility Contact

1. Name and Title of Facility Contact :
2. Facility Contact Mailing Address : Organization/Firm : Street Address : City : State : Zip Code :
3. Facility Contact Telephone Numbers : Telephone : Fax :

Property Boundary

UTM Coordinates :

Zone :	+	East :	km	+	North :	km	+

Building Identification

Identification of Building on Plot Plan or Flow Diagram :

+

Building Height : FT +

+

Building Boundary

UTM Coordinates :

Zone : + East : km + North : km +

Facility Contact

1. Name and Title of Facility Contact : Name : Scott Quaas Title : Environmental Manager	
2. Facility Contact Mailing Address : Organization/Firm : Tarmac America, Inc. Street Address : 455 Fairway Drive City : Deerfield Beach State : FL	Zip Code : 33441-____
3. Facility Contact Telephone Numbers : Telephone : (954)425-4165	Fax : (954)480-9352

Facility Regulatory Classifications

1. Small Business Stationary Source?	N
2. Title V Source?	Y
3. Synthetic Non-Title V Source?	N
4. Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?	Y
5. Synthetic Minor Source of Pollutants Other than HAPs?	N
6. Major Source of Hazardous Air Pollutants (HAPs)?	Y
7. Synthetic Minor Source of HAPs?	N
8. One or More Emissions Units Subject to NSPS?	Y
9. One or More Emission Units Subject to NESHAP?	N
10. Title V Source by EPA Designation?	N
11. Facility Regulatory Classifications Comment : Ozone SIP Facility : Annual Operating Report Required :	 + +

B. FACILITY REGULATIONS

Rule Applicability Analysis

Not Applicable

B. FACILITY REGULATIONS

List of Applicable Regulations

Not Applicable

C. FACILITY POLLUTANTS

Facility Pollutant Information

1. Pollutant Emitted	2. Pollutant Classification
PM	A
PM10	A
NOX	A
SO2	A
SAM	A
VOC	A
CO	A
H106	A

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information Pollutant 1

1. Pollutant Emitted : PM
2. Requested Emissions Cap : (lbs/hour) (tons/year)
3. Basis for Emissions Cap Code :
4. Facility Pollutant Comment :

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information Pollutant 2

1. Pollutant Emitted : PM10		
2. Requested Emissions Cap :	(lbs/hour)	(tons/year)
3. Basis for Emissions Cap Code :		
4. Facility Pollutant Comment :		

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information Pollutant 3

1. Pollutant Emitted : NOX
2. Requested Emissions Cap : (lbs/hour) (tons/year)
3. Basis for Emissions Cap Code :
4. Facility Pollutant Comment :

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information Pollutant 4

1. Pollutant Emitted : SO2
2. Requested Emissions Cap : (lbs/hour) (tons/year)
3. Basis for Emissions Cap Code :
4. Facility Pollutant Comment :

DEP Form No. 62-210.900(1) - Form
Effective : 3-21-96

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information Pollutant 5

1. Pollutant Emitted : SAM		
2. Requested Emissions Cap :	(lbs/hour)	(tons/year)
3. Basis for Emissions Cap Code :		
4. Facility Pollutant Comment :		

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information Pollutant 6

1. Pollutant Emitted : VOC
2. Requested Emissions Cap : (lbs/hour) (tons/year)
3. Basis for Emissions Cap Code :
4. Facility Pollutant Comment :

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information Pollutant 7

1. Pollutant Emitted : CO
2. Requested Emissions Cap : (lbs/hour) (tons/year)
3. Basis for Emissions Cap Code :
4. Facility Pollutant Comment :

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information Pollutant 8

1. Pollutant Emitted : H106
2. Requested Emissions Cap : (lbs/hour) (tons/year)
3. Basis for Emissions Cap Code : —
4. Facility Pollutant Comment :

E. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements for All Applications

1. Area Map Showing Facility Location :	Fig.2-1
2. Facility Plot Plan :	Fig.2-2
3. Process Flow Diagram(s) :	Fig.2-3
4. Precautions to Prevent Emissions of Unconfined Particulate Matter :	Attachment A
5. Fugitive Emissions Identification :	NA
6. Supplemental Information for Construction Permit Application :	NA

Additional Supplemental Requirements for Category I Applications Only

7. List of Proposed Exempt Activities :	NA
8. List of Equipment/Activities Regulated under Title VI :	NA
9. Alternative Methods of Operation :	NA
10. Alternative Modes of Operation (Emissions Trading) :	NA
11. Identification of Additional Applicable Requirements :	NA
12. Compliance Assurance Monitoring Plan :	NA
13. Risk Management Plan Verification :	NA
14. Compliance Report and Plan :	NA
15. Compliance Certification (Hard-copy Required) :	NA

III. EMISSIONS UNIT INFORMATION

A. TYPE OF EMISSIONS UNIT
(Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 1

Coal Handling System

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

2. Single Process, Group of Processes, or Fugitive Only? Check one :

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section : * Coal Handling System Description of Emissions Unit for AIRS Tracking : + Coal Handling System		
2. Emissions Unit Identification Number : * [X] No Corresponding ID [ ] Unknown		
3. Emissions Unit Status Code : A *	4. Acid Rain Unit? [ ] Yes [X] No *	5. Emissions Unit Major Group SIC Code : 32 +
6. Emissions Unit Comment : Pulverized Coal Bin. Original ARMS ID Nos. 03, 17,18,19. DEP Emissions Unit Comment : Similar-Emissions Unit Identification Numbers for Fee Purposes : +		

Emissions Unit Information Section 1
Coal Handling System

Emissions Unit Control Equipment 1

1. Description : Baghouse	
2. Control Device or Method Code :	17 *

C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 1
Coal Handling System

Emissions Units Details

1. Initial Startup Date :
2. Long-term Reserve Shutdown Date :
3. Package Unit : Manufacturer : Model Number :
4. Generator Nameplate Rating : MW
5. Incinerator Information : Dwell Temperature : Degrees Fahrenheit Dwell Time : Seconds Incinerator Afterburner Temperature : Degrees Fahrenheit Emissions Unit Type Code : 32 + Ozone SIP Base Emissions Unit : +

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate :	mmBtu/hr	
2. Maximum Incinerator Rate :	lb/hr	tons/day
3. Maximum Process or Throughput Rate :	7	tons/hour
4. Maximum Production Rate :		
5. Operating Capacity Comment : maximum process rate of 6.5 tons/hour represents kiln #2 firing rate		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule :	
24 hours/day	7 days/week

	52 weeks/year	7,884 hours/year

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Emissions Unit Information Section 1

Coal Handling System

Rule Applicability Analysis

Not Applicable

List of Applicable Regulations

62-296.320(4)(a) Process Weight Table

40 CFR 60.11(b) General NSPS Requirements

40 CFR 60.11(c) General NSPS Requirements

40 CFR 60.11(d) General NSPS Requirements

40 CFR 60.12 General NSPS Requirements

40 CFR 60.19 General NSPS Requirements

40 CFR 60.7 General NSPS Requirements

40 CFR 60.8 General NSPS Requirements

40 CFR 60.252(c) Subpart Y

40 CFR 254(a)

40 CFR 254(b)(2)

C. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 1

Coal Handling System

Emission Point Description and Type :

1. Identification of Point on Plot Plan or Flow Diagram :	EU01
2. Emission Point Type Code :	3 *
3. Descriptions of Emission Points Comprising this Emissions Unit :	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common :	
5. Discharge Type Code :	V
6. Stack Height :	100 feet
7. Exit Diameter :	2.00 feet
8. Exit Temperature :	77 °F *
9. Actual Volumetric Flow Rate :	12,000 acfm
10. Percent Water Vapor :	7.50 %
11. Maximum Dry Standard Flow Rate :	10,914 dscfm
12. Nonstack Emission Point Height :	feet
13. Emission Point UTM Coordinates : Zone : East (km) : North (km) :	
Good Engineering Practice Height :	+
14. Emission Point Comment : Percent water vapor reflects typical coal analysis	

F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 1

Coal Handling System

Segment Description and Rate : Segment 1

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) : Mineral Products; Bulk Material Conveyors; Coal	
2. Source Classification Code (SCC) : 3-05-101-03 *	
3. SCC Units : Tons Processed	
4. Maximum Hourly Rate : 6.50	5. Maximum Annual Rate :
6. Estimated Annual Activity Factor :	
7. Maximum Percent Sulfur : Percent Sulfur Limit : +	8. Maximum Percent Ash :
9. Million Btu per SCC Unit :	
10. Segment Comment :	

G. EMISSIONS UNIT POLLUTANTS
(Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 1
Coal Handling System

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
1 - PM *	017 *		EL
2 - PM10 *	017 *		EL

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 1

Coal Handling System

Pollutant Detail Information : Pollutant 1

1. Pollutant Emitted : **PM** *
2. Total Percent Efficiency of Control : %
3. Potential Emissions : 0.94 lb/hour 3.69 tons/year
4. Synthetically Limited? [ ] Yes [ ] No
5. Range of Estimated Fugitive/Other Emissions: to tons/year
6. Emissions Factor : Reference : BACT of 4/8/80 Unit Code : gr/dscf +*
7. Emissions Method Code : *
8. Calculations of Emissions : (10,914 dscfm x 0.01 gr/dscf)/7000 gr/lb x 60 min/hour = 3.94 lb/hour
9. Pollutant Potential/Estimated Emissions Comment :

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 1
Coal Handling System

Pollutant Detail Information : Pollutant 2

1. Pollutant Emitted : **PM10** *
2. Total Percent Efficiency of Control : %
3. Potential Emissions : lb/hour tons/year
4. Synthetically Limited? [ ] Yes [ ] No
5. Range of Estimated Fugitive/Other Emissions: to tons/year
6. Emissions Factor : Reference : Unit Code : +*
7. Emissions Method Code : *
8. Calculations of Emissions :
9. Pollutant Potential/Estimated Emissions Comment :

Emissions Unit Information Section 1
Coal Handling System

Pollutant Information Section 1

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	OTHER *			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units : Allowable Emissions Unit :	0.01 *	gr/dscf *		
4. Equivalent Allowable Emissions :	0.00	lb/hour	3.70	tons/year
5. Method of Compliance : EPA Method 9 Test				
Compliance Method Code : +*	Compliance Test Frequency : +*			
Fequency Base Date : +				
Regulation : +*				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : Emission limit pursuant to BACT determination (4/8/80) for other baghouses associated with EU01				

Emissions Unit Information Section 1
Coal Handling System

Pollutant Information Section 1

Allowable Emissions 2

1. Basis for Allowable Emissions Code :	RULE *			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units : Allowable Emissions Unit :	3.59 *	p^0.62 *		
4. Equivalent Allowable Emissions :	11.50	lb/hour	45.20	tons/year
5. Method of Compliance : EPA Method 9 Test				
Compliance Method Code : +*		Compliance Test Frequency : +*		
Fequency Base Date : +				
Regulation : +*				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : Process weight table applies by Rule 62-296.320(4)(a) to grinding processes only.				

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Emissions Unit Information Section ______

Pollutant Information Section ______

Allowable Emissions Information Section ______

Test Methods

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 1
Coal Handling System

Visible Emissions Limitation : Visible Emissions Limitation 1

1. Visible Emissions Subtype :	05 *		
2. Basis for Allowable Opacity :	OTHER *		
3. Requested Allowable Opacity :			
Normal Conditions :		%	
Exceptional Conditions :		%	
Maximum Period of Excess Opacity Allowed :	5	min/hour	
4. Method of Compliance : EPA Method 9			
5. Visible Emissions Comment : Emission limit pursuant to BACT determination (4/8/80)			
Compliance Test Frequency :	0 +	Frequency Base Date :	+
COM Required :	+		
Regulation :	+*		

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I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 1
Coal Handling System

Visible Emissions Limitation : Visible Emissions Limitation 2

1. Visible Emissions Subtype :	20 *	
2. Basis for Allowable Opacity :	RULE *	
3. Requested Allowable Opacity : Normal Conditions :		%
Exceptional Conditions :		%
Maximum Period of Excess Opacity Allowed :	5	min/hour
4. Method of Compliance : EPA Method 9		
5. Visible Emissions Comment : Coal grinding baghouse subject to 40 CFR 60 Subpart Y		
Compliance Test Frequency : 0 +	Frequency Base Date : +	
COM Required : +		
Regulation : +*		

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 1
Coal Handling System

Continuous Monitoring System : Continuous Monitor 1

1. Parameter Code : *	2. Pollutant(s):
3. CMS Requirement CMS Requirement Code : +	
4. Monitor Information Manufacturer : Model Number : Serial Number	
5. Installation Date :	
6. Performance Specification Test Date :	
7. Continuous Monitor Comment : Not Applicable	
Performance Specification Test Status : + Certification Date (DD-MON-YYYY) : +	

K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

Emissions Unit Information Section 1

Coal Handling System

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

[ ] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

[X] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

2. Increment Consuming for Nitrogen Dioxide?

[ ] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[X] None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3. Increment Consuming/Expanding Code :		
PM :	SO2 :	NO2 :
4. Baseline Emissions :		
PM :	lb/hour	tons/year
SO2 :	lb/hour	tons/year
NO2 :		tons/year
5. PSD Comment :		
Not Applicable		

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Emissions Unit Information Section 1

Coal Handling System

Supplemental Requirements for All Applications

1. Process Flow Diagram :	Fig.2-3
2. Fuel Analysis or Specification :	
3. Detailed Description of Control Equipment :	Attachment B
4. Description of Stack Sampling Facilities :	NA
5. Compliance Test Report :	NA
6. Procedures for Startup and Shutdown :	NA
7. Operation and Maintenance Plan :	NA
8. Supplemental Information for Construction Permit Application :	NA
9. Other Information Required by Rule or Statue :	NA

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operations :	NA
11. Alterntive Modes of Operation (Emissions Trading) :	NA

12. Identification of Additional Applicable Requirements :	NA
13. Compliance Assurance Monitoring Plan :	NA

14. Acid Rain Application (Hard-copy Required) :

NA	Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
NA	Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
NA	New Unit Exemption (Form No. 62-210.900(1)(a)2.)
NA	Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)