SECTION IV. APPENDIX BD

FINAL BACT DETERMINATION AND EMISSION STANDARDS

PROJECT DESCRIPTION

The proposed facility will be a nominal 1,150,000 tons per year (TPY) dry process portland cement plant incorporating a dry process kiln with a preheater and calciner (PH/C). Major equipment associated with the main components of the plant will include the following:

- A materials storage building (MSB);
- A primary crusher at the quarry and belt conveyors to MSB;
- Raw material piles stored inside of the MSB. The piles will include limestone, alumina sources (e.g. bauxite, clay, and coal ash), iron sources (e.g. mill scale and iron ore), silica sources (e.g. sand), and additives (e.g. feldspar);
- Materials handling equipment including portal reclaimers, stackers, belt conveyors, conveyor from the MSB to the raw mill, control system/analyzer, etc.;
- An in-line raw mill that simultaneously dries raw materials using the exhaust gas from the kiln, PH/C, and clinker cooler;
- A preheater with staged combustion and selective non-catalytic reduction (SNCR) system;
- An air heater for use when additional drying capacity is required;
- A nominal 10,000 ton blending silo;
- An indirect-firing system with a low-NO_X main kiln burner capable of burning coal, petroleum coke, fuel oil, and natural gas;
- A whole tire feeder system;
- A clinker cooler with reciprocating grates, cooling air fans, and hot air ducting to the kiln and PH/C;
- Clinker storage and grinding including a finish mill with air separator, clinker silos with metering device, limestone and gypsum piles, and associated conveyors;
- A cement transfer and storage facility including truck loadout and packhouse; and
- A nominal 18 TPH coal and petroleum coke grinding system with associated mill, storage facility, conveyors, including a fabric filter baghouse.

The permit authorizes the construction of the following new emissions units:

EU ID	Emissions Unit Description
001	Raw Material Quarrying, Crushing, and Storage. Includes raw material processing from quarry up to raw material storage, and additives handling from delivery to storage.
002	Raw Materials, Conveying, Storage, and Processing. From raw material and additive storage to preheater (includes conveyance of raw materials and raw meal to and from raw mill, and homogenizing silo).
003	Pyroprocessing System. Includes kiln, preheater/calciner, raw mill, air heater, and clinker cooler.
004	Clinker and Additives Storage and Handling. Includes clinker handling from clinker cooler to clinker silo discharge, and clinker and additive handling from storage to the finish mill.
005	Finish Mill (Cement Grinding)
006	Cement Handling, Storage, Packing, and Loadout. Includes cement conveyance to silos, cement silos, loadout to trucks from silos, and cement bagging operations.
007	Coal and Petroleum Coke Grinding System. Includes coal/petroleum coke handling from railcar unloading to the pulverized fuel bin.
008	Fugitive Dust From Storage Piles, Paved Roads, and Unpaved Roads

RAW MATERIAL QUARRYING, CRUSHING, AND STORAGE

Visible Emission Standards: These opacity standards do not apply to truck dumping of nonmetallic minerals into any screening operation, feed hopper, or crusher.

a. Fugitive emissions from the crusher shall not exceed 15% opacity.

b. Fugitive emissions from any transfer point on belt conveyors or from any other affected facility shall not exceed 10% opacity.

Opacity shall be determined in accordance with EPA Method 9.

RAW MATERIALS, CONVEYING, STORAGE, AND PROCESSING

Each emissions point specifically identified for raw materials conveying, storage, and processing shall be controlled by a baghouse system. Each required baghouse shall be designed, operated, and maintained to achieve a PM design specification of 0.01 gr/dscf and a PM_{10} design specification of 0.007 gr/dscf.

The following BACT standards apply to each emissions point of this unit including all raw material storage bins and conveying system transfer points:

a. Emissions are limited to 5% opacity from each of the above listed emissions points controlled by a baghouse.

b. Emissions are limited to 10% opacity from any emissions point not controlled by a baghouse.

Opacity shall be determined in accordance with EPA Method 9.

PYROPROCESSING SYSTEM

Emissions from the pyroprocessing system are controlled by the following equipment and techniques.

NO_X Controls

Low-NO_X Burners and Indirect Firing: The main kiln and calciner will be equipped with Low NO_X burners that will create distinct combustion zones within the flame. An indirect firing system will be used to reduce the amount of primary air injected with the fuel used in the main kiln burner.

Staged Combustion in the Calciner (SCC): The kiln system will be designed such that the introduction of fuel, air and meal to the calciner will be staged or sequenced for the reduction of NO_X emissions.

SNCR: A selective non-catalytic reduction (SNCR) system shall be designed, constructed and operated to achieve the permitted levels for NO_X emissions from the pyroprocessing system. The SNCR system will consist of an aqueous ammonia tank, pumps, piping, compressed air delivery, injectors, control system, and other ancillary equipment. Aqueous ammonia will be injected at a location(s) in the preheater/calciner with an appropriate temperature profile to support the SNCR process.

Particulate Matter (PM/PM_{10}) Controls:

The permittee shall install a baghouse control system to remove particulate matter emissions from the pyroprocessing exhaust gas stream to achieve the PM/PM_{10} emissions standards specified in this permit.

Sulfur Dioxide Controls:

The use of low-sulfur raw materials will help to keep SO_2 emissions below permitted levels.

Carbon Monoxide/Volatile Organic Compounds Controls:

The owner or operator shall control CO and VOC emissions with a design providing sufficient time/temperature to oxidize these pollutants, good operating practices, and careful attention to the raw material mix.

Emissions from the pyroprocessing system shall not exceed the following BACT standards.

Pollutant	Emission Limit	Averaging Time	Compliance Method	Basis
CO	2.9 lb/ton of clinker	30-day rolling	CEMS	BACT
	362.5 lb/hr			
NO_X[a]	1.95 lb/ton of clinker	30-day rolling	CEMS	BACT
	243.8 lb/hr			
PM/PM_{10}[b]	0.153 lb/ton of clinker	Three 1-hr runs	3-Run Test	BACT
	19.13 lb/hr			
	10 % opacity	6-minute block	COMS	
SO_2	0.20 lb/ton of clinker	24-hr rolling	CEMS	BACT
	25.0 lb/hr			
VOC[c]	0.12 lb/ton of clinker	30-day block	CEMS	BACT
	15.0 lb/hr			

a. For an "initial startup period" NO_X emissions shall not exceed 3.0 lb/ton of clinker (375.0 lb/hour) based on a 30-day rolling average. The "initial startup" period shall begin after initial certification of the NO_X CEMS and shall end as soon as any of the following conditions are met:
   1) The Kiln system produces 77,500 tons of clinker or more in any 30-day rolling period.
   2) The Kiln system produces a total of 155,000 tons of clinker.
   3) 365 days calendar days elapse after initial certification of the NO_X CEMS.

   After the "initial startup" period ends, NO_X emissions shall not exceed 1.95 lb/ton of clinker (243.8 lb/hour) based on a 30-day rolling average. These requirements do not waive or vary any applicable NSPS or NESHAP monitoring or record keeping requirements.

b. All PM emitted from the baghouse exhaust is assumed to be PM_{10}. The BACT standard for PM is equivalent to approximately 0.09 lb ton of preheater feed material. The emissions limits for particulate matter and visible emissions imposed by Rule 62-212.400(BACT) are as stringent as or more stringent than the limits imposed by the applicable NESHAP provisions. The BACT requirements do not waive or vary any applicable NESHAP monitoring or record keeping requirements.

c. Compliance shall be demonstrated by THC CEMS. VOC emissions shall be measured as total hydrocarbons (THC) and expressed as "propane" for the mass emissions rate.

{Permitting Note: In combination with the annual clinker production limitation of 1,095,000 tons per year, the above emissions standards effectively limit annual potential emissions from this unit to: 1,588 tons/year of CO; 1,068 tons/year of NO_X (after year one); 83.8 tons/year of PM/PM_{10}; 110 tons/year of SO_2; and 66 tons/year of VOC. Note that first year annual NO_X emissions could be as high as 1,643 tons/year.}

CLINKER AND ADDITIVES STORAGE AND HANDLING

The following BACT standards apply to each emissions point of this unit including all raw material storage and conveying system transfer points:

a. Emissions are limited to 5% opacity from each of the above listed emissions points controlled by a baghouse.

b. Emissions are limited to 10% opacity from any emissions point not controlled by a baghouse.

Each emissions point identified for clinker storage and conveying shall be controlled by a baghouse system. Each required baghouse shall be designed, operated, and maintained to achieve a PM design specification of 0.01 gr/dscf and a PM_{10} design specification of 0.007 gr/dscf.

Opacity shall be determined in accordance with EPA Method 9.

Finish Mill (Cement Grinding)

Finish Mill: Visible emissions are limited to 5% opacity from the finish mill baghouse. The baghouse is designed to control PM emissions to 0.01 grains/dry standard cubic foot (gr/dscf) and PM_{10} emissions to 0.007 gr/dscf.

Finish Mill Air Separator: The following BACT standards apply to the finish mill air separator:

PM/ PM_{10}	Visible Emissions
0.007 gr/dscf	5% Opacity

All PM emitted from the baghouse exhaust is assumed to be PM_{10}. PM emissions will be determined in accordance with EPA Method 5. Opacity shall be determined in accordance with EPA Method 9.

CEMENT HANDLING, STORAGE, PACKING, AND LOADOUT

Each emissions point identified for finish mills cement processing shall be controlled by a baghouse system. Each required baghouse shall be designed, operated, and maintained to achieve a PM design specification of 0.01 gr/dscf and a PM_{10} design specification of 0.007 gr/dscf.

The following BACT standards apply to each emissions point of this unit:

a. Emissions are limited to 5% opacity from each of the above listed emissions points controlled by a baghouse.

b. Emissions are limited to 10% opacity from any emissions point not controlled by a baghouse.

Opacity shall be determined in accordance with EPA Method 9.

COAL AND PETROLEUM COKE GRINDING SYSTEM

Each emissions point identified for the coal and petroleum coke grinding system shall be controlled by a baghouse system. Each required baghouse shall be designed, operated, and maintained to achieve a PM design specification of 0.01 gr/dscf and a PM_{10} design specification of 0.007 gr/dscf.

Particulate Matter Standards: Particulate matter emissions from the thermal dryer shall not exceed 0.007 grains per dscf of exhaust as determined by EPA method 5.

Visible Emissions Standards: Visible emissions shall not exceed the following limits as determined by EPA Method 9:

- Visible emission from any emissions point described above and controlled by a baghouses shall not exceed 5% opacity.
- Visible emissions from all coal/petcoke processing and conveying equipment, coal/petcoke storage system, or coal/petcoke transfer and loading system processing coal/petcoke, and not controlled by a baghouse, shall not exceed 10% opacity.

FUGITIVE DUST FROM STORAGE PILES, PAVED ROADS, AND UNPAVED ROADS

The following work practices were determined as BACT for the control of fugitive emissions:

a. No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity without taking reasonable precautions to prevent such emissions. Such activities include, but are not limited to: vehicular movement; transportation of materials; construction, alteration, demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling.

b. Reasonable precautions shall include the following:

   (1) Landscaping and planting of vegetation.

   (2) Application of water to control fugitive dust from activities such as demolition of buildings, grading roads, construction, and land clearing.

(3) Water supply lines, hoses and sprinklers shall be located near all stockpiles of raw materials, coal, and petroleum coke.

(4) All plant operators shall be trained in basic environmental compliance and shall perform visual inspections of raw materials, coal and petroleum coke periodically and before handling. If the visual inspections indicate a lack of surface moisture, such materials shall be wetted with sprinklers. Wetting shall continue until the potential for unconfined particulate matter emissions are minimized.

(5) Water spray shall be used to wet the materials and fuel if inherent moisture and moisture from wetting the storage piles are not sufficient to prevent unconfined particulate matter emissions.

(6) As necessary, applications of asphalt, water, or dust suppressants to unpaved roads, yards, open stockpiles and similar activities.

(7) Paving of access roadways, parking areas, manufacture area, and fuel storage yard.

(8) Removal of dust from buildings, roads, and other paved areas under the control of the owner or operator of the facility to prevent particulate matter from becoming airborne.

(9) A vacuum sweeper shall be used to remove dust from paved roads, parking, and other work areas.

(10) Enclosure or covering of conveyor systems where practicably feasible.

(11) All materials at the plant shall be stored under roof. Materials, other than quarried materials, shall be stored on compacted clay or concrete, or in enclosed vessels.

(12) Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter.

(13) Confining abrasive blasting where possible.

c. 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.

DETAILS OF THE ANALYSIS MAY BE OBTAINED BY CONTACTING:

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February 10, 2006
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2/13/06
Date