

SUPPLEMENT TO PERMIT NO. 60-71L

Holnam, Inc.
Dundee, Michigan
Revised May 8, 2000
GENERAL CONDITIONS

1. Rule 201(1) - The process or process equipment covered by this permit shall not be reconstructed, relocated, altered, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule.
2. Rule 201(4) - If the installation, reconstruction, relocation, or alteration of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the person to whom this permit was issued, or the designated authorized agent, shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environmental Quality, P.O. Box 30260, Lansing, Michigan 48909, if it is decided not to pursue the installation, reconstruction, relocation, or alteration of the equipment allowed by this Permit to Install.
3. Rule 201(6)(a) - If this Permit to Install is issued for a process or process equipment located at a stationary source that is subject to the Renewable Operating Permit program requirements pursuant to R 336.1210, trial operation is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install and until the appropriate terms and conditions of this Permit to Install have been incorporated into the Renewable Operating Permit. Upon incorporation of the appropriate terms and conditions into the Renewable Operating Permit, this Permit to Install shall become void.
4. Rules 201(6)(b) - If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to R 336.1210, operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install.
5. Rule 201(8) and Section 5510 of Act 451, P.A. 1994 - The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Departments' rules or the Clean Air Act.
6. Rule 219 - The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to R 336.1219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b) and (c) of R 336.1219. The written request shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environmental Quality.
7. Rule 901 - Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property.

8. Rule 912 - The owner or operator of a source, process, or process equipment shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant in excess of standards for more than one hour, or of any air contaminant in excess of standards for more than two hours, as required in this rule, to the District Supervisor, Air Quality Division. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the District Supervisor within 10 days, with the information required in this rule.
9. Approval of this permit does not exempt the person to whom this permit was issued from complying with any future applicable requirements which may be promulgated under Part 55 of Act 451, P.A. 1994 or the Clean Air Act.
10. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.
11. Operation of this equipment may be subject to other requirements of Part 55 of Act 451, P.A. 1994, and the rules promulgated thereunder.
12. Rule 301 - Except as provided in subrules (2), and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of R 336.1301, a person shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with R 336.1303.
 - a) A 6-minute average of 20% opacity, except for one 6-minute average per hour of not more than 27% opacity.
 - b) A visible emission limit specified by an applicable federal new source performance standard.
 - c) A visible emission limit specified as a condition of this permit to install.
13. Rule 370 - Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in R 336.1370(2).
14. Rule 285 - Except as allowed by Rule 285 (a), (b), and (c), applicant shall not substitute any fuels, coatings, nor raw materials for those described in the application and allowed by this permit, nor make changes to the process or process equipment described in the application, without prior notification to and approval by the Air Quality Division.
15. The Department may require the applicant to conduct acceptable performance tests, at the applicant's expense, in accordance with R 336.2001 and R 336.2003, under any of the conditions listed in R 336.2001.

SPECIAL CONDITIONS

EMISSION LIMITS

1. The particulate emission rate from the two portland cement kilns, modified to burn Tire Derived Fuel (TDF), hereinafter "kilns", shall not exceed 0.10 pounds per 1,000 pounds of exhaust gases, nor 724 tons per year based on a 12-month rolling period as determined at the end of each calendar month. Exhaust gas oxygen correction shall be performed according to the procedure in Attachment A.
2. The sulfur dioxide emission rate from the kilns shall not exceed 11,940 tons per year based on a 12-month rolling period as determined at the end of each calendar month.
3. The nitrogen oxides emissions rate from the kilns shall not exceed 3,377 tons per year based on a 12-month rolling period as determined at the end of each calendar month.
4. The carbon monoxide emission rate from the kilns shall not exceed 3,515 tons per year based on a 12-month rolling period as determined at the end of each calendar month. This limit was based on data from the TDF trial-burn and is known to be biased low. Therefore, the applicant may retest to establish a different limit. Testing shall be conducted pursuant to the requirements of Condition No. 26.
5. The volatile organic compounds (VOC) emission rate from the kilns shall not exceed 7,217 tons per year based on a 12-month rolling period as determined at the end of each calendar month.
6. Except as provided in Special Condition No. 30, visible emissions from the kilns shall not exceed a 6-minute average of 15 percent opacity in the stack based on the continuous opacity monitoring system. When there is a detached plume from the kilns during, but not limited to, visible emission monitor outages, malfunction and/or calibrations, the visible emissions shall not exceed a 6-minute average of 20 percent opacity at the stack. The staff of the Air Quality Division shall perform visible emission readings at staff's discretion in accordance with 40 CFR 60, Appendix A, Reference Method 9, as modified to read only at the top of the stack.

OPERATING REQUIREMENTS

7. Applicant shall not operate the kilns unless the fabric filter collectors and either the activated carbon adsorbent injection system or the slurry scrubbers and regenerative thermal oxidizers are installed and operating properly.
8. The fabric filter collectors shall be operating when the fabric filter inlet temperature is between 280 and 475 degrees Fahrenheit, except during startup when the fabric filter inlet temperature is less than 310 degrees Fahrenheit.
9. The maximum amount of TDF fired in the kilns combined shall not exceed 4.6 tons per hour based upon a 24-hour average calculated at the end of each hour.

10. The hourly heat input to either kiln from TDF feed shall not exceed 21% of the total heat input to that kiln.
11. The hourly heat input to either kiln from petroleum coke shall not exceed 25% of the total heat input to that kiln.
12. Applicant shall not operate the kilns unless the program for continuous fugitive dust control for all plant roadways, the plant yard, all material storage piles and all material handling operations specified in Attachment C has been implemented and is maintained.
13. Applicant shall not operate the kilns unless the malfunction abatement plan/preventative maintenance program, specified in Attachment D, for the fabric filter collector emission control system and sorbent and conditioning materials storage injection and handling system has been implemented and is maintained.
14. During times that the carbon injection system is being operated, the nominal amount of carbon injected into each kiln exhaust ahead of the fabric filter collector shall be uniformly distributed throughout the hour, not including startup, and shutdown as defined in Special Condition No. 30, and shall not be less than 295 pounds per hour calculated as a five hour rolling average updated each hour, or less than 280 pounds for any individual hour for each operating kiln. For purposes of calculating the five hour rolling average, all hourly carbon injection feeds in excess of 305 pounds shall be set equal to 305 pounds. Alternate substances and/or injection rates may be established by the Department after an acceptable demonstration has been made by the applicant that compliance with the particulate emission and visible emission limitations will be achieved. Attachment E provides examples of compliance with this permit condition.
15. Applicant shall not use more than 1670 gallons per month of specification used oil as supplemental fuel in the kilns. Specification used oil is defined as used lubricating and hydraulic oils generated by the mobile and stationary equipment in use at this Holnam Cement Facility and meeting the specification shown in Attachment F.

MONITORING AND RECORD KEEPING REQUIREMENTS

16. Applicant shall monitor and record hourly the amount of TDF and coal/coke mixture fired in the kilns, and calculate the TDF 24-hour average usage rate in a manner and with instrumentation acceptable to the Air Quality Division. All records including the measured TDF and coal/coke mixture hourly usage rate, the calculated TDF and coke hourly heat input rates, and the calculated TDF 24-hour average usage rate shall be kept on file for a period of at least five years and made available to the Air Quality Division upon request.

17. Applicant shall monitor and record the kiln feed rate every two hours in a manner and with instrumentation acceptable to the Air Quality Division. Applicant shall use the kiln feed rate to calculate bi-hourly production rates. All records shall be kept on file for a period of at least five years and made available to the Air Quality Division upon request.
18. Applicant shall monitor and record the gas temperature at the exit from the kilns on a continuous basis in a manner and with instrumentation acceptable to the Air Quality Division. All records shall be kept on file for a period of at least five years and made available to the Air Quality Division upon request.
19. Applicant shall monitor and record the visible emissions from the cement kilns on a continuous basis. The continuous opacity monitoring system (COMS) shall be installed, calibrated, maintained and operated in accordance with the procedures set forth in 40 CFR 60.13 and Performance Specification 1 (PS 1), Appendix B of 40 CFR Part 60. Data collected by the opacity monitoring system shall be collected for a minimum of 95 percent of the operating hours of the kilns per month and in a manner and with instrumentation acceptable to the District Supervisor, Air Quality Division. The applicant shall use all reasonable measures necessary to operate the continuous opacity monitoring system during periods of startup, shutdown and malfunction. In accordance with 40 CFR Parts 60.7 and 60.13(h) the magnitude, in actual percent opacity, of all six minute averages of opacity greater than 15 percent and the time period represented by such averages and any deficiencies of the opacity monitoring system up-time shall be submitted in an acceptable format to the District Supervisor, Air Quality Division, within 30 days following the end of the quarter. Applicant shall perform an annual audit of the COMS using the procedures put forth in U.S. EPA publication No. 600/8-87-025, "Performance Audits Procedures for Opacity Monitors", and all amendments thereto. The results of the annual audit shall be submitted to the District Supervisor within 15 days of receipt. Further, all monitoring data shall be kept on file for a period of at least five years and made available to the District Supervisor upon request.
20. Applicant shall monitor and record the sulfur dioxide and nitrogen dioxide emission from the cement kilns on a continuous basis in a manner and with instrumentation acceptable to the Air Quality Division (AQD). Installation and operation of the sulfur dioxide and nitrogen dioxide continuous emission monitoring systems shall meet the following timelines:
 - a.) Within 60 calendar days after the issuance of this permit, applicant shall submit two copies of a Monitoring Plan to the AQD, for review and approval. The Monitoring Plan shall include drawings or specifications showing proposed locations and descriptions of the required CEMS.
 - b.) Within 150 calendar days after the issuance of this permit, the applicant shall submit two copies of a complete test plan for the CEMS to the AQD for approval.
 - c.) Within 90 calendar days after the completion of the installation of the scrubber/oxidizer system the applicant shall complete the installation and testing of the CEMS.
 - d.) Within 60 days after startup of the scrubber oxidizer system, the applicant shall submit to the AQD two copies of the final report demonstrating CEMS complies with the requirements of Performance Specifications (PS) 2 of Appendix B, 40 CFR Part 60.

The sulfur dioxide and nitrogen dioxide CEMS required by this condition shall meet the following requirements:

- e) The span value shall be 2.0 times the lowest emission standard or as specified in the federal regulations
- f) The CEMS shall be installed, calibrated, maintained, and operated in accordance with the procedures set forth in 40 CFR 60.13 and PS 2 of Appendix B, 40 CFR Part 60.
- g) Each calendar quarter, the applicant shall perform and report the Quality Assurance Procedures of the CEMS set forth in Appendix F of 40 CFR Part 60. Within 30 days following the end of each calendar quarter, the Applicant shall submit the results to the AQD in the format of the data assessment report (Figure 1, Appendix F).
- h) The applicant shall perform an annual audit of the COMS using the procedures set forth in USEPA Publication 450/4-92-010, "Performance Audits Procedures for Opacity Monitors", or a procedure acceptable to the AQD. Within 30 days after the completion of the audit, the results of the annual audit shall be submitted to the AQD.
- i) All monitoring data shall be kept on file for a period of at least five years and made available to the AQD upon request.

In accordance with 40 CFR 60.7(c) and (d), the applicant shall submit two copies of an excess emission report (EER) and summary report in an acceptable format to the Air Quality Division, within 30 days following the end of each calendar quarter. The Summary Report shall follow the format of Figure 1 in 40 CFR 60.7(d). The EER shall include the following information.

- j) A report of each exceedance above the limits specified in Special Conditions numbers 2 and 3. This includes the date, time, magnitude, cause and corrective actions of all occurrences during the reporting period.
- k) A report of all periods of CEMS downtime and corrective action.
- l) A report of the total operating time of the cement kilns during the reporting period.
- m) If No exceedances or COMS downtime occurred during the reporting period, applicant shall report that fact.
- n) A report of any periods that the CEMS exceeds the instrument range.

These monitors and the resulting data shall be used for determining compliance with Special Conditions numbers 2 and 3.

21. Applicant shall keep a record of the monthly usage rate of specification used oil as supplemental fuel. Such records shall be kept on file for a period of at least five years and made available to the Air Quality Division upon request.

TESTING REQUIREMENTS

22. Applicant shall analyze TDF, coal and coke fuels for their individual heat and metal contents on a semi-annual basis, using a method(s) acceptable to the Air Quality Division, a testing/analysis procedure(s) protocol shall be submitted to the District Supervisor, Air Quality Division, for approval. Metals to be analyzed for should include manganese, mercury and nickel as a minimum. Results of these analyses shall be kept on file for a period of at least five years and made available to the Air Quality Division upon request. After two years from the date of approval of this permit the applicant may apply for a change in frequency of testing. The change in testing frequency request shall be submitted to and approved by the District Supervisor, Air Quality Division.

23. Applicant shall analyze raw materials fed to the kilns for sulfur and metal content on a semi-annual basis using a method(s) acceptable to the Air Quality Division, testing/analysis procedure(s) protocol shall be submitted to the District Supervisor, Air Quality Division, for approval. Metals to be analyzed for should include manganese, mercury and nickel as a minimum. Results of these analyses shall be kept on file for a period of at least five years and made available to the Air Quality Division upon request. After two years from the date of approval of this permit the applicant may apply for a change in frequency of testing. The change in testing frequency request shall be submitted to and approved by the District Supervisor, Air Quality Division.
24. Applicant shall collect and analyze a representative composite sample of all categories of the specification used oils used as supplemental fuel for the kilns, to verify the physical and chemical properties of the used oil comply with the specifications listed in Attachment F. Samples shall be collected at least twice per calendar year with sampling procedures and analytical techniques, including quality assurance procedures, acceptable to the Air Quality Division. Upon request of the Air Quality Division, applicant shall collect and analyze representative individual samples of each category of the specification used oil. All sampling records and analytical results shall be kept on file for a period of at least two years and made available to the Air Quality Division upon request.
25. Rules 1001, 1003 and 1004 - Within 18 months after commencement of trial operation of the TDF system, verification of dioxin and furan emission rates from the kilns by testing, at owner's expense, in accordance with Department requirements, will be required for operating approval. Verification of emission rates includes the submittal of a complete report of the test results. No less than 30 days prior to testing, a complete stack testing plan must be submitted to the Air Quality Division. The final plan must be approved by the Air Quality Division prior to testing.
26. Rules 1001, 1003, and 1004 - Verification of particulate, sulfur dioxide, nitrogen oxides, carbon monoxide, all heavy metals, and VOC emission rates, from the kilns by testing, at owner's expense, in accordance with Department requirements, may be required. The testing shall be conducted within 60 days following the receipt of the written notification of the requirement. Verification of emission rates includes the submittal of a complete report of the test results. If testing is required, a complete test plan must be submitted to the Air Quality Division. The final plan must be approved by the Division prior to testing and a complete report of test results must be submitted to the Division within 60 days following the last date of testing.

MALFUNCTION ABATEMENT REQUIREMENTS

27. Raw material input feed to the kilns shall cease immediately, consistent with safe operating procedures, upon an initiation of the fabric filter collector bypass. Input feed to the kilns shall not restart until the fabric filter collector is back on line and functioning properly. The fabric filter collector may be routinely bypassed only during the portion of startup as defined in Special Condition No. 30, when the fabric filter collector inlet temperature is less than 310 degrees Fahrenheit.

MISCELLANEOUS REQUIREMENTS

28. The exhaust gases from the kilns shall be discharged unobstructed vertically upwards to the ambient air from a stack with a maximum diameter of 180 inches at an exit point not less than 350 feet above ground level.
29. A complete copy of the carbon specifications supplied by the carbon vendor and a statement of equivalence with the carbon currently in use shall be submitted to the District Supervisor immediately upon delivery of a shipment of carbon from a new vendor.
30. The emission limitations in Special Condition No. 6 shall not be applicable during period of startup and during periods of shutdown. Startup shall be defined as between the time when any fuel is put to the burner pipe and no later than sixteen hours after coal is put to the burner pipe. Shutdown shall be defined as a halting of the production process.
31. This permit allows the use of only the following materials and fuels listed below:

Raw Materials

Limestone
Clay/Shale
Sand
Gypsum
Clinkers
Recycled kiln dust
Leached kiln dust

Alternate Raw Materials

Conditioned flyash
Bottom ash
Non-hazardous petroleum contaminated soils

Fuels

Natural Gas
Pulverized coal
Petroleum coke
Specification used oil
Tire-derived fuel (TDF)

This condition does not preclude the use of alternative raw materials and fuels allowed by Rule 285 (b) and (c).

Holnam, Inc
Permit No. 60-71L
Page 9
March 20, 2000

Attachment A

Permit No. 60-71L

Let	M	=	Flow measured at test location in ACFM
	x	=	O ₂ content as fraction of dry gas volume measured at test location
	y	=	CO ₂ content as fraction of dry gas volume measured at test location
	w	=	Moisture content of gases by volume as measured at test location
	T	=	Temperature in degrees Rankine
	p	=	Static pressure in duct
	b	=	Barometric pressure
	cf	=	Correction factor for temperature & pressure
			$cf = [(b+p)/b] (530/T)$

- Assume:
1. Kiln gases and water vapor behave as ideal gases
 2. Contribution from moisture in ambient air is negligible compared to moisture content in kiln gases

Correction Procedure:

1. Convert M to dry CFM @ STP (M')
 $M' = (1-w) (M) (cf) \text{ DSCFM}$
2. Calculate density of M'
 $D = [x(32) + y(44) + (1-x-y) (28)] / 386.94 \text{ lbs./cu.ft.}$
3. Calculate total mass flow of M'
 $Z = (D) (M') \text{ lbs. / min.}$
4. Calculate mass flow of water in M
 $V = (\text{density of H}_2\text{O @ T}_m) (w) (M) \text{ lbs. / min.}$
5. Calculate mass flow of dry kiln gas @ STP
 $Q' = [(.2095 - x) / (.2095 - .06)] (Z)$
6. Add mass flow of water to obtain total mass flow of wet kiln gas @ STP
 $Q = Q' + V$

Holnam, Inc
Permit No. 60-71L
Page 11
March 20, 2000

Attachment C

Permit No. 60-71L

HOLNAM INC., DUNDEE CEMENT PLANT

FUGITIVE DUST CONTROL PROGRAM

FUGITIVE DUST PLAN
 ATTACHMENT C

Section	Equip. Item	Location	Control Methods	
			Control Equip.	Operation
Stockpiles	Coal	South end of plant along secondary road. Avg. 10,000 ton stockpile.	Delivery in Covered Trucks	Mine Run avg. 9% moisture
Stockpiles	Pet Coke	South end of plant along secondary road. Avg. 2,000 tons.	Delivery in Covered Trucks	Low fines content. Residual hydro-carbon
Stockpiles	Limestone	South end of plant under Belt Conveyor 13. Avg. 50,000 tons	Discharge onto pile is from a telescoping spout that has auto controls to raise/lower spout. Water spray system at load point of belt 3.	Low fines content
Stockpiles	Bottom Ash	South end of plant near limestone pile. Avg. 10,000 tons.	Delivery in covered trucks	High moisture
Stockpiles	Gypsum	Next to customer silo along main roadway. Avg. 10,000 tons.	Delivery in covered trucks	Gypsum 2 ^x size Very low fines content
Stockpiles	Clinker	Main storage hall. Storage hall capacity 125,000 tons.	Discharge into hall is through gravity controlled discharge doors. Transport conveyors at transfer points are dedusted with baghouse collection. Hall is partially enclosed.	Storage crane bucket operation is restricted to low level discharge.
Stockpiles	Conditioned Flyash	In quarry at clay plant dump hopper area.	Delivery in covered trucks and material has been vetted.	Minimize inventories.
Section	Equip. Item	Location	Control Methods	
			Control Equip.	Operation
Transport	Gypsum	From stockpile to feeder 4		Material is purchased as 2 ^x size. Low fines content.
Transport	Limestone	Haulage from rockface to gyratory crusher.		Rock is 12 ^x plus. Low fines content.
Transport	Clay	Haulage from stripping to clay		Material contains 13%

crusher.

moisture.

Transport	Top Stripping	Haulage to stripping dump	Area is treated with water truck once per day or more during dry weather stripping. High moisture material.
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Conveying	Belt 1	Quarry crusher to belt 2	Completely enclosed in a underground tunnel.
	Belt 2	Belt 2 to secondary crushing	Completely enclosed in a gallery structure. Crushing system dedusted by a baghouse collector.
	Belt 3	Secondary crushing to stockpile	Completely enclosed in a gallery structure. Discharge to stockpile is through an auto controlled raise/lower telescoping spout.
	Belt 4	Reclaim conveyor from stockpile.	Completely enclosed in a gallery structure.
	Belt 5	Reclaim conveyor from secondary building to feed silos.	Completely enclosed in a gallery structure. Transfer points dedusted by baghouse dust collectors.
	Belt 6	Short transfer belt in secondary crusher building to outside silo.	Transfer points dedusted by baghouse dust collectors.

Section	Equip. Item	Location	Control Methods	
			Control Equip.	Operation
Road	Quarry Roads	Main Entrance road to quarry Clay haul road Stone haul road	Gravel construction sealed with oil/asphalt mixture	Treatment with mixture 4 times per year.
	Temporary Road	Road to overburdened dump	Graded regularly and usage of water to control fugitive dust	Plant 4,000 gal water truck. Once per day and more during dry weather stripping operations.
Road	Main Plant Roads	Main Plant	Concrete construction Road sweeper for maintaining clean paved surfaces Truck Wash Facility	Swept every weekday Apr-Oct., twice a week Nov-Mar., (during dry weather). Operated Apr.-Oct.
Road	Secondary Roads	Road secondary building to waterplant	Graded gravel road	Treated 2 times per year with oil/asphalt mixture.
Road	Parking lots	Entrance to main plant	Graded gravel construction	Treated 2 times per year with oil/asphalt mixture.
Stockpiles (inactive)	Outside clinker	SW of storage hall	Clinker forms hard covering which stabilized the pile	Do not disturb piles until total reclaim is possible
Transport	Clay	Haulage from stripping to clay crusher.		Material contains 13% moisture.
Transport	Top Stripping	Haulage to stripping dump		Area is treated with water truck once per day or more during dry weather stripping. High moisture material.

ATTACHMENT D

MALFUNCTION ABATEMENT PLAN/PREVENTIVE MAINTENANCE PROGRAM HOLNAM INC. - DUNDEE CEMENT PLANT DUNDEE, MICHIGAN

Permit No. 60-71L

1.0 INTRODUCTION

1.1 PLAN REQUIREMENT

This Malfunction Abatement Plan/Preventive Maintenance Program ("Plan") is developed pursuant to the Administrative Rules of the Michigan Department of Natural Resources, Part 9, Rules 910, 911, and 912. The Plan describes the method by which anticipated malfunction situations at the Holnam Inc.'s Dundee Cement Plant ("Dundee") located in Dundee, Michigan, will be managed by the owner, or operator, of the facility. This will constitute the standard operating procedures to be implemented at the Dundee facility.

1.2 PLAN PURPOSE

The purpose of this Plan is to describe the standard operating procedures to be used to abate or minimize potential abnormal conditions that may occur at the facility resulting in an in-stack opacity that exceeds the opacity limitation of 15 percent using a 6-minute average. The Plan consists of two parts: 1) The preventive maintenance program, and 2) The malfunction abatement and equipment monitoring program. The on-duty shift supervisor is responsible for implementing the Plan.

The preventive maintenance program includes the following elements:

- Items or equipment that are to be inspected
- Frequency of inspection
- Method of inspection
- Personnel responsible for overseeing the inspection
- Scheduled maintenance and repairs of equipment
- Major replacement parts that are to be kept in inventory

The malfunction abatement and equipment monitoring program includes the following elements:

- Equipment operating variables that are to be monitored to detect any malfunction or failure
- Normal operating range of these variables
- Description of the method of monitoring
- Personnel responsible for monitoring
- Frequency of monitoring

- Description of the corrective procedures or operational changes aimed at abating a malfunction or equipment failure situation

2.0 FACILITY BACKGROUND

The Dundee Cement Plant began operation in 1959. The plant produces cement clinker in two rotary kilns using a wet process. The exhaust from each kiln is treated separately by an air pollution control device before it is released vertically upward into the atmosphere through a common single stack that is 350 feet tall and 15 feet in diameter.

The air pollution control system at the Dundee facility consists of a dry injection venturi scrubber followed by fabric filter collectors. Activated carbon is injected into the exhaust gas ahead of the fabric filters at a nominal rate of 295 lbs/hr, consistent with condition 29. This control system will maintain particulate emissions below the emission limitation of 0.10 lb/1000 lb stack gas corrected at 6% oxygen. The control device will also allow the company to meet a 6 minute opacity limitation of 15 percent opacity in the stack based on the continuous opacity monitoring system and consistent with the requirement in Special Condition 6.

3.0 PREVENTIVE MAINTENANCE PROGRAM

This program is designed to minimize equipment malfunctions by establishing an inspection schedule for all equipment and accessories associated with the air pollution control system. table 1 lists the items to be inspected, the frequency of inspection, the person responsible for overseeing the inspection, and the replacement parts kept in inventory. This program will help identify ahead of time any malfunction that may arise, and by conducting an effective maintenance program, equipment malfunctions will be kept to a minimum. The method of inspection and maintenance procedures will be conducted per the vendor's recommendations. During inspection, the following information will be recorded in a logsheet (see attached Inspection Logsheet):

- Items inspected
- Equipment identification number
- Date of inspection
- The condition of the equipment
- General comments pertaining to the necessity for repairs or adjustments
- The initials of the person conducting the inspection

4.0 MALFUNCTION ABATEMENT AND EQUIPMENT MONITORING PROGRAM

This program is intended to identify any abnormal conditions or equipment malfunctions. Table 2 lists the equipment that are anticipated to break down or cause an exceedance of the opacity limitation, the operating variables to be monitored, the normal operating range, the method of monitoring, the frequency of monitoring, the person monitoring the equipment, and the corrective procedures or operational changes that achieve compliance during a malfunction or failure of the equipment. This program helps detecting any malfunctions and initiates the required corrective actions to achieve compliance in a timely manner. During a malfunction event, the following information will be recorded in a logsheet (see attached Repair Logsheet):

- Equipment identification number
- The date the malfunction was detected
- A description of the malfunction
- The time the malfunction was detected
- The time the repair was completed
- A description of the required repair
- The initials of the person conducting the repair

Except during startup as defined in Special Condition 30, Holnam shall undertake an investigation into the cause of any occurrence of opacity of three consecutive 6 minute averages in excess of 10% opacity based on the continuous opacity monitoring system. The results of this investigation shall be recorded in the operating log.

- a) If the cause of excessive opacity is general bag failure requiring rebagging, Holnam shall either take the compartment off-line or rebag the faulty compartment in the dust collector within 180 days of the completion of the investigation.
- b) If the cause of the excessive opacity is isolated bag failure, Holnam shall take the compartment off-line until repairs are performed within 10 days.

PREVENTIVE MAINTENANCE PROGRAM
 ATTACHMENT D
 TABLE 1

ITEMS INSPECTED		FREQUENCY	RESPONSIBILITY	REPLACEMENT PARTS KEPT IN INVENTORY
Baghouse System (BH1 and BH 2)	Housing and Duct Conditions	Semi-Annual	Maintenance Engineer	bags, kiln exhaust fan motor, programmable controller, Computer , air compressor and motor, damper solenoids, dust pod valves, differential pressure cells, thermocouples, hopper and collect screws, gear reducer and motor, bag bands, tension springs, bag caps, filters, drive belts, reverse air fan motor.
	Bag Condition and Tension	Semi-Annual	Maintenance Engineer	
	Collection Screws	Semi-Annual	Maintenance Engineer	
	Double Tipping Valves	Semi Annual	Maintenance Engineer	
	Hopper Screws	Semi-Annual	Maintenance Engineer	
	Bypass Dampers	Semi-Annual	Maintenance Engineer	
	Seal Air Fan	Semi-Annual	Maintenance Engineer	
	Dust Pods	Semi-Annual	Maintenance Engineer	
	Baghouse Cleaning System	Semi-Annual	Maintenance Engineer	
	Reverse Air Dampers	Semi-Annual	Maintenance Engineer	
	Reverse Air Fans	Semi-Annual	Maintenance Engineer	
	Shakers (Variable Speed Drives)	Semi-Annual	Electrical Engineer	
	Sonic Horns	Semi-Annual	Electrical Engineer	
	Air Compressors LP	Semi-Annual	Maintenance Engineer	
	Kiln Exhaust Fan	Semi-Annual	Maintenance Engineer	
	Electric Motors	Semi-Annual	Electrical Engineer	
Programmable Controller	Semi-Annual	Electrical Engineer		
Alarms	Semi-Annual	Electrical Engineer		

PREVENTIVE MAINTENANCE PROGRAM
 ATTACHMENT D
 TABLE 1 (continued)

ITEMS INSPECTED		FREQUENCY	RESPONSIBILITY	REPLACEMENT PARTS KEPT IN INVENTORY
Baghouse System (BH1 and BH 2)	Instrumentation	Semi-Annual	Electrical Engineer	see previous page
	Computer	Semi-Annual	Electrical Engineer	
	Control Logic	Semi-Annual	Electrical Engineer	
	Air Valve Operators	Semi Annual	Maintenance Engineer	
	Air Dryer H.P.	Monthly	Electrical Engineer	
	Filter Regulator Lubricators	Monthly	Maintenance Engineer	
Dry Venturi Scrubber System	Feed System Calibration	Once/shift (minimum)	Kiln Burner Operator	weigh system load cell, weigh system control package, injection air blower motor, silo alleviator bags.
	Scrubber System	Once/shift (minimum)	Kiln Burner Operator	

Notes:

1. Inspection procedures will be based on vendors recommendations
2. Maintenance is performed as necessary when the inspection reveals problems
3. Equipment inspection and maintenance date, equipment name, equipment identification number, repairs resulting from inspection will be recorded in a logsheet (see attached logsheets)

SHIFT INSPECTION LOGSHEET					
Items Inspected	Equipment ID	Inspection Date	Condition	Comment (see note 1)	Initials
Dry Venturi Scrubber System	Feed System				
	Scrubber System				

Note:

1. If repairs are required, fill out the repair logsheet and reference it in the comment column (above)

MONTHLY INSPECTION LOGSHEET					
Items Inspected	Equipment ID	Inspection Date	Condition	Comment (see note 1)	Initials
Baghouse System (BH1 and BH2)	Air Dryer H.P.				
	Filter Regulator Lubricators				

Note:

1. If repairs are required, fill out the repair logsheet and reference it in the comment column (above)

SEMI-ANNUAL INSPECTION LOGSHEET FOR MISCELLANEOUS EQUIPMENT						
Equipment Name	Items Inspected	Equipment I.D.	Inspection Date	Condition	Comment (see note 1)	Initials

Note:

1. If repairs are required, fill out the repair logsheet and reference it in the comment column (above).

INSPECTION LOGSHEET

Items Inspected		Equipment I.D.	Inspection Date	Condition	Comment (see note 1)	Initials
Baghouse System (BH1 and BH2)	House and Duct Conditions					
	Bag Condition and Tension					
	Collection Screws					
	Double Tipping Valves					
	Hopper Screws					
	Bypass Dampers					
	Seal Air Fan					
	Dust Pods					
	Baghouse Cleaning System					
	Reverse Air Dampers					
	Reverse Air Fans					
	Shakers (Variable Speed Drives)					
	Sonic Horns					
	Air Compressors LP					
	Kiln Exhaust Fan					
	Electric Motors					
	Programmable Controller					
	Alarms					
	Instrumentation					
	Computer					
Control Logic						
Air Valve Operators						

Note: 1. If repairs are required, fill out the repair logsheet and reference it in the comment column (above).

REPAIR LOGSHEET						
Equipment ID	Date	Malfunction Description	Time Malfunction Detected	Time Repair Completed	Repair Description	Initials

Note:

1. If repair time exceeds two hours, see note 3 of the Abatement and Equipment Monitoring Program

MALFUNCTION ABATEMENT AND EQUIPMENT MONITORING PROGRAM
 ATTACHMENT D
 TABLE 2

Equipment	Operating Variables Monitored	Normal Operating Range	Method of Monitoring	Frequency of Monitoring	Person Monitoring	Corrective Procedure or Operational Change in the Event of a Malfunction or Failure to Achieve Compliance
Baghouse system (BH1 and BH2)	Inlet Gas temperature	280°F to 475°F	Display Screen	Frequently	Kiln Burner	If the malfunction is in one or more compartments, those compartments will be taken out of service until repairs are performed. If the malfunction which results in emissions that exceed the emission limitations for more than two hours, see Note 3.
	Outlet Gas Temperature	275°F to 470°F	Display Screen	Frequently	Kiln Burner	
	Inlet Pressure	-6" W.G. to -8.5" W.G.	Differential Pressure Trend Display	Continuous	Kiln Burner	
	Outlet Pressure	-14" W.G. to -16.5" W.G.				
	% Oxygen	0.5 to 2.0%	Strip Chart Recorder or CEMS	Continuous	Kiln Burner	
	In Stack Opacity	5 to 10%	Strip Chart Recorder or CEMS	Continuous	Kiln Burner	
Dry Venturi Scrubber (DVS1 and DVS2)	Inlet Gas Temperature	370 – 565°F	Display Screen	Frequently	Kiln Burner	The injection feed system for each source has redundant sources of injection material (2 silos) and load cells for measuring each batch injection. In the event of a problem with the feed system, the operator selects the alternate equipment, and repairs will be made as soon as feasible. Redundancy is also built into the computer control of the system. The number of batches per hour and batch weight setpoint are determined by material density and desired pounds-per-hour (PPH).
	Outlet Gas Temperature	280 – 475°	Display Screen	Frequently	Kiln Burner	
	Tempering Air Damper Position	40 - 100%	Display Screen	Frequently	Kiln Burner	
	Batch Weight	10 - 20 pounds	Display Screen	Frequently	Kiln Burner	
	Batch Time	Based on Batch Weight	Display Screen	Frequently	Kiln Burner	
Dry Venturi Scrubber (DVS1 and DVS2)	Actual PPH Injection	300 pounds	Display Screen	Frequently	Kiln Burner	see previous page
	Total Pounds Injection	Totalizer	Display Screen	Frequently	Kiln Burner	

MALFUNCTION ABATEMENT AND EQUIPMENT MONITORING PROGRAM
 ATTACHMENT D
 TABLE 2

Equipment	Operating Variables Monitored	Normal Operating Range	Method of Monitoring	Frequency of Monitoring	Person Monitoring	Corrective Procedure or Operational Change in the Event of a Malfunction or Failure to Achieve Compliance
	ALARMS					
	Batch Weight UNDER Setpoint		Display Screen & Alarm System	Continuous	Kiln Burner	see previous page
	Batch Weight OVER Setpoint		Display Screen & Alarm System	Continuous	Kiln Burner	
	Selected Equipment OFF		Display Screen & Alarm System	Continuous	Kiln burner	

Notes:

1. A repair logsheet will be maintained. The logsheet will include: Equipment ID, Date, Time Malfunction Detected, Time Repair Completed, Repair Procedures (see attached Repair Logsheets)
2. The person monitoring the equipment will notify his or her supervisor promptly of any abnormal operating variables that cannot be corrected through normal adjustments and procedures.
3. Pursuant to the Michigan Air Pollution Control Commission Rules, Part 9, Rule 912, emissions that exceed the applicable emission limitations due to abnormal conditions in, or breakdown of, process or control equipment which continue for more than two hours will be reported as soon as possible but not later than 9:00 a.m. of the next working day to the District Supervisor. Within ten days of this occurrence, a detailed report will be submitted to the District Supervisor. The report will include the probable causes, duration of violation, remedial action taken, and the steps that are being undertaken to prevent a reoccurrence. The preventive steps will become a part of the Malfunction Abatement Plan.

ATTACHMENT E

EXAMPLES OF COMPLIANCE WITH OR NON COMPLIANCE
 WITH PROPOSED PERMIT CONDITION 14

Permit No. 60-71L

Hourly Carbon Feed Rates (PPH)					5-Hour	Status
Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Rolling Average	
305	305	305	305	305	305	C ¹
300	300	300	300	300	300	C
295	295	295	295	295	295	C
280	305	305	305	305	300	C
280	300	300	300	300	296	C
280	280	305	305	305	295	C
280	280	280	305	305	290	NC ²
290	295	295	295	295	294	NC ²
275	300	300	300	300	295	NC ³
255	305	305	305	305	295	NC ³
290	290	290	290	320	293	NC ⁴

Notes:

¹ - C indicates Compliance with permit special condition 7.

² - Non Compliance with permit special condition 7 because the 5 hour rolling average is less than 295 PPH.

³ - Non Compliance with permit special condition 7 because the 1 hour in the 5 hour averaging block is less than 280 PPH.

⁴ - Non Compliance with permit special condition 7 because the 5 hour rolling average is less than 295 PPH. Note that the hour 5 feed rate of 320 PPH reverts to 305 PPH for purposes of calculating the 5 hour rolling average.

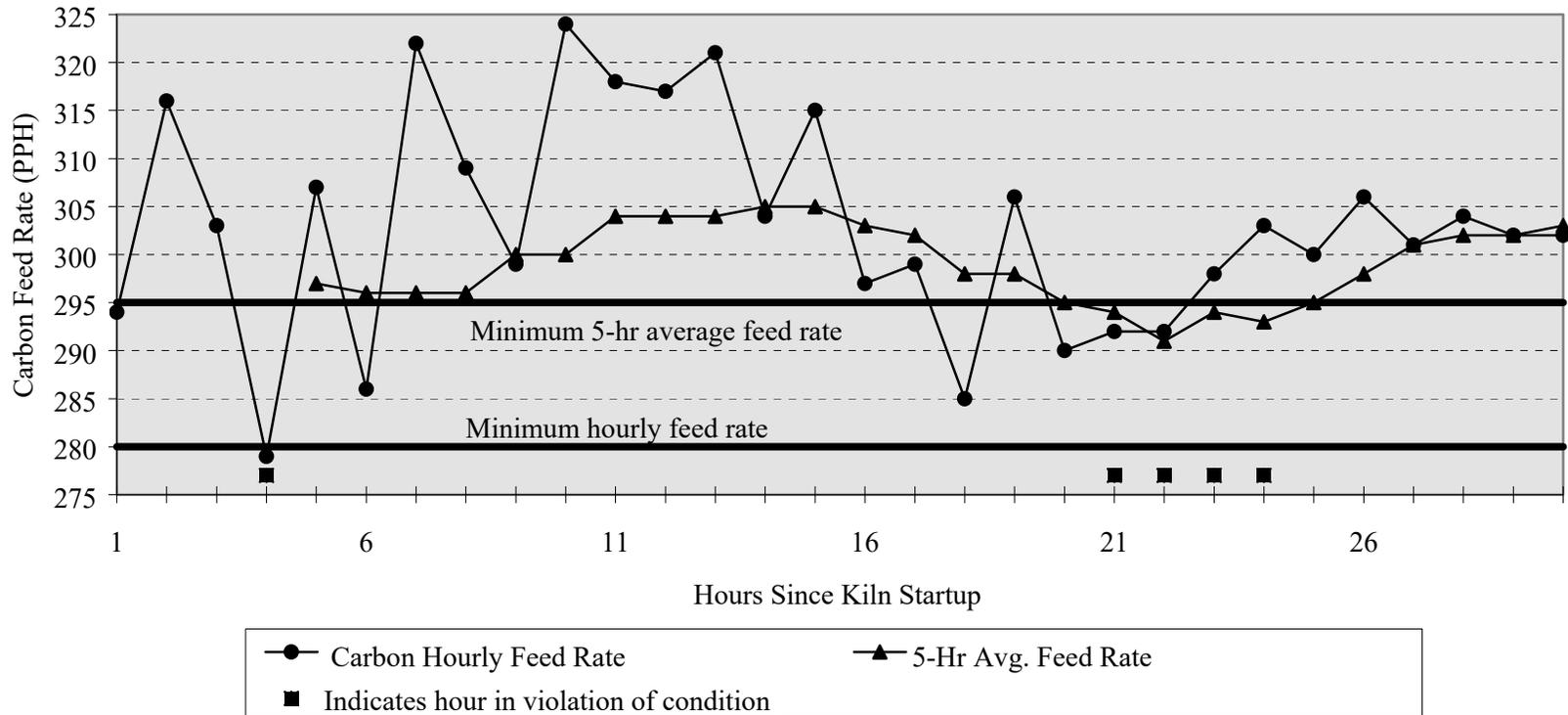
EXAMPLE OF COMPLIANCE WITH PROPOSED PERMIT
 CONDITION 29 DURING STARTUP

Hours Since Kiln Startup	Carbon Hourly Feed Rate (PPH)	5-Hr Avg. Feed Rate (PPH)	Hourly Feed Rate Status	5-hr Avg.
1	294		PASS	
2	316		PASS	
3	303		PASS	
4	279		FAIL	
5	307	297	PASS	PASS
6	286	296	PASS	PASS
7	322	296	PASS	PASS
8	309	296	PASS	PASS
9	299	300	PASS	PASS
10	324	300	PASS	PASS
11	318	304	PASS	PASS
12	317	304	PASS	PASS
13	321	304	PASS	PASS
14	304	305	PASS	PASS
15	315	305	PASS	PASS
16	297	303	PASS	PASS
17	299	302	PASS	PASS
18	285	298	PASS	PASS
19	306	298	PASS	PASS
20	290	295	PASS	PASS
21	292	294	PASS	FAIL
22	292	291	PASS	FAIL
23	298	294	PASS	FAIL
24	303	293	PASS	FAIL
25	300	295	PASS	PASS
26	306	298	PASS	PASS
27	301	301	PASS	PASS
28	304	302	PASS	PASS
29	302	302	PASS	PASS
30	302	303	PASS	PASS

Compliance with proposed permit conditions evaluated using the following parameters

Compliance parameter	PPH
Minimum hourly feed rate	280
Maximum hourly feed rate for averaging	305
Minimum 5 hour average feed rate	295

EXAMPLE OF COMPLIANCE WITH PERMIT CONDITION 29 AFTER KILN STARTUP



Note: Rolling average calculated using the carbon feed rates for the five most recent hours. If an hourly feed rate was above 305 PPH, it was replaced with 305 to calculate the rolling average.