



DEPARTMENT ORDER

**Shaw Brothers Construction, Inc.  
Cumberland County  
Gorham, Maine  
A-425-71-N-A (SM)**

**Departmental  
Findings of Fact and Order  
Air Emission License  
Amendment**

**FINDINGS OF FACT**

After review of the air emission license amendment application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes (M.R.S.) § 344 and § 590, the Maine Department of Environmental Protection (Department) finds the following facts:

**I. REGISTRATION**

A. Introduction

Shaw Brothers Construction, Inc. (Shaw Brothers) was issued Air Emission License A-425-71-L-R/M on June 17, 2014, for the operation of emission sources associated with their crushed stone and gravel facility.

Shaw Brothers has requested an amendment to their license to reflect the recent replacement of an existing jaw rock crusher and its generator set with two new portable jaw rock crushers and their generator sets.

Under a separate application for amendment, Shaw Brothers has also requested to add three additional new non-portable rock crushers to their license. These new crushers will be directly connected to and powered by the electrical service at the facility.

The equipment addressed in this license amendment is located at 341 Mosher Road, Gorham, Maine.

B. Emission Equipment

This amendment adds the following equipment to the facility's air emission license:

**Rock Crushers**

<u>Designation</u>	<u>Powered By</u>	<u>Process Rate (tons/hr)</u>	<u>Date of Manuf.</u>	<u>Control Device</u>
Jaw Crusher LT106 #1 (new)	Diesel #10	100	2017	Spray Nozzles
Jaw Crusher LT106 #2 (new)	Diesel #11	100	2017	Spray Nozzles
Telsmith T400 Cone Crusher #1 (new)	Electric	600	2017	Water Spray System
Telsmith T400 Cone Crusher #2 (new)	Electric	600	2017	Water Spray System
Telsmith 4448 Jaw Crusher (new)	Electric	1030	2017	Water Spray System

**Generator Units**

<u>Equipment</u>	<u>Max. Input Capacity (MMBtu/hr)</u>	<u>Firing Rate (gal/hr)</u>	<u>Rated Output Capacity (HP)</u>	<u>Fuel Type, % sulfur</u>	<u>Date of Manuf.</u>	<u>Date of Install.</u>
Diesel #10 CAT 7.1	1.9	13.6	260 @ 1600 RPM	Distillate Fuel, 0.0015%	2017	2017
Diesel #11 CAT 7.1	1.9	13.6	260 @ 1600 RPM	Distillate Fuel, 0.0015%	2017	2017

This amendment removes the following equipment from the facility's air emission license:

**Rock Crusher**

<u>Designation</u>	<u>Powered By</u>	<u>Process Rate (tons/hour)</u>	<u>Date of Manuf.</u>	<u>Control Device</u>
Jaw Crusher LT105	Diesel #5	100	1999	Spray Nozzles

**Generator Unit**

<u>Equipment</u>	<u>Max. Input Capacity (MMBtu/hr)</u>	<u>Firing Rate (gal/hr)</u>	<u>Fuel Type, % sulfur</u>	<u>Date of Manuf.</u>
Diesel #5 CAT 3306	2.2	15.9	Distillate Fuel, 0.0015%	1999

C. Definitions

Nonmetallic mineral processing plant. For the purposes of this license, *nonmetallic mineral processing plant* means any combination of equipment that is used to crush or grind any nonmetallic mineral wherever located, including lime plants, power plants, steel mills, asphalt concrete plants, portland cement plants (not including concrete batch plants), or any other facility processing nonmetallic minerals.

Portable Engine. For the purposes of this license, *portable engine* means an internal combustion engine which is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform. This definition does NOT include engines which remain or will remain at a location (excluding storage locations) for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. Any engine that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period.

Distillate Fuel. For the purposes of this license, *distillate fuel* means the following:

- Fuel oil that complies with the specifications for fuel oil numbers 1 or 2, as defined by the American Society for Testing and Materials (ASTM) in ASTM D396;
- Diesel fuel oil numbers 1 or 2, as defined in ASTM D975;
- Kerosene, as defined in ASTM D3699;
- Biodiesel, as defined in ASTM D6751; or
- Biodiesel blends, as defined in ASTM D7467.

D. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the issued date of this license.

The modification of a minor source is considered a major or minor modification based on whether or not expected emission increases exceed the “Significant Emission” levels as defined in the Department’s *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100. The emission increases are determined by subtracting the current licensed annual emissions preceding the modification from the maximum future licensed annual emissions.

The only regulated emissions from the new portable and non-portable rock crushers are visible emissions, with no criteria air pollutants (CAP) or hazardous air pollutants (HAP) being generated by this equipment. Additionally, the current air license has an annual fuel limit for its generators of 75,000 gallons of distillate fuel per calendar year, which will not be affected by the changes incorporated in this amendment. Therefore, this amendment will not increase licensed emissions of any criteria air pollutant (CAP) or hazardous air pollutant (HAP). However, because it does result in the addition of new equipment and the removal of obsolete equipment, this amendment has been determined to be a minor modification and has been processed as such.

## II. BEST PRACTICAL TREATMENT (BPT)

### A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. Separate control requirement categories exist for new and existing equipment.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

### B. Nonmetallic Mineral Processing Plants

#### 1. Rock Crushers – Jaw Crushers LT106 #1 and LT106 #2

In May of 2017, Shaw Brothers replaced their 1999 Metso Lokotrack L105 portable Jaw Crusher with two new 2017 Metso Lokotrack portable Jaw Crushers designated as LT106 #1 and LT106 #2. The L105 Jaw Crusher had a design production rate of 100 tons per hour, as do Jaw Crushers LT106 #1 and LT106 #2 each.

Due to the sizes of the two new portable Jaw Crushers LT106 #1 and LT106 #2, they are not subject to the EPA New Source Performance Standards (NSPS) 40 C.F.R. Part 60, Subpart OOO – *Standards of Performance for Nonmetallic Mineral Processing Plants*, which applies to portable plants that were manufactured after August 31, 1983, and that have capacities of more than 150 tons per hour.

##### a. BACT Findings

The regulated pollutant from the new Jaw Crushers LT106 #1 and LT106 #2 is particulate matter (PM) emissions. The Department finds that BACT for

PM emissions from LT106 #1 and LT106 #2 shall be the operation of their installed water sprays as needed to control visible emissions, and to maintain the water sprays on these Jaw Crushers in good working condition. Visible emissions from LT106 #1 and LT106 #2 shall be limited to no greater than 10% opacity on a six (6) minute block average basis for each rock crusher.

2. Rock Crushers –Telesmith T400 Cone Crusher #1, Telesmith T400 Cone Crusher #2 and Telesmith 4448 Jaw Crusher

Shaw Brothers is installing three new non-portable rock crushers at their facility that were all manufactured after August 31, 1983. These three rock crushers will be located outdoors and will be directly powered by electricity through the facility's existing electrical service. Startup of these three rock crushers is scheduled for early 2018. The two Telesmith T400 crushers (T400 #1 and T400 #2) are Cone Crushers, each having a maximum process rate of 600 standard tons per hour. The Telesmith 4448 crusher (4448) is a Jaw Crusher having a maximum process rate of 1,030 standard tons per hour.

Due to the sizes and ages of the three new non-portable Jaw Crushers being installed, T400 #1, T400 #2 and 4448 are each subject to the EPA New Source Performance Standards (NSPS) 40 C.F.R. Part 60, Subpart OOO – *Standards of Performance for Nonmetallic Mineral Processing Plants*, which applies to non-portable plants that were manufactured after August 31, 1983, and that have capacities of more than 25 tons per hour.

[40 C.F.R. §§ 60.670(e)]

a. New Source Performance Standards

Requirements of 40 C.F.R. Part 60, Subpart OOO

i. Standards

Subpart OOO, Table 3 contains applicable visible emission requirements for rock crushers T400 #1, T400 #2 and 4448. This equipment is also subject to standards contained in the State rule *Visible Emissions Regulation*, 06-096 C.M.R. ch. 101. The State requirements are determined to be more stringent. Therefore, the visible emission limit for this equipment has been streamlined to the State regulation. Visible emissions from rock crushers T400 #1, T400 #2 and 4448 shall be limited to no greater than 10% opacity on a six-minute block average basis for each rock crusher.

Visible emissions from any nonmetallic mineral processing plant equipment, other than rock crushers, (including transfer points on belt conveyors, portable screens, etc.) which commenced construction, modification, or reconstruction, on or after April 22, 2008, shall not exceed 7% opacity on a six-minute block average basis. [40 C.F.R. Part 60, Subpart OOO, Table 3]

ii. **Monitoring Requirements**

Shaw Brothers shall maintain records detailing the maintenance on particulate matter control equipment including spray nozzles. Shaw Brothers shall perform monthly inspections of any water sprays to ensure water is flowing to the correct locations and initiate corrective action within 24 hours if water is found to not be flowing properly. Records of the date of each inspection and any corrective action required shall be included in the maintenance records. The maintenance records shall be kept on-site at the rock crushing location. [40 C.F.R. § 60.674(b)]

iii. **Testing Requirements**

Subpart OOO, § 60.675 requires that Shaw Brothers conduct separate initial performance tests for visible emissions from rock crushers T400 #1, T400 #2 and 4448, and from each piece of associated equipment subject to Subpart OOO, potentially including any associated grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, and enclosed truck or railcar loading station.

Testing shall be completed in accordance with the following:

- (1) An initial performance test must be completed within 60 days after achieving the maximum production rate at which the unit will be operated, but no later than 180 days after initial startup of the unit. If the initial performance test for a facility falls within a seasonal shutdown, then with approval from the Department, the initial performance test may be postponed until no later than 60 calendar days after resuming operation of the affected equipment. [40 C.F.R. § 60.672(b)]
- (2) Each performance test shall be done using the methods set forth in 40 C.F.R. Part 60, Subpart OOO, § 60.675. [40 C.F.R. § 60.675(c)]
- (3) Shaw Brothers shall submit a test notice to the Department at least seven days prior to conducting a performance test. [40 C.F.R. § 60.675(g)]

iv. Reporting and Recordkeeping Requirements

For the rock crushers and ancillary equipment subject to 40 C.F.R. Part 60, Subparts A and OOO, Shaw Brothers shall comply with the notification and recordkeeping requirements of 40 C.F.R. §§ 60.676 and 60.7, except for § 60.7(a)(2) per 40 C.F.R. Subpart OOO, § 60.676(h). [40 C.F.R. §§ 60.676(b), (f), and (i)]

b. BACT Findings

The regulated pollutant from the new rock crushers T400 #1, T400 #2 and 4448 is particulate matter (PM) emissions. The Department finds that BACT for PM emissions from rock crushers T400 #1, T400 #2 and 4448 shall be in compliance with the requirements of Subpart OOO, which requires the operation of the water sprays on rock crushers T400 #1, T400 #2 and 4448 as needed to control visible emissions. Shaw Brothers shall also maintain the water sprays on these rock crushers in good working condition. Visible emissions from the rock crushers T400 #1, T400 #2 and 4448 shall be limited to no greater than 10% opacity on a six (6) minute block average basis for each rock crusher.

C. Generators – Diesel #10 and #11

In May of 2017, Shaw Brothers removed their Diesel #5 Generator that had been used to power the removed 1999 L105 portable Jaw Crusher, and installed two new generator sets to power their two new 2017 LT106 #1 and #2 portable Jaw Crushers. The new generator sets each consist of an engine and an electrical generator. The two new generators are both driven by CAT 7.1 distillate-fired engines that are governed to run at a maximum of 1600 RPM, resulting in a maximum heat input capacity of 1.9 MMBtu/hr each while firing 13.6 gallons per hour.

The new generators are considered non-road engines, as opposed to stationary engines, since they are portable and will be moved to various sites. Therefore, the new generators are not subject to 40 C.F.R. Part 60, Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines* because this standard only applies to stationary engines. [40 C.F.R. § 60.4200(a)]

Additionally, 40 C.F.R. Part 63, Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines* is not applicable to these portable generators because this standard only applies to stationary reciprocating internal combustion engines (RICE). [40 C.F.R. § 63.6585]

**BACT Findings for Generators - Diesel #10 and #11**

**1. Particulate Matter: PM / PM<sub>10</sub>**

Particulate matter emissions from distillate fuel-fired engines of this size are generally controlled through proper operation and maintenance.

Additionally, add-on controls such as filters and catalytic converters are available to further reduce particulate matter emissions. Even though the portable engines for Diesels #10 and #11 are not subject to the requirements of 40 C.F.R. Part 60, Subpart IIII or 40 C.F.R. Part 63, Subpart ZZZZ, the units were procured with diesel particulate filters and diesel oxidation catalysts incorporated into their design to reduce particulate matter emissions from the engines to levels at or below the EPA's Tier IV standards.

The Department has determined that BACT for PM / PM<sub>10</sub> emissions from Diesel #10 and #11 shall be the proper operation and maintenance of the portable non-road engines and their integrated emissions reduction equipment.

**2. Sulfur Dioxide: SO<sub>2</sub>**

The use of wet scrubbers or other SO<sub>2</sub> add-on control methods would not be economically feasible considering the small amount of emissions that are currently being generated by the engines. The best achievable method for limiting SO<sub>2</sub> emissions is the use of low sulfur fuel, such as distillate fuel having a sulfur content of no greater than 0.0015% by weight.

**3. Nitrogen Oxides: NO<sub>x</sub>**

The use of good combustion practices to ensure the complete and efficient combustion of the fuel fired in the portable engines is an effective method commonly used for limiting the NO<sub>x</sub> emissions that the engines produce.

The portable engines for Diesels #10 and #11 were ordered and supplied with Selective Catalytic Reduction (SCR) and NO<sub>x</sub> Reduction Systems (NRS) integrated into their design, which will reduce their NO<sub>x</sub> emissions to levels at or below the EPA's Tier IV standards. Although the engines are not subject to the requirements of 40 C.F.R. Part 60, Subpart IIII or 40 C.F.R. Part 63, Subpart ZZZZ, the included emissions controls will allow the engines to run at or below the stringent standards specified by them.



The Department finds that BACT for NO<sub>x</sub> emissions from Diesels #10 and #11 shall be the proper operation and maintenance of the portable non-road engines and their integrated emissions reduction equipment, in conjunction with good combustion controls and practices.

#### 4. Carbon Monoxide and Volatile Organic Compounds: CO and VOC

CO and VOC emissions result from incomplete fuel combustion, caused by conditions such as insufficient residence time or limited oxygen availability. CO and VOC emissions from distillate fuel-fired engines are generally managed through good combustion controls and proper operation and maintenance of the engine.

Additional add-on controls are often available for larger engines where they are technologically and economically feasible to install. Diesels #10 and #11 were purchased with Diesel Oxidation Catalysts (DOC) incorporated into their design to allow a further reduction of the CO and VOC emission levels in their exhaust.

The Department finds that BACT for CO and VOC emissions from Diesels #10 and #11 shall be the proper operation and maintenance of the units and their emissions reduction controls.

#### BACT Emission Limits for Diesels #10 and #11

<b>Pollutant</b>	<b>Emission Limit Basis</b>	<b>Emission Factor lb/MMBtu</b>	<b>lb/hr</b>
PM / PM <sub>10</sub>	AP-42, Table 3.3-1, dated 10/96	0.31	0.6
SO <sub>2</sub>	Mass Balance Calculation, based on firing distillate fuel with a maximum sulfur content of 0.0015% by weight	0.00155	0.01
NO <sub>x</sub>	AP-42, Table 3.3-1, dated 10/96	4.41	8.4
CO	AP-42, Table 3.3-1, dated 10/96	0.95	1.8
VOC	AP-42, Table 3.3-1, dated 10/96	0.36	0.7

#### 5. Visible Emissions

BACT for visible emissions from Diesels #10 and #11 shall be the following:

Visible emissions shall not exceed 10% opacity on a six-minute block average basis.  
[06-096 C.M.R. ch. 115, BACT]

**D. Annual Emissions**

This amendment does not affect the facility's licensed annual emissions. The new portable and non-portable rock crushers do not have any licensed annual emissions requirements. The emission factors for the two new generator sets are equal to, or more stringent than those for the remaining generators as well as the one being removed from the license. The annual fuel use limit for the facility is not changing as a result of this amendment. Therefore, there will be no changes to the facility's licensed annual emissions.

**ORDER**

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License Amendment A-425-71-N-A subject to the conditions found in Air Emission License A-425-71-L-R/M and the following conditions.

Severability - The invalidity or unenforceability of any provision of this License Amendment or part thereof shall not affect the remainder of the provision or any other provisions. This License Amendment shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

**SPECIFIC CONDITIONS**

The following condition shall replace Condition (16)(A) of Air Emission License A-425-71-L-R/M dated June 17, 2014.

**(16) Rock Crushers**

- A. Shaw Brothers shall install and maintain spray nozzles for particulate matter control on all of the jaw and cone rock crusher units (Jaw Crushers L100, L105 #2, L125, L416, LT106 #1, LT106 #2 and 4448, and Cone Crushers L125, L416, LT300, FT200, T400 #1 and T400 #2) and operate them as necessary to limit visible emissions to no greater than 10% opacity on a six (6) minute block average basis for each rock crusher. [06-096 C.M.R. ch. 115, BACT/BPT and 06-096 C.M.R. ch. 101]

The following new Conditions (16)(I) through (16)(O) shall be added to Air Emission License A-425-71-L-R/M dated June 17, 2014.

- I. Shaw Brothers shall perform monthly inspections of the spray nozzles and water spray systems on T400 #1, T400 #2 and 4448, to ensure that water is flowing to the correct locations and they shall initiate corrective action within 24 hours if water is found to not be flowing properly. [40 C.F.R. § 60.674(b)]
- J. Shaw Brothers shall maintain a log detailing the maintenance on particulate matter control equipment (including spray nozzles and water spray systems) for rock crushers T400 #1, T400 #2 and 4448. Records of the date of each inspection and any corrective action required for each rock crusher shall be included in the maintenance log. The maintenance log shall be kept on-site at the rock crushing location, and Shaw Brothers shall make hard or electronic copies (whichever is requested) of the logbook available to the Administrator or the Department upon request. [40 C.F.R. § 60.676(b)]
- K. Visible emissions from any non-metallic mineral processing plant equipment, other than rock crushers, (including transfer points on belt conveyors, portable screens, etc.) which commenced construction, modification, or reconstruction, on or after April 22, 2008, shall not exceed 7% opacity on a six-minute block average basis for each point observed. [40 C.F.R. Part 60, Subpart OOO, Table 3]
- L. An initial performance test shall be completed for each of the rock crushers T400 #1, T400 #2 and 4448 and associated equipment subject to Subpart OOO within 60 days after achieving the maximum production rate at which the unit will be operated, but no later than 180 days after initial startup of the unit. If any of the initial performance tests for Shaw Brothers falls within a seasonal shutdown, then with approval from the Department, the initial performance test(s) may be postponed until no later than 60 calendar days after resuming operation of the affected equipment. [40 C.F.R. § 60.672(b)]
- M. Each performance test shall be done using the methods set forth in 40 C.F.R. Part 60, Subpart OOO, § 60.675. [40 C.F.R. § 60.675(c)]
- N. Shaw Brothers shall submit a test notice to the Department at least seven days prior to conducting a performance test. [40 C.F.R. § 60.675(g)]
- O. For the rock crushers T400 #1, T400 #2, 4448, and any ancillary equipment subject to 40 C.F.R. Part 60, Subparts A and OOO, Shaw Brothers shall comply with the notification and recordkeeping requirements of 40 C.F.R. §§ 60.676 and 60.7, except for §60.7(a)(2) per 40 C.F.R. Subpart OOO, § 60.676(h). [40 C.F.R. § 60.676(b), (f) and (i)]

The following condition shall replace Condition (17)(A)(1) of Air Emission License A-425-71-L-R/M dated June 17, 2014.

(17) **Portable Diesel Generators**

A. Fuel Use

1. Diesels #1, #3, #4, #6, #7, #8, #9, #10 and #11 shall fire only distillate fuel with a maximum sulfur content not to exceed 15 ppm (0.0015% sulfur, by weight). [06-096 C.M.R. ch. 115, BACT/BPT]

The following condition shall replace Condition (17)(C) of Air Emission License A-425-71-L-R/M dated June 17, 2014.

C. Emissions shall not exceed the following: [06-096 C.M.R. ch. 115, BACT/BPT]

<b>Unit</b>	<b>PM (lb/hr)</b>	<b>PM<sub>10</sub> (lb/hr)</b>	<b>SO<sub>2</sub> (lb/hr)</b>	<b>NO<sub>x</sub> (lb/hr)</b>	<b>CO (lb/hr)</b>	<b>VOC (lb/hr)</b>
Diesel #1 – Cat 3306	0.3	0.3	0.01	9.7	2.1	0.8
Diesel #3 – Cat 3406	0.4	0.4	0.01	15.9	3.4	1.3
Diesel #4 – Cat 3406	0.4	0.4	0.01	15.9	3.4	1.3
Diesel #6 – Cat 3456	0.6	0.6	0.01	16.9	4.5	0.5
Diesel #7 – Cat C-12	0.4	0.4	0.01	15.9	3.4	1.3
Diesel #8 – Cat 3306	0.3	0.3	0.01	9.7	2.1	0.8
Diesel #9 – JD 6081	0.2	0.2	0.01	5.8	1.3	0.5
Diesel #10 – CAT 7.1	0.6	0.6	0.01	8.4	1.8	0.7
Diesel #11 – CAT 7.1	0.6	0.6	0.01	8.4	1.8	0.7

The following condition shall replace Condition (17)(D) of Air Emission License A-425-71-L-R/M dated June 17, 2014.

- D. Visible emissions from Diesels #1, #3, #4, #6, #7, #8 and #9 shall not exceed 20% opacity on a six (6) minute block average, except for no more than two (2) six (6) minute block averages in a continuous 3-hour period. [06-096 C.M.R. ch. 101]

Shaw Brothers Construction, Inc.  
Cumberland County  
Gorham, Maine  
A-425-71-N-A (SM)

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Departmental  
Findings of Fact and Order  
Air Emission License  
Amendment

The following is a new condition and shall be added to Air Emission License A-425-71-L-R/M dated June 17, 2014.

E. Visible emissions from Diesels #10 and #11 shall not exceed 10% opacity on a six-minute block average basis.

DONE AND DATED IN AUGUSTA, MAINE THIS 25 DAY OF January, 2018.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Paul Mercer  
PAUL MERCER, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-425-71-L-R/M.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: June 2, 2017

Date of application acceptance: June 6, 2017

Date filed with the Board of Environmental Protection:

This Order prepared by Patric J. Sherman, Bureau of Air Quality.

