DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

N558742649

FACILITY: WOODARD-CM		**SRN / ID:** N5587
LOCATION: 210 S DELANEY RD, OWOSSO		**DISTRICT:** Lansing
CITY: OWOSSO		**COUNTY:** SHIAWASSEE
CONTACT: Tony Minarik , Industrial Engineer		**ACTIVITY DATE:** 11/15/2017
STAFF: Julie Brunner	**COMPLIANCE STATUS:** Non Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: Compliance inspection for PTI 270-95B and as part of an FCE		
RESOLVED COMPLAINTS:		

On November 15, 2017, I conducted an unannounced, scheduled inspection of Woodard-CM (N5587). The last inspection was on November 18, 2015 and was a self-initiated inspection.

Contact:
Tony Minarik, Industrial Engineer; 989-725-4410; tminarik@woodard-furniture.com.

Facility Description and Regulatory Overview:
This facility manufactures outdoor furniture with steel and aluminum frames. The manufacturing operation includes metal forming, welding, metal surface treatment, coating of metal, and fabric and upholstery manufacturing. The finished furniture is packaged (shrink wrapped and/or boxed) for shipping. The facility also manufactures about 50 to 100 propane-fueled fire pits per month.

The facility is in an industrial park on the westside outskirts of Owosso. Woodard moved all furniture manufacturing operations to this location in 1995.

There are approximately 175 employees. Operations are one shift per day, 5 to 6 days per week with April to August generally being 6 days per week. The plant shuts down in the middle of August after the busy season for a brief break.

Woodard-CM (N5587) is a minor source due to the potential to emit of less than 250 tons per year (tpy) of any regulated air contaminant. The facility is a synthetic minor for emissions of hazardous air pollutants (HAPs) with opt-out limits of less than 9.0 tpy of any single HAP and 22.5 tpy of aggregate HAPs. The facility is not subject to the Title V - Renewable Operating Permit Program.

The facility operates under PTI 270-95B which is for a burn-off oven, an E-coat line, and includes the HAPs opt-out limits. The facility also has many exempt processes. The various processes at the plant are listed below.

Emission Unit ID	Description	Permit or Exemption Rule
Forges	Two small forges, fired by natural gas	Rule 282(2)(a)(i)
Welding stations: steel	Arc welding of steel wire	Rule 285(2)(i)
Welding stations: aluminum	TiG welding of aluminum wire	Rule 285(2)(i)
Prod grinders	Metal grinding processes exhausting to in-plant environment	Rule 285(2)(l)(vi)(B)
Cleaning process (two operating modes, one for aluminum parts, one for steel)	Spraying of metal parts with a series of seven clean water, caustic, and acid solutions	Rule 281(2)(e)
EU-Ecoat	The electrodeposition coating line (E-coat) consists of a dip tank, flash-off area, and a natural gas-	PTI 270-95B

Emission Unit ID	Description	Permit or Exemption Rule
	fired oven used to coat metal lawn furniture and miscellaneous metal parts.	
Four powder coating booths	Powder coating in electrostatic booths, with a two-sectioned oven	Rule 287(2)(d)
Antique coating, booth and area	Spray booth for application antiquing finish to metal parts, with HVLP spray guns, and mat/panel filters	Rule 287(2)(c)
EU-BurnOffOven	A natural gas-fired burn-off oven with afterburner	PTI 270-95B
Shot blast machine	Shot blast machine, with mechanical collector and baghouse (external vent)	Rule 285(2)(l)(vi)(C)
Aluminum parts cleaning booth	Aluminum parts cleaner using walnut shells with particulate control (internal vent)	Rule 285(2)(l)(vi)(B)
Machine shop	Various metal working processes	Rule 285(2)(l)(vi)(A) and/or (B)
Natural gas-fired emergency generator	Emergency generator for lighting.	Rule 285(2)(g)
Natural gas-fired space heaters	10 natural gas-fired space heaters for building heat	Rule 282(2)(b)(i)
Two small natural gas-fired boilers	There is one boiler in maintenance and one for the E-coat process.	Rule 282(2)(b)(i)

The coating processes are subject to the federal requirements of 40 CFR Part 60, Subpart EE, New Source Performance Standards (NSPS) for Surface Coating of Metal Furniture. For 40 CFR 60, Subpart EE, the following applies:

§60.310 Applicability and designation of affected facility.
(a) The affected facility to which the provisions of this subpart apply is each metal furniture surface coating operation in which organic coatings are applied.
(b) This subpart applies to each affected facility identified in paragraph (a) of this section on which construction, modification, or reconstruction is commenced after November 28, 1980.
(c) Any owner or operator of a metal furniture surface coating operation that uses less than 3,842 liters of coating (as applied) per year and keeps purchase or inventory records or other data necessary to substantiate annual coating usage shall be exempt from all other provisions of this subpart. These records shall be maintained at the source for a period of at least 2 years.

Since Woodard is an "area source" of HAPs with two (2) small natural gas-fired boilers, the gas-fired boilers are not subject to 40 CFR 63 Subpart JJJJJJ, the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boiler Area Sources.

Michigan Air Emissions Reporting System (MAERS):
The facility reports to MAERS as an SM Opt-Out, Category II fee subject.

Inspection:
Arrived: 9:30 AM
Departed: 12:30 PM
Weather: 42°F, wind SSE @ 11 MPH, UV 0 Low

No visible emissions (VEs) were observed from any of the facility exhaust stacks upon arrival. No odors were identified surrounding the facility.

A pre-inspection meeting was conducted with Mr. Tony Minarik (Industrial Engineer). Tony is planning to retire in January 2019. The facility operations were discussed. Steel and aluminum furniture is manufactured, and the surface treatment is different for each. For steel furniture, a detergent based pre-wash to remove oils is followed by electrodeposition of a primer (E-coat process) to prevent rust. The steel furniture then goes to storage until an order is placed. When ordered, the steel furniture is washed with water and powder coated, and finished to the customer's specifications. For the aluminum furniture, some surface prep such as grinding may be needed then an acid wash followed by powder coating. Depending on the finish type ordered, the antique coating of the furniture is done after the powder coating.

A facility tour was then taken starting with the incoming metal. For steel furniture, the metal comes in coils and rods. For the aluminum furniture, the aluminum comes in kits from China.

Metal bending and shaping activities (Rule 285(2)(l)(vi)(B)):
Some bending and shaping of metal coils and rods is done by hand, and some by machine (CNC bender, etc.). The metal bending and shaping activities exhaust to the general, in-plant environment.

Forges (Rule 282(2)(a)(i)):
The two (2) small natural gas-fired forges (manufactured by the Johnson Gas Appliance Co.) are used for forming some steel furniture pieces. The two forges are greater than 50 years old. One forge was operating at the time of the inspection. Chair scrolls were being made. They usually run 4 to 8 hours per week depending on orders. The process is vented out the roof.

Welding Department for aluminum and steel (Rule 285(2)(i)):
Aluminum and steel are welded in separate welding stations. The aluminum is welded by hand using the wire and torch method. For steel, there are two robotic welding stations (1980s vintage), and the rest is done by hand. The robotic welders were in operation and some hand welding was being done at the time of inspection. After welding, the furniture pieces are hung on a chain-on-edge conveyor line to travel to the next processing area in the plant

Prod Grinders (Rule 285(2)(l)(vi)(B)):
Because aluminum is soft, and can easily get nicked or scraped, the aluminum parts are buffed, prior to being washed and painted. The furniture is removed from the conveyor when passing the hand grinding areas as needed. The production grinders exhaust to the general, in-plant environment.

Aluminum parts cleaning booth (Rule 285(2)(l)(vi)(B)):
A process for surface buffing of aluminum parts was installed around 2015. It consists of an enclosed booth which uses walnut shell particulates and has a cartridge dust collector and collection system for disposal of the walnut particulates. The booth is manually operated. The operator stands inside the booth and "sprays" the walnut shells at the part. No particulate or dust was outside of the booth and the process is vented into the plant atmosphere.

E-coat dip line – PTI 270-95B:
The E-coat process applies a primer to steel parts to protect against rust. Aluminum parts do not need to be primed. The entire process line is enclosed. The steel parts are first spray washed in a seven-stage washer to remove dirt and dust. The washer chemicals consist of various nitric acids, phosphoric acids, inorganic salts, nitrates, fluorides, silicates, and sodium hydroxide. The water-based primer is applied in a 1750-gallon dip tank. It is a two-part water-based mixture consisting of a paste and resin. A solvent is added to balance the tank. The solvent addition is glycol ether EB (CAS No. 111-76-2) which has been delisted as a HAP and lactic acid as an additive. After coating, the furniture pieces enter a flash-off area, and then a natural gas-fired curing oven. The oven temperature is approximately 350°F to 375°F. There is one stack on the dip tank and two stacks on the curing oven which appear to be at the permitted heights in Special Condition (SC) VIII.1 - 3.

The use of manufacturer's formulation data to determine volatile organic compound (VOC) coating content per Special Condition (SC) V.1 was approved on June 28, 2016 by the Lansing District Supervisor. Technical specification sheets for the E-coating system are maintained and copies are attached. The facility is in compliance with this condition and SC VI.2.

The records required by SC VI.3 and VI.4 are attached and discussed below.

A small hot water boiler (exempt) is used to provide heat to the tanks in the process. The E-coat process tanks are cleaned out once a year and there are various holding tanks sitting close to the E-coat process for this purpose.

Parts cleaning process (Rule 281(2)(e)):
There is a large parts washing process at the plant. It can wash either steel or aluminum parts, but not both at the same time. It has one operating mode for washing steel parts, and a more intensive, 7 stage washing process for aluminum with caustic and acidic solutions being sprayed, followed by clean water rinses. All of the metal parts go through a natural gas-fired dryer following the wash process. Then, the parts are ready for powder coating application.

Powder coating booths (Rule 287(2)(d)):
They have three powder coating booths which are used to apply topcoats. These are in a separate room, and slide on rails to be moved on and off the process chain-on-edge conveyor line. A fourth powder coating booth for clearcoats sits outside of the room housing the topcoat booths. Of the three topcoat booths, two automated lines apply high volume colors to the metal furniture. Overspray of the high-volume colors is collected for reuse. The smaller orders in different colors are applied using a manually operated powder coating booth. The automatic booths require two (2) operators each, and the manual booth requires four (4) operators. The booths have particulate filters, and exhaust into the in-plant environment. The manual booth was operating, and operators wear particulate masks when powder coating. The powder is collected in the lower sides and bottom of the booth.

After the topcoat powder coating has been applied, the parts are cured in either of two curing ovens. After curing, a chain-on-edge conveyor takes the parts by an antiquing area. If the antique finish is not desired, the part stays on the conveyor. If antiquing is desired, the part is removed from the conveyor, and taken to the antiquing area.

Antiquing area with spray booth (Rule 287(2)(c)):
Operators spray on a water-based antiquing finish using HVLP spray guns. The booth is equipped with a wall of mat/panel filters. Various dabbing or streaking techniques using newspapers or rags to achieve an aged look is done outside of the booth.

After metal furniture has an antiquing finish applied, it is placed back on the chain-on-edge conveyor, and goes through the powder coating booth for the clearcoat finish. The furniture then enters the second of two curing ovens. (If antiquing is desired, the units are not fully baked in the first oven.) This allows the powder coat to be reheated in the second oven which provides a harder finish.

Burn-off oven (PTI 270-95B):
The natural gas-fired Blu-surf burn-off oven is used to remove the layers of paint which can build up over time on metal part hooks used to convey the parts through the production process. Additionally, when the coating on a piece of painted steel furniture does not meet the standards for quality that piece of furniture is cleaned in the burn-off oven. The operating temperature of the oven is 750°F and the afterburner temperature is set to 1400°F when operating in compliance with SC IV.1. The oven is equipped with a temperature gauge to continually monitor the afterburner temperature as required by SC IV.2. If the temperature in the oven gets too hot, there is an auto-shutdown. This is indicative of a fire in the oven. The burn-off oven runs about 4 hours per day depending on rejects or customer refurbishments.

Shot blast machine with mechanical collector and baghouse (Rule 285(2)(l)(vi)(C)):
The shot blast machine is used for removing ash deposits from hooks and metal parts that have gone through the burn-off oven. It can also be used to remove rust from steel. It was not running at the time of the inspection and we were able to look inside of it. The baghouse for it sits across from it and vents externally. The shot blast machine system was in the old Woodard plant and is approximately 100 years old. The shot blast machine runs not more than 4 hours per day.

Textile, finishing and packaging area:
Fabric, cushions, and/or a lattice of plastic straps are applied to the furniture here. There are over 300 different fabric choices for customers. The fabric can be heat sealed and/or machine sewn to create pillows and cushions for the furniture.

In the finishing area, there is some touchup of paint using spray cans (Rule 287(2)(b)) and cleanup as necessary. Small cans of toluene which is a HAP is used for cleanup. Cleanup could be quantified under Rule

290. The annual usage of toluene to date is 300 gallons. Approximately, 200 lb/month of toluene on average has been used for cleanup according to AQD staff calculations (attached). Rule 290(2)(a)(ii)(A) allows up to 1,000 lb/month of toluene.

After finishing, the furniture is carefully packaged to avoid damage in shipping. They glue and assemble cardboard boxes using water-based glue. They have a large mechanical box cutter. They also have a process which shrink wraps products with clear plastic using a propane hot gun. A reaction injection molding machine to create packing pillows uses a 2-component liquid isocyanate material. Two drums of isocyanate materials were connected and when mixed, polymerize to create foam pillows in a plastic bag. This process appears exempt under Rule 286(2)(e).

Machine shop:
Their machine shop has a vertical milling machine and other metal machining processes, which are exempt because they are used on a non-production basis (Rule 285(2)(l)(vi)(A)). They are also exempt because they exhaust into the general, in-plant environment.

Natural gas-fired space heaters (Rule 282(2)(b)(i)):
There are 10 natural gas-fired space heaters used for building heat.

Natural gas-fired emergency generator (Rule 285(2)(g)):
There is one (1) emergency generator for lighting that was installed when the building was built. It is in the Maintenance Department. The following is the information on the engine and generator:
Brand – Olympian
Model – A4350 Natural Gas
Serial # 2037184
Engine Manufacture Date: Dec. 1994
Gen Set Model No. 95A 02376 S, Date: 6/30/95
No Tier Rating
Engine: 1800 RPM
Generator: 100 kW
Engine clock: 667 hours

The emergency engine at the stationary source is subject to the National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE) promulgated in 40 CFR Part 63, Subparts A and ZZZZ as an existing RICE. Michigan does not have delegation to implement and enforce this standard, but sources are still required to comply with this standard.

Departure:
No violations or concerns were identified at the time of inspection. Records not obtained during the inspection were to be emailed.

Records Review:
Mr. Minarik emailed electronic copies of the monthly VOC recordkeeping for the E-coat process, facility-wide coating usage which also included the Rule 287(2)(c) recordkeeping for the antiquing booth and area. Safety Data Sheets (SDS) and tech sheets for materials used in the coating and pre-cleaning were provided and are attached. Natural gas usage for the last 12-months was also provided and totals 23,244 Mcf from November 2016 to October 2017.

For the antiquing booth, the coating usage was far below the 200 gallons per month allowed by Rule 287(2)(c) from November 2016 to October 2017. The highest usage was in May 2017 with 43.2 gallons of coatings used.

Month - Coating Usage (gallons)
Nov-16 - 24.4
Dec-16 - 24.2
Jan-17 - 27.5
Feb-17 - 25.2
Mar-17 - 25.1
Apr-17 - 31.2
May-17 - 43.2
Jun-17 - 31.3
Jul-17 - 25.3

Aug-17 - 31.1
Sep-17 - 38.7
Oct-17 - 37.1
Total - 364.3

For the E-coat process, the throughput of resin, paste, and solvent added to the dip tank for a given month counts as the VOC emitted in that month. The VOC emission limits on PTI 270-95B are 2,000 lb/month and 10.0 tpy. The following are the VOC emissions for November 2016 to October 2017.

Month	VOC (lbs / month)	VOC (tons / month)	VOC (12-month rolling)
Nov-16	84.0	0.042	
Dec-16	2.8	0.0014	
Jan-17	84.0	0.042	
Feb-17	54.3	0.027	
Mar-17	32.5	0.016	
Apr-17	2.8	0.0014	
May-17	2.8	0.0014	
Jun-17	2.8	0.0014	
Jul-17	2.8	0.0014	
Aug-17	2.8	0.0014	
Sep-17	2.8	0.0014	
Oct-17	84.0	0.042	0.18 tpy
Permit Limit	***2000***		***10.0 tpy***

PTI 270-95B limits metal furniture surface coating to less than 1,015 gallons per year on a 12-month rolling basis. Coating usage from November 2016 to October 2017 was as follows:

Month - Coating Usage (gallons)
Nov-16 - 355
Dec-16 - 25
Jan-17 - 358
Feb-17 - 76
Mar-17 - 46
Apr-17 - 57
May-17 - 44
Jun-17 - 32
Jul-17 - 46
Aug-17 - 32
Sep-17 - 89
Oct-17 - 408
Total - 1565

For the 2017 year in October, 1185 gallons of metal furniture surface coating had been used which is over the annual limit of 1,015 gallons per year in 40 CFR 60, Subpart EE.

For the HAPs opt-out, the single and aggregate HAP emission records were not being kept in a proper manner. The E-coating materials don't contain any HAPs. The antiquing paints have no HAPs according to the SDS and one of the thinners does contain HAPs. Toluene is used as a clean-up solvent and the annual usage of toluene to date is 300 gallons.

Toluene emissions (11 months) = 300 gallons x 7.26 lb/gallon x 1 ton/2000 lbs = 1.1 tons

AQD staff estimate that 1.2 tons of toluene could be emitted by the end of 2017 if current usage rates are maintained.

Summary:
Noncompliance with the coating usage limits on PTI 270-95B for compliance with 40 CFR 60 Subpart EE were identified with this inspection. A violation notice will be sent. The recordkeeping for the facility needs to be revisited as some recordkeeping requirements were missing and are having to be redeveloped. Coating usage and VOC emissions for EU-Ecoat were being kept. HAPs recordkeeping needs to be fixed, but AQD staff estimate that they are probably well below the opt-out limits.

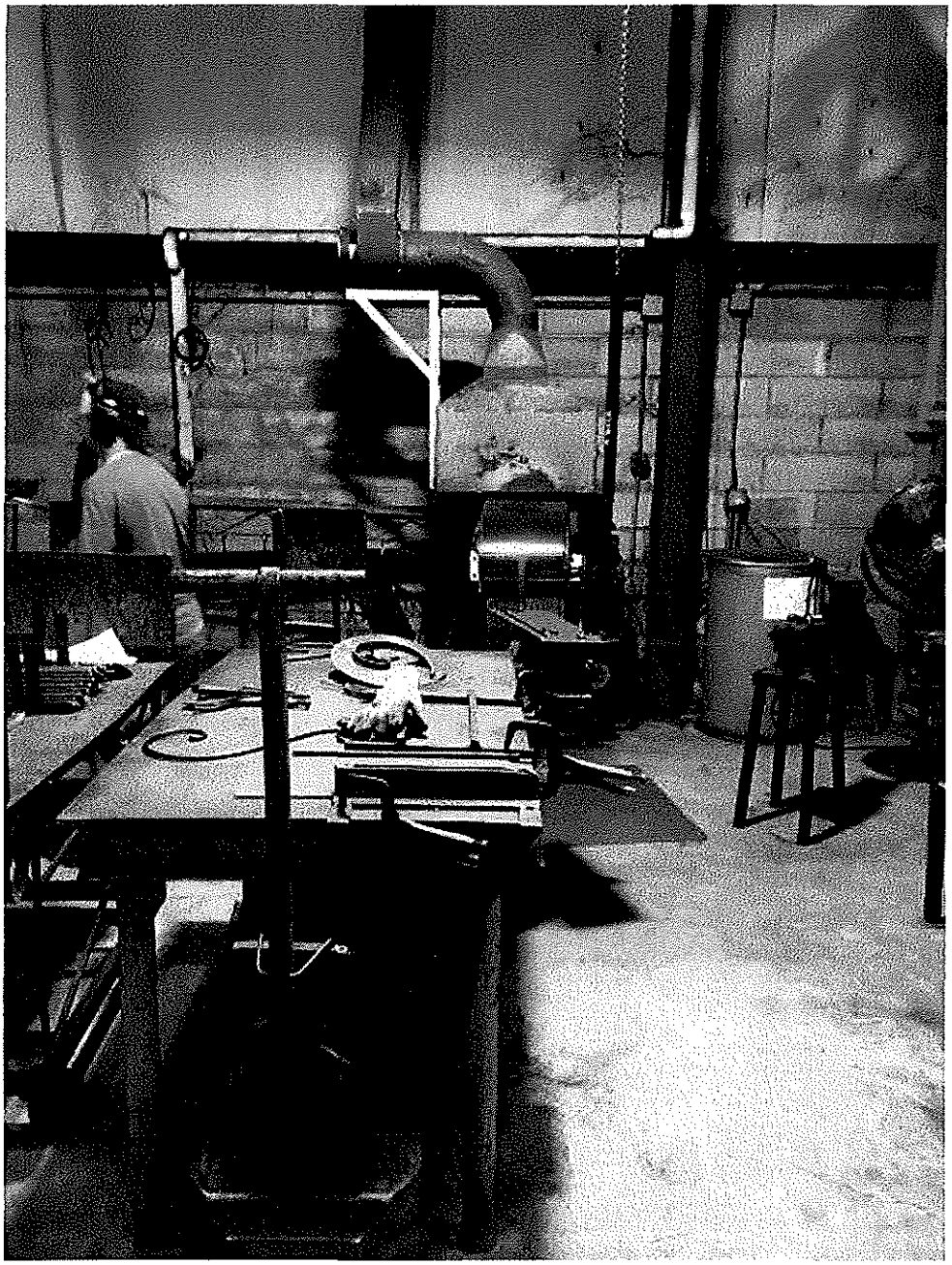

Image 1(0016) : Forge and area

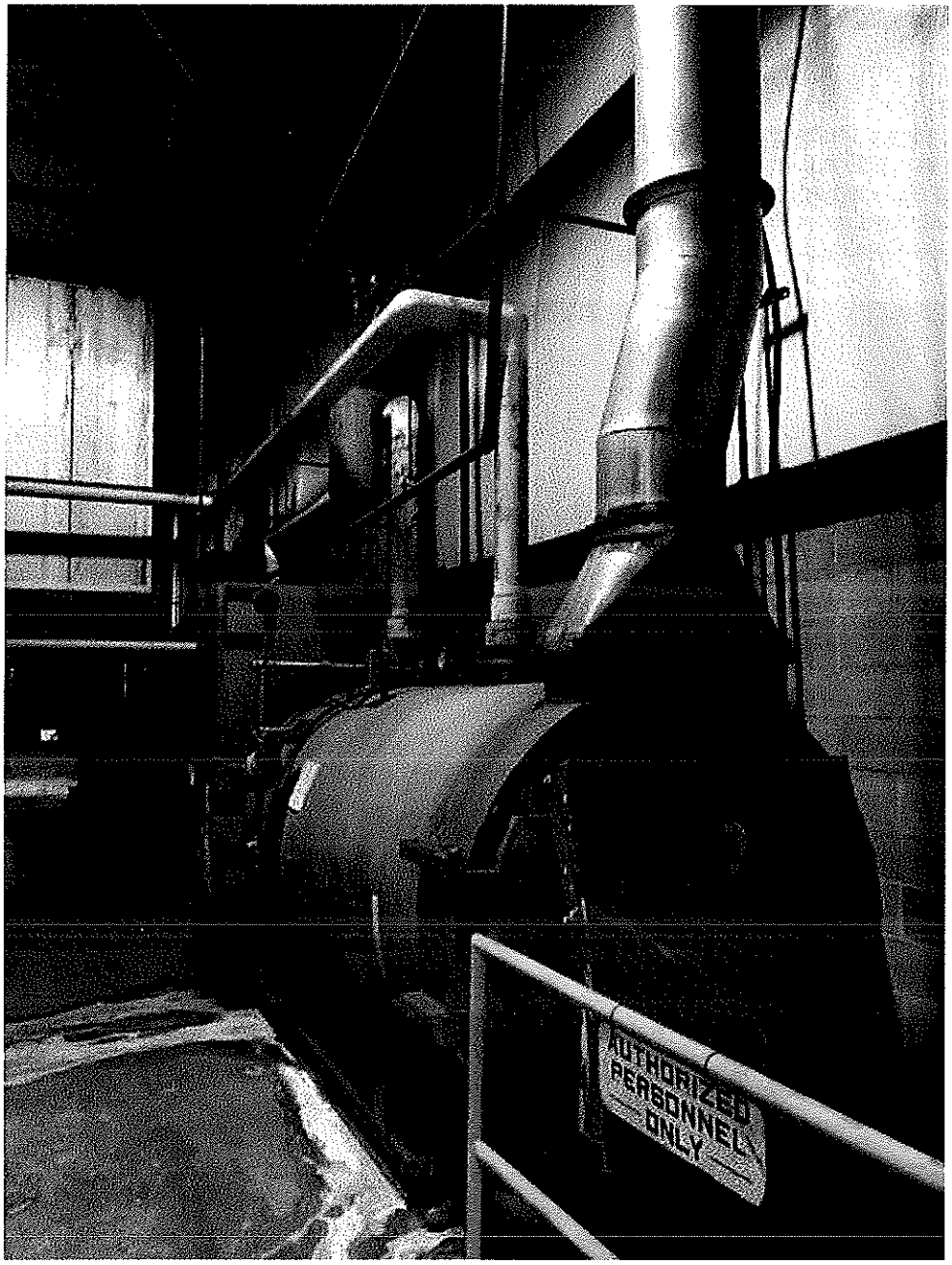

Image 2(0017) : Small hot water boiler on Ecoat

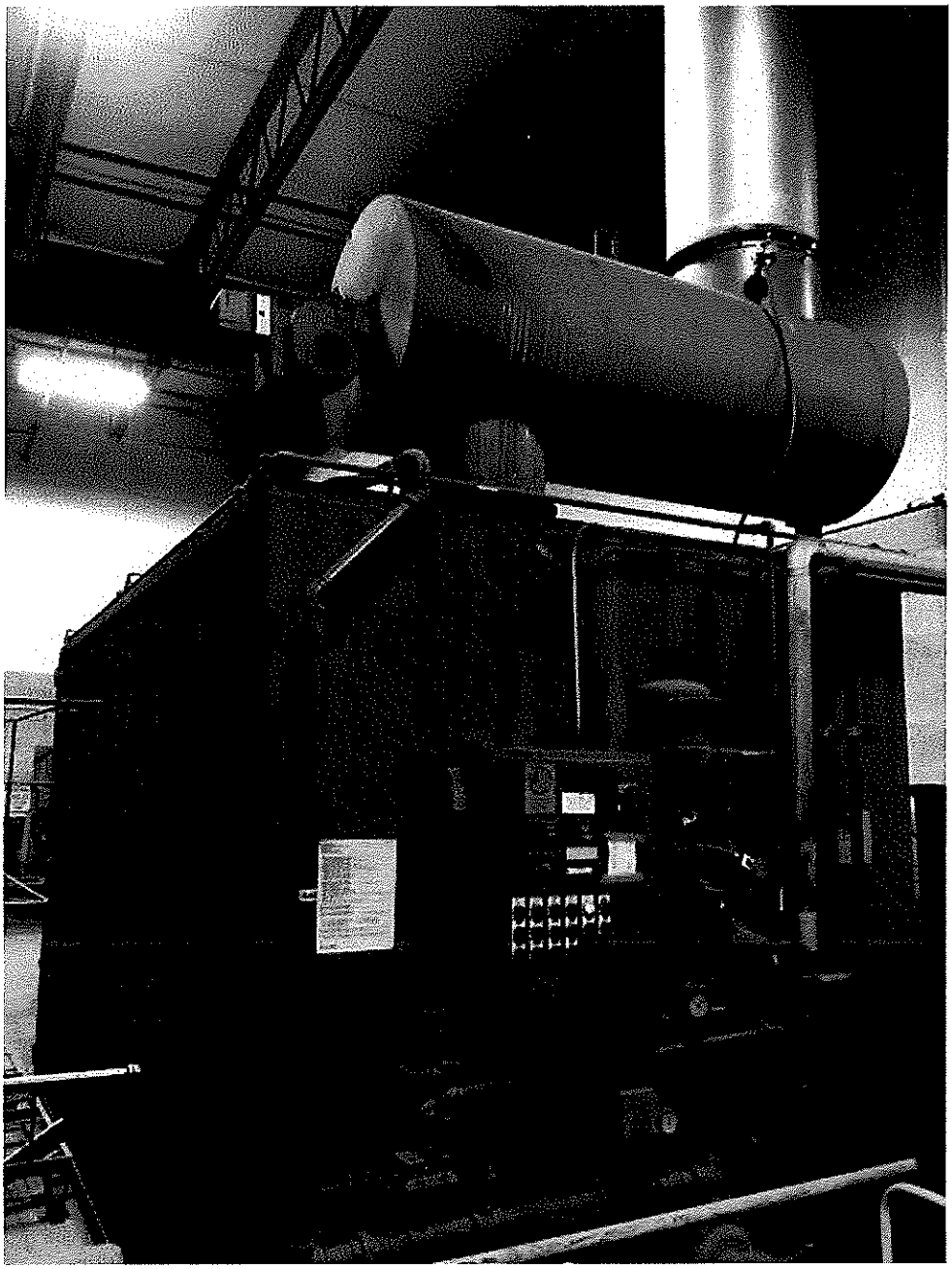

Image 3(0018) : Blu-Surf burn-off oven

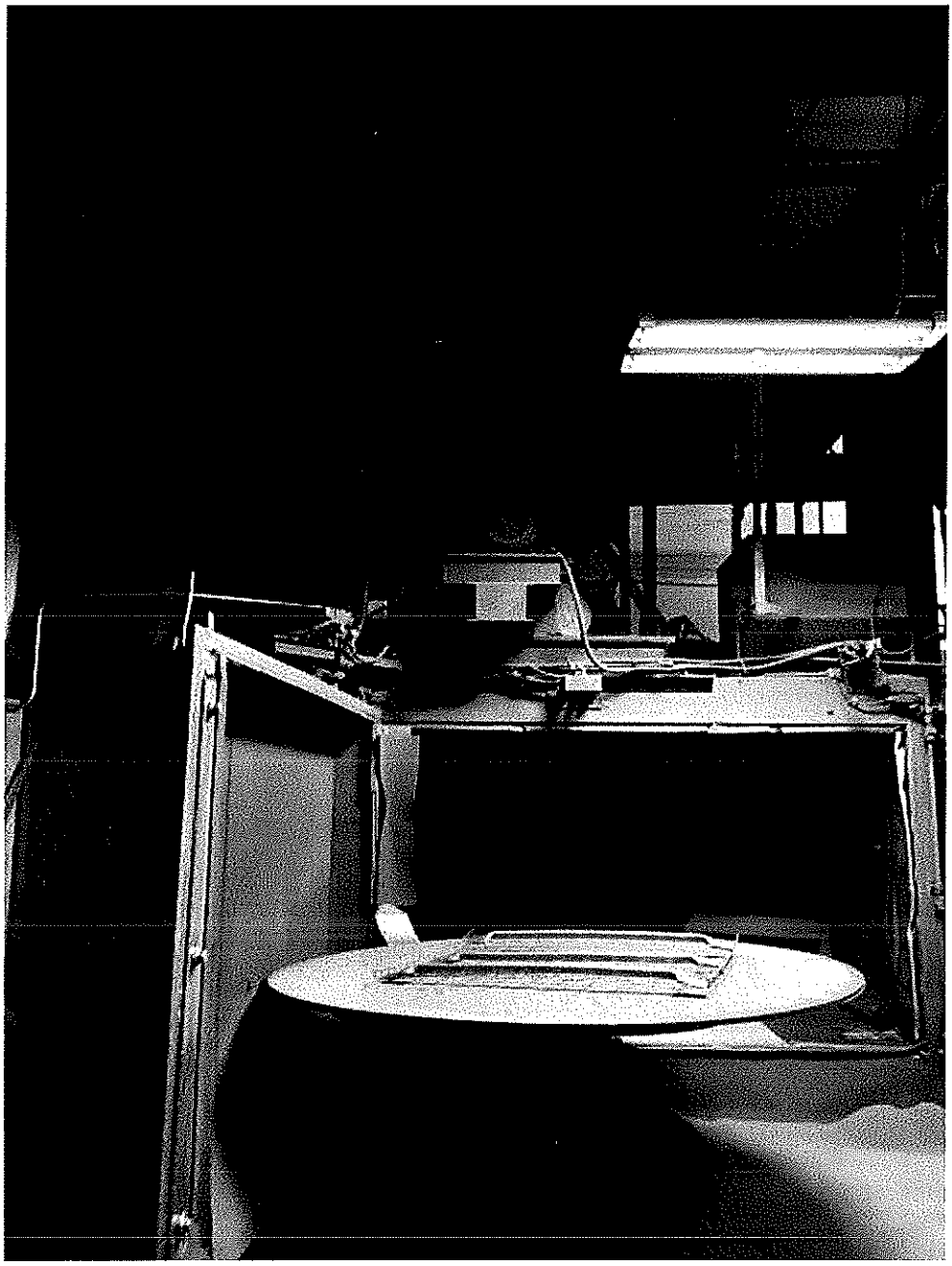

Image 4(0019) : Shot blast machine

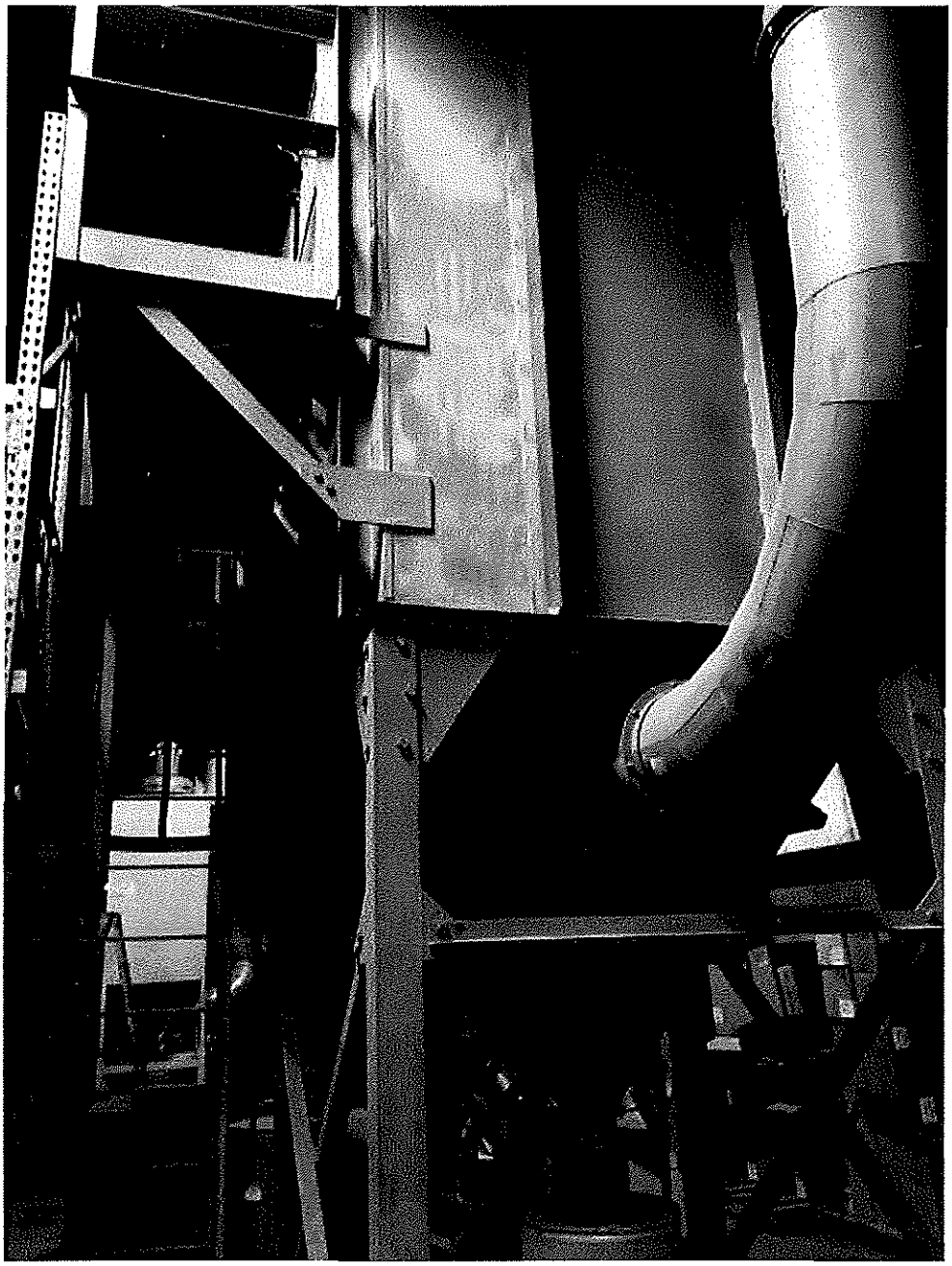

Image 5(0020) : Shot blast dust collector

Image 6(0021) : Natural gas-fired generator set

NAME Julie L. Brown DATE 12/14/17 SUPERVISOR B.M.