TECHNICAL SUPPORT DOCUMENT

Air Discharge Permit 22-3510
Air Discharge Permit Application CL-3186

Issued: April 26, 2022

Columbia Machine, Inc.

SWCAA ID – 321

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Southwest Clean Air Agency

TABLE OF CONTENTS

ABBREVIATIONS

List of Acronyms

ADP.....Air Discharge Permit

AP-42 .....Compilation of Emission Factors, AP-42, 5th Edition, Volume 1, Stationary Point and Area Sources – published by EPA

ASIL.....Acceptable Source Impact Level

BACT.....Best available control technology

BART .....Best Available Retrofit Technology

CAM .....Compliance Assurance Monitoring

CAS#.....Chemical Abstracts Service registry number

CFR.....Code of Federal Regulations

EPA.....U.S. Environmental Protection Agency

EU .....Emission Unit

LAER.....Lowest achievable emission rate

MACT.....Maximum Achievable Control Technologies

mfr.....Manufacturer

NESHAP.....National Emission Standards for Hazardous Air Pollutants

NOV.....Notice of Violation/

NSPS.....New Source Performance Standard

PSD .....Prevention of Significant Deterioration

RACT.....Reasonably Available Control Technology

RCW .....Revised Code of Washington

SCC.....Source Classification Code

SDS .....Safety Data Sheet

SQER .....Small Quantity Emission Rate listed in WAC 173-460

Standard .....Standard conditions at a temperature of 68°F (20°C) and a pressure of 29.92 in Hg (760 mm Hg)

SWCAA .....Southwest Clean Air Agency

T-BACT .....Best Available Control Technology for toxic air pollutants

WAC .....Washington Administrative Code

List of Units and Measures

µg/m³.....Micrograms per cubic meter

µm .....Micrometer (10^{-6} meter)

acfm.....Actual cubic foot per minute

bhp.....Brake horsepower

dscfm.....Dry Standard cubic foot per minute

g/dscm.....Grams per dry Standard cubic meter

gpm .....Gallon per minute

gr/dscf .....Grain per dry standard cubic foot

hp.....Horsepower

hp-hr.....Horsepower-hour

kW.....Kilowatt

MMBtu.....Million British thermal unit

MMcf .....Million cubic feet

ppm .....Parts per million

ppmv .....Parts per million by volume

ppmvd .....Parts per million by volume, dry

ppmw.....Parts per million by weight

psig.....Pounds per square inch, gauge

rpm .....Revolution per minute

scfm.....Standard cubic foot per minute

tph .....Ton per hour

tpy .....Tons per year

List of Chemical Symbols, Formulas, and Pollutants

C_3H_8 .....Propane
CH_4.....Methane
CO .....Carbon monoxide
CO_2.....Carbon dioxide
CO_2e.....Carbon dioxide equivalent
H_2S .....Hydrogen sulfide
HAP.....Hazardous air pollutant listed pursuant to Section 112 of the Federal Clean Air Act
HCl.....Hydrochloric acid
Hg.....Mercury
N_2O .....Nitrous oxide
NH_3 .....Ammonia
NO_2 .....Nitrogen dioxide
NO_x .....Nitrogen oxides
O_2 .....Oxygen
O_3 .....Ozone
PM.....Particulate Matter with an aerodynamic diameter 100 µm or less
PM_{10} .....PM with an aerodynamic diameter 10 µm or less
$PM_{2.5}$ .....PM with an aerodynamic diameter 2.5 µm or less
SO_2 .....Sulfur dioxide
SO_x .....Sulfur oxides
TAP .....Toxic air pollutant pursuant to Chapter 173-460 WAC
TGOC.....Total Gaseous Organic Carbon
TOC.....Total Organic Carbon
TSP.....Total Suspended Particulate
VOC .....Volatile organic compound

Terms not otherwise defined have the meaning assigned to them in the referenced regulations or the dictionary definition, as appropriate.

1. FACILITY IDENTIFICATION

Applicant Name:	Columbia Machine, Inc.
Applicant Address:	107 Grand Boulevard, Vancouver, WA 98661
Facility Name:	Columbia Machine, Inc.
Facility Address:	107 Grand Boulevard, Vancouver, WA 98661
SWCAA Identification:	321
Contact Person:	Kevin Litterell
Primary Process:	Fabricated Metal Products
SIC/NAICS Code:	3499: Fabricated Metal Products 332999: All Other Miscellaneous Fabricated Metal Product Manufacturing
Facility Classification:	Natural Minor

2. FACILITY DESCRIPTION

Columbia Machine, Inc. (Columbia Machine) manufactures capital equipment for the concrete products industry. Columbia Machine also manufactures conveyor equipment for a variety of customers. The facility fabricates all of the steel components, with the exception of cast metal, which includes cutting, machining, bending, welding, heat treating, sandblasting, and painting.

3. CURRENT PERMITTING ACTION

This permitting action is in response to Air Discharge Permit (ADP) application number CL-3186 dated March 22, 2023. Columbia Machine submitted ADP application CL-3186 requesting the following:

- Water plasma cutting table with mist collector and cartridge filter control for particulate matter (PM). The new unit will replace the K2500, which was vented internally and was not designated an emission unit.
- No change in coatings or paint throughput is proposed.
- This permitting action only addresses the approval of the new plasma cutting table and does not include conditions and requirements for the remainder of the facility. This ADP does not supersede the previous ADP. This Technical Support Document (TSD) does cover the entire facility.

4. PROCESS DESCRIPTION

Steel is cut, shaped, and welded in the Steel Service Center. Forty percent of welding will be performed in the Steel Service Center, Building #3; 40% of welding is performed in Mold Fab, Building #3; 10% of welding is performed in Fab, Building #1, and 10% of welding is performed in Fab, Building #2. Some grinding is performed on welded pieces. The two plasma cutting machines and two lasers are in the Steel Service Center.

Metal pieces, some welded, are transported to the Machine Shop where all of the machining is performed. The parts are drilled and cut in the Machine Shop. Most of the grinding is performed here as well.

Some parts are transported to the heat treat oven for hardening.

The parts are then sandblasted with steel shot in the Sandblasting Building, Building #4. Emissions from sandblasting are controlled by the Wheelabrator dust collector.

After sandblasting, they are moved to the staging area, where they are hung by color tag. They are then sent to one of the paint booths for direct to metal paint process.

5. EQUIPMENT/ACTIVITY IDENTIFICATION

5.a. Paint Booth (Warehouse Booth). Bleeker Brothers model number SPF 121012 paint booth that has dimensions of approximately 12' x 12' x 9'10". It is exhausted at an airflow of 18,135 acfm. HVLP guns are used. The booth houses Columbus Industries, Inc. high-capacity paint collectors, 20" x 20". This booth is utilized for small orders.

5.b. Paint Booth (Main/Finish Booth). Bleeker Brothers standard drive-thru paint booth model #T-DT-64, serial # P89-8972. Approximately 63' long x 16' wide x 16' high. It is exhausted at an airflow of 26,680 acfm through a 42-inch diameter fan with a 10-hp drive. It has two layers of filters. The primary filtration is 117 ft^2 of RP 3000 series media and the secondary filtration is RP 3300 series media. This booth is used to apply finish paint on major items.

The booth has a natural gas heater with a burner rating of 2.2 MMBtu/hr.

The booth exhausts through a stack 87" above the building roof and has an approximate diameter of 12".

5.c. Paint Booth (Primer Booth). A Global Finishing Solutions model SDG-1818-PDT-36, serial # 69008 side draft, paint booth that has dimensions of 36'4" x 18'4" x 21'8". It is exhausted through a filter bank containing 68 Columbus Industries high capacity mini-mesh filters 20" x 20" x 2" thick, providing 189 ft^2 filtration area. The filters have up to a 99.0% efficiency for air dry enamel. The exhaust flow is 33,170 acfm. There are two fans, JBI model 8049-FJ35 units with 3 hp drives and a speed of 1,740 rpm. The facility uses Graco G-40 air assisted airless spray guns with an 80% transfer efficiency.

The booth has a natural gas heater with a burner rating of 2.75 MMBtu/hr. During the drying phase, the airflow drops to 16,500 acfm.

The booth exhausts through a stack 37' above ground level, 6' above the building roof, and has a diameter of 42".

5.d. Paint Booth (Banksy South Booth). A Spray Systems model I-141220 paint booth that has dimensions of 24' x 15' x 13.5'. It is exhausted through a filter bank containing 40 American Air Filters, type AG28, high-capacity fiberglass filters 20" x 25" x 2" thick providing 139 ft^2 of filtration area. The filters have up to a 99.99% efficiency. The exhaust flow is 16,800 acfm. The facility uses Iwata LPH200 and LPH400 HVLP spray guns and a Wagner Leopard air assisted airless spray gun, each with a 65% transfer efficiency or greater.

The booth has a natural gas heater with a burner rating of 1.77 MMBtu/hr.

The booth exhausts through a stack 36' above ground level, 6' above the building roof, and has a diameter of 42".

5.e. Paint Booth (Von Dutch North Booth). A Spray Systems model I-141220 paint booth that has dimensions of 24' x 15' x 13.5'. It is exhausted through a filter bank containing 40 American Air Filters, type AG28, high-capacity fiberglass filters 20" x 25" x 2" thick, providing 139 ft^2 of filtration area. The filters have up to a 99.99% efficiency. The exhaust flow is 16,800 acfm. The facility uses Iwata LPH200 and LPH400 HVLP spray guns and a Wagner Leopard air assisted airless spray gun, each with a 65% transfer efficiency or greater.

The booth has a natural gas heater with a burner rating of 1.77 MMBtu/hr.

The booth exhausts through a stack 36' above ground level, 6' above the building roof, and has a diameter of 42".

5.f. Paint Mixing Room. A Spray Systems model MRD-10812 deluxe mix room that has dimensions of 10.3' x 10.3' x 12.7'. The exhaust flow is 1,125 acfm.

The booth exhausts through a stack 36' above ground level, 6' above the building roof, and has a diameter of 9".

5.g. Welders. 32 total welding stations: 30 wire and 2 stick (arc) welding booths. The North, South, and Omax fab operations exhaust out building vents. The Mold fab uses a combination of hoods, smoke extractors and pick-up points. The Steel Service Center uses a combination of internally vented Donaldson Torit and Shadow filtered smoke extractors.

5.h. Heat Treat Furnace. Pacific Scientific Karbomatic Furnace Model #PKM-100-2-ERT, serial #662-0018. It has a maximum working temperature of 1,900 °F. The unit utilizes endothermic gas from the endothermic generator, which is enriched with natural gas for

carburizing treated parts. The unit is estimated to combust 6.0 MMBtu/hr (actual heat input for the unit is unknown). A 5' x 7' hood serviced by a 36" diameter exhaust vents uncontrolled during purging. The furnace uses nitrogen for purging the endothermic generated gas out of the furnace anytime the furnace is below 1,400 °F.

5.i. Endothermic Generator. An electrically heated California Heating Equipment endothermic generator, model ENDO-1500-E, Serial #4865. It has a maximum working temperature of 1,900 °F. The unit requires 0.41 MMBtu/hr of natural gas to operate the various burn off flares and for the endothermic reaction. The unit mixes natural gas with air, which runs through a retort at 1,850 °F. A catalyst in the retort cracks the mixture of natural gas and air into 40% H, 40% N, and 20% CO. The air mixture runs through tubes to quench the gas. This is plumbed to the PKM-100-2-ERT furnace mentioned above. This chemistry keeps the materials from scaling/decarburizing. Natural gas that is not utilized in the reaction is combusted and vented through an approximate 12" diameter exhaust.

The furnace/endothermic generator as three pilot lights (flares) to burn off natural gas. Two are at the inlet and outlet doors to assure oxygen does not enter the process. The amount of natural gas burned for these 'flares' is unknown.

5.j. Baghouse (Bystronic Laser). Donaldson Torit PowerCore model TG 6, serial number 3736639 1.1 1, manufactured in 2012. It is a cartridge type dust collector with a rated airflow of 3,000 acfm. This dust collector is equipped with 6 fluted 16-oz. fabric filtration cartridges (36.2" x 16.7" x 5.3"), MERV 15, providing a total collection area of 882 ft^2. Filter cartridges are cleaned while in use with a reverse jet cleaning system. This baghouse services only the Bystronic Laser.

The baghouse exhausts through a stack 10' above ground and has dimensions of 11" by 30".

The laser is a ByLaser 6000 CO_2 laser made by Bystronic Inc. and has a 6,000 W laser to cut through up to 25 mm of metal.

5.k. Mist Collector (K5000 Plasma) (*updated*). One Kinetic Engineering Design Limited model K5000XMC, serial number K5000XMC-6940-439 plasma cutter, manufactured in 2016. It has a 400-amp plasma that can cut up to 2.5" thick metal. When assisted by oxyfuel, it is capable of cutting steel up to 6" thick. It also has drilling capabilities. It can be used as a water table, as well.

Emissions from cutting are collected by a mist collector using cartridge type filters with a rated airflow of 4,000 acfm. The mist collector has six filter mounts with two filters each (totaling twelve filters). The filters are Donaldson LG TD Ultra-web FR cartridges measuring 12.74" x 26" and Donaldson DF Ultra-web FR cartridges measuring 12.74" x 26". One of each filter is placed in each of the six filter mounts, providing a total collection area of 257.88 ft^2. Filter cartridges are cleaned while in use with a pulse-jet cleaning system. The dry side of the control system has a pressure gauge.

The mist collector system exhausts through a stack 38" above roof level and has dimensions of 8" x 12".

5.l. Mist Collector (K3000 Plasma) (*new*). One custom Kinetic Cutting Systems model K3000XMC, serial number 589, water table plasma cutter. It has a 400-amp plasma that can cut up to 3" thick metal. When assisted by oxyfuel, it is capable of cutting steel up to 8" thick. It also has drilling capabilities. It cuts underwater to reduce the released fume from cutting metal. They only cut mild steel, but have requested to be able to cut stainless steel in the future.

Emissions from cutting underwater are collected by a Kinetic Cutting Systems mist collector using cartridge type filters with a rated airflow of 4,000 acfm. The mist collector uses two Donaldson DryFlo Ultra-web FR cartridges with wrap material measuring 18.92" x 20" offering a collection area of area of 280 ft^2.

The baghouse exhausts through a stack 38" above roof level and has a diameter of 16".

5.m. Baghouse (Sandblasting). Wheelabrator model JPSMA-4D16 cartridge type dust collector with a rated airflow of 11,200 acfm, serial number 3377. This dust collector is equipped with 16 filter cartridges (3.75 oz/yd^2 paper filters) providing a total collection area of 5,088 ft^2. Filter cartridges are cleaned while in use with a pulse-jet cleaning system. Baghouse exhaust discharges to the atmosphere through an exhaust stack 30' above ground and has a diameter of 42". Sandblasting is performed in the sandblast building and uses steel shot and steel grit.

5.n. Boiler. A West Coast natural gas-fired boiler, rated at 4.2 MMBtu/hr. It is used to heat the machine shop during the months of November through March as needed. The boiler exhausts through a stack approximately 30' above ground and has a rectangular opening of 3' x 3'.

5.o. Emergency Generator.

Engine Make / Model:	John Deere / 6068TF150
Serial Number:	PE6068T079468
Engine Power Rating:	114 bhp
Engine Fuel Consumption:	5.76 gal/hr; approximately (standby, 100% load)
Engine Mfg Date:	2000
Certification:	Tier 1
Generator Make / Model:	KatoLight Power Package / D86FRJ4
Serial Number:	644761-64870
Generator Power Rating:	85 kW

Insignificant Emission Units

1. One Amata laser machine (Laser Cutter 2), LCV-3015B II, manufactured in 1998, with a Torit dust collector, model SDF-6, with an airflow of 1,600 cfm and a filter area of 618 ft^2, internally vented.
2. Tank: One (1) 1,500-gallon capacity nitrogen storage tank.
3. Tank: One (1) 410-gallon capacity nitrogen storage tank.
4. Tank: One (1) 500-gallon capacity liquid propane storage tank.
5. Tank: One (1) 250-gallon capacity liquid propane storage tank.
6. Tank: One (1) 3,000-gallon capacity bulk oxygen storage tank.
7. Tank: One (1) diesel tank.
8. Sanders: Two (2) 8" Columbia Machine built belt sanders serviced by a 3" diameter line and vented to the welding exhaust system.
9. Draw furnaces: Five (5) Draw Furnace:
   a. Three (3) PKM (Pacific Karbo Matic) Electric Furnaces
      1. One (1) 1350 °F PKM Du-al
      2. One (1) 1450 °F PKM
      3. One (1) 1850 ° PKM Du-al
   b. One (1) TTT (Tedesco Thermal Technology) Furnace 1,450 °F
   c. One (1) Despatch Furnace 500 °F
10. Wash tank: One (1) wash tank, PW-100-E. Electric. It has a maximum temperature of 180 °F. The unit is vented uncontrolled via an 8" diameter exhaust duct uncontrolled through the roof.
11. Minimizer III Solvent Reclaimer: Removes solvents from the paint waste.
12. Two (2) Roto-blasts (Goff George Fischer). One in Building #3 and one in Building #4.

5.p. Equipment/Activity Summary.

ID No.	Equipment/Activity	Control Equipment/Measure
1	Bleeker Brothers paint booth, model number SPF 121012 (Warehouse Booth)	Filter bank - Columbus Industries, Inc. high capacity paint collectors
2	Bleeker Brothers paint booth, standard drive-thru paint booth, model #T-DT-64, with natural gas heater (Main/Finish Booth)	Filter bank - Primary filtration: RP 3000 series media, secondary filtration: RP 3300 series media. Ultralow sulfur fuel (natural gas)
3	Global Finishing Solutions paint booth, model SDG-1818-PDT-36, with natural gas heater (Primer Booth)	Filter bank - Columbus Industries, Inc. high capacity paint collectors. Ultralow sulfur fuel (natural gas)
4	Spray Systems paint booth, model I-141220 (Banksy South Booth)	Filter bank – American Air Filters high capacity paint collectors. Ultralow sulfur fuel (natural gas)
5	Spray Systems paint booth, model I-141220 (Von Dutch North Booth)	Filter bank – American Air Filters high capacity paint collectors. Ultralow sulfur fuel (natural gas)

6	Spray Systems paint mixing room	None
7	Welding: 32 booths	Filter bank - Air Filtration System
8	Heat treat furnace	Ultralow sulfur fuel (natural gas)
9	California Heating Equipment endothermic generator	Ultralow sulfur fuel (natural gas)
10	Bystronic laser	Baghouse - Donaldson Torit PowerCore model TG 6
11	K5000 Plasma cutting system	Mist collector with Donaldson filter cartridges
12	K3000 Plasma cutting system	Mist collector with Donaldson filter cartridges
13	Sandblasting activities	Baghouse - Wheelabrator, model # JPSMA-4D16
14	Natural gas boiler	Ultralow sulfur fuel (natural gas)
15	Emergency generator	EPA certification, Limited operation (≤100 hr/yr) Ultralow sulfur (≤15 ppm) diesel fuel

6. EMISSIONS DETERMINATION

Unless otherwise specified by SWCAA, actual emissions must be determined using the specified input parameter listed for each emission unit and the following hierarchy of methodologies:

(a) Continuous emissions monitoring system (CEMS) data;
(b) Source emissions test data (EPA reference method). When source emissions test data conflicts with CEMS data for the time period of a source test, source test data must be used;
(c) Source emissions test data (other test method); and
(d) Emission factors or methodology provided in this TSD

6.a. Paint Spraying Operations. VOC and TAP/HAP emissions are calculated using a mass balance approach, using the facility-wide usage of surface coating products. VOC and TAP/HAP emissions for each product are determined by taking the percent VOC (or percent volatiles minus water and exempt) and percent TAP and multiplying by the usage (by weight). VOC and TAP/HAP content and product density are found in the SDS or the Technical Data Sheet (TDS) for the product.

Example. Given a specific coating with a density of 8.5 lb/gal, a VOC content of 7.5 lb/gal, and a toluene content of 2%, assuming 10 gal/yr of usage, emissions of toluene can be determined:

10 gal/yr × 8.5 lb/gal VOC = 85 lb/yr total usage
10 gal/yr × 7.5 lb/gal VOC = 75 lb/yr VOC
85 lb/yr total usage × 2% toluene = 1.7 lb/yr toluene

The SDS may specifically list the solids content (as lb/gal or %), but if not, the solids content can be inferred by taking the total density of the product minus the total VOC of the product (this method provides a conservative maximum). Using the solids content of each product (or an average 30%), the particulate (PM and PM_{10}) emissions can be determined assuming a 65% transfer efficiency by using high volume low pressure (HVLP) guns, and the control efficiency of the filter media. All of the emitted PM is assumed to be PM_{10} and $PM_{2.5}$ is assumed to be 78% of the PM/PM_{10}, by weight, based on data from Version 2.0 of EPA's Particulate Matter Calculator for SCC 40200101.

Example. Given 10 gal/yr usage of a coating with a density of 7.1 lb/gal with 20% solids and assuming a transfer efficiency of 65% with filter arrestance of 99%, emissions of PM_{10} and $PM_{2.5}$ can be determined:

$10 \text{ gal/yr} \times 7.1 \text{ lb/gal} \times 20\% \times (100\% - 65\%) \times (100\% - 99\%) = 0.05 \text{ lb/yr } PM_{10}$
$0.50 \text{ lb/yr } PM_{10} \times 78\% = 0.04 \text{ lb/yr } PM_{2.5}$

A list of the products in use, the SDS or TDS, and expected annual usage was provided as part of previous ADP applications. Coating throughput will not change due to this application. It is recognized that the actual usage of products will vary. Emission estimates were based on the provided information using the procedures listed above. Emissions are determined to be as follows:

Pollutant	Emissions
VOC	25.00 tons
PM/PM_{10}	0.03 tons
$PM_{2.5}$ (78% PM)	0.02 tons
TAP	14.00 tons
HAP	7.75 tons

TAP or HAP	CAS Number	ASIL ($\mu g/m^3$)	SQER (lbs/yr)	Emissions (lbs/yr)
Acetone	67-64-1	5,900	43,748	600
Aluminum	7429-90-5	33	5,250	33
Benzene	71-43-2	0.12	20	5
2-Butoxyethanol*	111-76-2	400	43,748	1,600
n-Butyl acetate	123-86-4	2,400	43,748	3,000
Butyl alcohol	71-36-3	500	43,748	50
Sec-Butyl alcohol	78-92-2	1,000	43,748	1,000
Carbon black	1333-86-4	12	1,750	80
Cobalt compounds*	7440-48-4	0.17	175	28
Cyclohexanone	108-94-1	330	43,748	225

TAP or HAP	CAS Number	ASIL ($\mu g/m^3$)	SQER (lbs/yr)	Emissions (lbs/yr)
Diacetone alcohol	123-42-1	790	43,748	800
Diethylene glycol* monomethyl ether	111-77-3	--	--	1
Ethyl acetate	141-78-6	4,800	43,748	300
Ethyl benzene*	100-41-4	1,000	43,748	1,300
Ethylene glycol* monobutyl ether acetate	112-07-2	--	--	300
Iron oxide	1309-37-1	17	1,750	25
Isobutyl acetate	110-19-0	2,400	43,748	130
Isobutyl alcohol	78-83-1	510	43,748	106
Isopropyl acetate	108-21-4	3,500	43,748	21
Manganese compounds*	--	0.40	175	15
Methyl-n-amyl ketone	110-43-0	780	43,748	800
Methyl ethyl ketone*	78-93-3	1,000	43,748	5,000
Methyl isobutyl ketone*	108-10-1	680	43,748	450
2-Propoxyethanol*	2807-30-9	--	43,748	200
Propanol	71-23-8	1,600	43,748	10
Styrene*	100-42-5	1,000	43,748	320
Toluene*	108-88-3	400	43,748	3,000
VM&P Naphtha	8030-30-6	4,600	43,748	4,000
Xylene*	1330-20-7	1,500	43,748	4,000
Zinc oxide	1314-13-2	17	1,750	10

* Labeled compounds are also classified as Federal Hazardous Air Pollutants.

6.b. Natural Gas Emissions. Potential annual emissions from the combustion of natural gas in the fire-tube boiler, the endothermic generator, the heat-treating unit, booth heaters, and other miscellaneous equipment were calculated with the assumption that the equipment will operate at full rated capacity for 8,760 hours per year. Emissions of NO_X, CO, VOC, SO_2, $PM/PM_{10}/PM_{2.5}$, formaldehyde, and benzene were calculated using emission factors

from AP-42 Section 1.4 (7/98). Greenhouse gas emissions were calculated using the procedures specified in 40 CFR 98. All PM is assumed to be $PM_{10}/PM_{2.5}$.

The combined approximate heat input is 19.1 MMBtu/hr from equipment operation. The facility does not have a separate natural gas meter on each piece of combustion equipment.

Main/Finish Booth Heater. Emissions from the 2.2 MMBtu/hr natural gas-fired paint booth heater were based on 8,760 hours per year operation and EPA AP-42, Section 1.4 "Natural Gas Combustion" (7/93) emission factors.

Main/Finish Booth Heater

Hours of Operation	8,760	hr/yr
Heat Rate	2.20	MMBtu/hr
Natural Gas Heat Value =	1,020	Btu/scf for AP-42 emission factors
Natural Gas Heat Value =	1,028	Btu/scf for 40 CFR 98 GHG emission factors

Pollutant	Emission Factor lb/MMscf	lb/hr	tpy	Emission Factor Source
NO_X	100.0	0.22	0.94	AP-42 Sec. 1.4 (7/98)
CO	84.0	0.18	0.79	AP-42 Sec. 1.4 (7/98)
VOC	5.5	0.012	0.052	AP-42 Sec. 1.4 (7/98)
SO_X as SO_2	0.6	0.0013	5.67E-03	AP-42 Sec. 1.4 (7/98)
PM	7.6	0.016	0.072	AP-42 Sec. 1.4 (7/98)
PM_{10}	7.6	0.016	0.072	AP-42 Sec. 1.4 (7/98)
$PM_{2.5}$	7.6	0.016	0.072	AP-42 Sec. 1.4 (7/98)
Benzene	0.0021	4.5E-06	0.000020	AP-42 Sec. 1.4 (7/98)
Formaldehyde	0.075	1.6E-04	0.000709	AP-42 Sec. 1.4 (7/98)

Greenhouse Gases	kg/MMBtu	GWP	CO_2e lb/MMBtu	CO_2e lb/MMscf	tpy, CO_2e	
CO_2	53.02	1	116.89	120,162	1,126	40 CFR 98
CH_4	0.001	25	0.055	56.66	1	40 CFR 98
N_2O	0.0001	298	0.066	67.54	1	40 CFR 98
Total GHG - CO_2e	53.0211		117.010	120,286	1,128	

Primer Paint Booth Heater. Emissions from the 2.75 MMBtu/hr natural gas-fired paint booth heater were based on 8,760 hours per year operation and EPA AP-42, Section 1.4 "Natural Gas Combustion" (7/93) emission factors.

Primer Booth Heater

Hours of Operation	8,760	hr/yr
Heat Rate	2.75	MMBtu/hr
Natural Gas Heat Value =	1,020	Btu/scf for AP-42 emission factors
Natural Gas Heat Value =	1,028	Btu/scf for 40 CFR 98 GHG emission factors

Pollutant	Emission Factor lb/MMscf	lb/hr	tpy	Emission Factor Source
NO_X	100.0	0.27	1.18	AP-42 Sec. 1.4 (7/98)
CO	84.0	0.23	0.99	AP-42 Sec. 1.4 (7/98)
VOC	5.5	0.015	0.065	AP-42 Sec. 1.4 (7/98)
SO_X as SO_2	0.6	0.0016	7.09E-03	AP-42 Sec. 1.4 (7/98)
PM	7.6	0.020	0.090	AP-42 Sec. 1.4 (7/98)
PM_{10}	7.6	0.020	0.090	AP-42 Sec. 1.4 (7/98)
$PM_{2.5}$	7.6	0.020	0.090	AP-42 Sec. 1.4 (7/98)
Benzene	0.0021	5.7E-06	0.000025	AP-42 Sec. 1.4 (7/98)
Formaldehyde	0.075	2.0E-04	0.000886	AP-42 Sec. 1.4 (7/98)

Greenhouse Gases	kg/MMBtu	GWP	CO_2e lb/MMBtu	CO_2e lb/MMscf	tpy, CO_2e	
CO_2	53.02	1	116.89	120,162	1,408	40 CFR 98
CH_4	0.001	25	0.055	56.66	1	40 CFR 98
N_2O	0.0001	298	0.066	67.54	1	40 CFR 98
Total GHG - CO_2e	53.0211		117.010	120,286	1,409	

Banksy South Booth Heater. Emissions from the 1.77 MMBtu/hr natural gas-fired paint booth heater were based on 8,760 hours per year operation and EPA AP-42, Section 1.4 "Natural Gas Combustion" (7/93) emission factors.

Banksy South Booth Heater

Hours of Operation	8,760	hr/yr
Heat Rate	1.77	MMBtu/hr
Natural Gas Heat Value =	1,020	Btu/scf for AP-42 emission factors
Natural Gas Heat Value =	1,028	Btu/scf for 40 CFR 98 GHG emission factors

Pollutant	Emission Factor lb/MMscf	lb/hr	tpy	Emission Factor Source
NO_X	100.0	0.17	0.76	AP-42 Sec. 1.4 (7/98)
CO	84.0	0.15	0.64	AP-42 Sec. 1.4 (7/98)
VOC	5.5	0.0095	0.042	AP-42 Sec. 1.4 (7/98)
SO_X as SO_2	0.6	0.0010	4.56E-03	AP-42 Sec. 1.4 (7/98)
PM	7.6	0.013	0.058	AP-42 Sec. 1.4 (7/98)
PM_{10}	7.6	0.013	0.058	AP-42 Sec. 1.4 (7/98)
$PM_{2.5}$	7.6	0.013	0.058	AP-42 Sec. 1.4 (7/98)
Benzene	0.0021	3.6E-06	0.000016	AP-42 Sec. 1.4 (7/98)
Formaldehyde	0.075	1.3E-04	0.000570	AP-42 Sec. 1.4 (7/98)

Greenhouse Gases	kg/MMBtu	GWP	CO_2e lb/MMBtu	CO_2e lb/MMscf	tpy, CO_2e	
CO_2	53.02	1	116.89	120,162	906	40 CFR 98
CH_4	0.001	25	0.055	56.66	0	40 CFR 98
N_2O	0.0001	298	0.066	67.54	1	40 CFR 98
Total GHG - CO_2e	53.0211		117.010	120,286	907	

Von Dutch North Booth Heater. Emissions from the 1.77 MMBtu/hr natural gas-fired paint booth heater were based on 8,760 hours per year operation and EPA AP-42, Section 1.4 "Natural Gas Combustion" (7/93) emission factors.

Von Dutch North Booth Heater

Hours of Operation	8,760	hr/yr
Heat Rate	1.77	MMBtu/hr
Natural Gas Heat Value =	1,020	Btu/scf for AP-42 emission factors
Natural Gas Heat Value =	1,028	Btu/scf for 40 CFR 98 GHG emission factors

Pollutant	Emission Factor lb/MMscf	lb/hr	tpy	Emission Factor Source
NO_X	100.0	0.17	0.76	AP-42 Sec. 1.4 (7/98)
CO	84.0	0.15	0.64	AP-42 Sec. 1.4 (7/98)
VOC	5.5	0.010	0.042	AP-42 Sec. 1.4 (7/98)
SO_X as SO_2	0.6	0.0010	4.56E-03	AP-42 Sec. 1.4 (7/98)
PM	7.6	0.013	0.058	AP-42 Sec. 1.4 (7/98)
PM_{10}	7.6	0.013	0.058	AP-42 Sec. 1.4 (7/98)
$PM_{2.5}$	7.6	0.013	0.058	AP-42 Sec. 1.4 (7/98)
Benzene	0.0021	3.6E-06	0.000016	AP-42 Sec. 1.4 (7/98)
Formaldehyde	0.075	1.3E-04	0.000570	AP-42 Sec. 1.4 (7/98)

Greenhouse Gases	kg/MMBtu	GWP	CO_2e lb/MMBtu	CO_2e lb/MMscf	tpy, CO_2e	
CO_2	53.02	1	116.89	120,162	906	40 CFR 98
CH_4	0.001	25	0.055	56.66	0	40 CFR 98
N_2O	0.0001	298	0.066	67.54	1	40 CFR 98
Total GHG - CO_2e	53.0211		117.010	120,286	907	

Heat Treat Furnace. Emissions from the approximate 6.0 MMBtu/hr (actual heat input for the unit is unknown) natural gas-fired furnace were based on 8,760 hours per year operation and EPA AP-42, Section 1.4 "Natural Gas Combustion" (7/93) emission factors. The furnace typically operates 6,264 hours per year.

Heat Treat Furnace

Hours of Operation	8,760	hr/yr
Heat Rate	6.00	MMBtu/hr
Natural Gas Heat Value =	1,020	Btu/scf for AP-42 emission factors
Natural Gas Heat Value =	1,028	Btu/scf for 40 CFR 98 GHG emission factors

Pollutant	Emission Factor lb/MMscf	lb/hr	tpy	Emission Factor Source
NO_X	100.0	0.59	2.58	AP-42 Sec. 1.4 (7/98)
CO	84.0	0.49	2.16	AP-42 Sec. 1.4 (7/98)
VOC	5.5	0.032	0.14	AP-42 Sec. 1.4 (7/98)
SO_X as SO_2	0.6	0.0035	0.015	AP-42 Sec. 1.4 (7/98)
PM	7.6	0.045	0.20	AP-42 Sec. 1.4 (7/98)
PM_{10}	7.6	0.045	0.20	AP-42 Sec. 1.4 (7/98)
$PM_{2.5}$	7.6	0.045	0.20	AP-42 Sec. 1.4 (7/98)
Benzene	0.0021	1.2E-05	0.000054	AP-42 Sec. 1.4 (7/98)
Formaldehyde	0.075	4.4E-04	0.001932	AP-42 Sec. 1.4 (7/98)

Greenhouse Gases	kg/MMBtu	GWP	CO_2e lb/MMBtu	CO_2e lb/MMscf	tpy, CO_2e	
CO_2	53.02	1	116.89	120,162	3,072	40 CFR 98
CH_4	0.001	25	0.055	56.66	1	40 CFR 98
N_2O	0.0001	298	0.066	67.54	2	40 CFR 98
Total GHG - CO_2e	53.0211		117.010	120,286	3,075	

Endothermic Generator. Emissions from the 0.41 MMBtu/hr natural gas-fired endothermic generator were based on 8,760 hours per year operation and EPA AP-42, Section 13.5 "Industrial Flares" (4/15) emission factors. The generator typically operates 6,264 hours per year.

The unit uses natural gas in two processes: for the endothermic reaction and combusted in flares (or pilot lights) near the furnace load and unload doors and as a general flare off the unit. They cannot measure how much natural gas goes to which process. It is assumed all natural gas is combusted in the flares.

Endothermic Generator

Hours of Operation	8,760	hr/yr
Heat Rate	0.41	MMBtu/hr
Natural Gas Heat Value =	1,020	Btu/scf for AP-42 emission factors
Natural Gas Heat Value =	1,028	Btu/scf for 40 CFR 98 GHG emission factors

Pollutant	Emission Factor lb/MMBtu	lb/hr	tpy	Emission Factor Source
NO_X	0.07	0.03	0.12	AP-42 Sec. 13.5 (4/15)
CO	0.31	0.13	0.56	AP-42 Sec. 13.5 (4/15)
VOC	0.57	0.23	1.02	AP-42 Sec. 13.5 (4/15)

Greenhouse Gases	kg/MMBtu	GWP	CO_2e lb/MMBtu	CO_2e lb/MMscf	tpy, CO_2e	
CO_2	53.02	1	116.89	120,162	210	40 CFR 98
CH_4	0.001	25	0.055	56.66	0	40 CFR 98
N_2O	0.0001	298	0.066	67.54	0	40 CFR 98
Total GHG - CO_2e	53.0211		117.010	120,286	210	

Boiler. Emissions from the 4.2 MMBtu/hr natural gas-fired fire-tube boiler were calculated based on 8,760 hours per year operation and EPA AP-42, Section 1.4 "Natural Gas Combustion" (7/93) emission factors. The boiler typically operates between November and March.

Boiler

Hours of Operation	8,760	hr/yr
Heat Rate	4.20	MMBtu/hr
Natural Gas Heat Value =	1,020	Btu/scf for AP-42 emission factors
Natural Gas Heat Value =	1,028	Btu/scf for 40 CFR 98 GHG emission factors

Pollutant	Emission Factor lb/MMscf	lb/hr	tpy	Emission Factor Source
NO_X	100.0	0.41	1.80	AP-42 Sec. 1.4 (7/98)
CO	84.0	0.35	1.51	AP-42 Sec. 1.4 (7/98)
VOC	5.5	0.023	0.10	AP-42 Sec. 1.4 (7/98)
SO_X as SO_2	0.6	0.0025	0.011	AP-42 Sec. 1.4 (7/98)
PM	7.6	0.031	0.14	AP-42 Sec. 1.4 (7/98)
PM_{10}	7.6	0.031	0.14	AP-42 Sec. 1.4 (7/98)
$PM_{2.5}$	7.6	0.031	0.14	AP-42 Sec. 1.4 (7/98)
Benzene	0.0021	8.6E-06	0.000038	AP-42 Sec. 1.4 (7/98)
Formaldehyde	0.075	3.1E-04	0.001353	AP-42 Sec. 1.4 (7/98)

Greenhouse Gases	kg/MMBtu	GWP	CO_2e lb/MMBtu	CO_2e lb/MMscf	tpy, CO_2e	
CO_2	53.02	1	116.89	120,162	2,150	40 CFR 98
CH_4	0.001	25	0.055	56.66	1	40 CFR 98
N_2O	0.0001	298	0.066	67.54	1	40 CFR 98
Total GHG - CO_2e	53.0211		117.010	120,286	2,153	

6.c. Welding Emissions. Estimated emissions from the welding operations are based on EPA AP-42, Section 12.19 "Electric Arc Welding" (7/94) emission factors for electric arc welding and maximum annual usage of welding rods (electrodes).

Emission Factors from EPA AP-42, Section 12.19:

Rod Type	Emission Factor (lb PM_{10}/1,000 lbs of Rod)	Emission Factor (lb Cr(III)/1,000 lbs of Rod)	Emission Factor (lb Co/1,000 lbs of Rod)	Emission Factor (lb Mn/1,000 lbs of Rod)	Emission Factor (lb Ni/1,000 lbs of Rod)
14Mn-4Cr	81.6	1.39	--	23.2	1.71
E11018	16.4	--	--	1.38	--
E308	10.8	0.393	0.001	0.252	0.043
E310	15.1	2.53	--	2.2	0.196
E316	10.0	0.522	--	0.544	0.055
E410	13.2	--	--	0.685	0.014
E6010	25.6	0.003	--	0.991	0.004
E6011	38.4	0.005	0.001	0.998	0.05
E6012	8.0	--	--	--	--
E6013	19.7	0.004	< 0.001	0.945	0.002
E7018	18.4	0.006	< 0.001	1.03	0.002
E7024	9.2	0.001	--	0.629	--
E7028	18.0	0.013	--	0.846	--
E8018	17.1	0.017	--	0.03	0.051
E9015	17.0	--	--	--	--
E9018	16.9	0.212	--	0.783	0.013
ECoCr	27.9	--	--	--	--
ENi-Cl	18.2	--	--	0.039	0.890
ENiCrMo	11.7	0.420	--	0.043	0.247
ENi-Cu	10.1	--	--	0.212	0.423
E308L	5.4	0.524	< 0.001	0.346	0.184
E70S	5.2	0.001	< 0.001	0.318	0.001
ER1260	20.5	0.004	--	--	--
ER5154	24.1	0.010	--	0.034	--
ER316	3.2	0.528	--	0.245	0.226
ERNiCrMo	3.9	0.353	--	0.070	1.25
ERNiCu	2.0	< 0.001	--	0.022	0.451
E110	20.8	0.002	--	2.02	0.112
E11018	57.0	0.969	--	0.704	0.102
E308LT	9.1	--	--	--	--
E316LT	8.5	0.970	--	0.590	0.093
E70T	15.1	0.004	--	0.891	0.005
E71T	12.2	0.002	< 0.001	0.662	0.004
EM12K	0.05	--	--	--	--

A sample of emission factors is listed above.

The facility uses a variety of rod types from year to year. Emission factors and emissions vary based on the type of rod used. The Small Quantity Emission Rate (SQER) and Acceptable Source Impact Level (ASIL) are thresholds established in WAC 173-460 (effective 2/14/94). The following emission throughputs were established for Columbia Machine before WAC 173-460 became effective. Based on usage established in SWCAA 95-1760, rod type, and a potential maximum rod usage of 116,550 lbs/year, emissions were as follows:

Pollutant	ASIL ($\mu g/m^3$)	SQER (lb/yr)	lb/yr	TPY
PM	--	--	1,512	0.76
Chromium(III)	1.7	175	5.65	0.0028
Cobalt	0.17	175	0.42	0.0002
Manganese	3.3	175	870.2	0.44
Nickel	0.0021	0.5	3.4	0.0017

The manganese limit established in SWCAA 95-1760 was determined using T-SCREEN modeling. The ASIL for manganese of 3.3 $\mu g/m^3$, identified in WAC 173-460-160, will not be exceeded if the facility does not exceed 660 lbs/year of manganese emissions. Nickel emissions were not limited above the SQER.

6.d. The Bystronic Baghouse. Emissions from operation of the Bystronic Torit baghouse are calculated based on a maximum emission concentration of 0.005 gr/dscf, a rated airflow of 3,000 acfm, and 8,760 hrs/yr of potential operation. All emitted PM is assumed to be PM_{10} and $PM_{2.5}$.

Bystronic Baghouse				
Rated Airflow =	3,000 scfm			
Grain Loading =	0.005 gr/dscf			
Hours of Operation =	8,760 hours per year			
Pollutant	Emission Factor lb/hr	lb/yr	tpy	Emission Factor Source
Total $PM/PM_{10}/PM_{2.5}$	0.13	1,126	0.56	Engineering estimate

6.e. The K5000 Plasma Cutter Mist Collector and Filters. Emissions from operation of the K5000 Plasma Cutter Donaldson Torit filters are calculated based on a maximum emission concentration of 0.005 gr/dscf, a rated airflow of 4,000 acfm, and 8,760 hrs/yr of potential operation. All emitted PM is assumed to be PM_{10} and $PM_{2.5}$.

K5000 Filter				
Rated Airflow =	4,000	scfm		
Grain Loading =	0.005	gr/dscf		
Hours of Operation =	8,760	hours per year		
Pollutant	Emission Factor lb/hr	lb/yr	tpy	Emission Factor Source
Total $PM/PM_{10}/PM_{2.5}$	0.17	1,502	0.75	Engineering estimate

6.f. The K3000 Plasma Cutter Mist Collector and Filters (*new*). Emissions from operation of the K3000 Plasma Cutter filters are calculated based on a maximum emission concentration of 0.005 gr/dscf, a rated airflow of 4,000 acfm, and 8,760 hrs/yr of potential operation. All emitted PM is assumed to be PM_{10} and $PM_{2.5}$.

K3000 Baghouse				
Rated Airflow =	4,000	scfm		
Grain Loading =	0.005	gr/dscf		
Hours of Operation =	8,760	hours per year		
Pollutant	Emission Factor lb/hr	lb/yr	tpy	Emission Factor Source
Total $PM/PM_{10}/PM_{2.5}$	0.17	1,502	0.75	Engineering estimate

6.g. The Sandblasting Baghouse. Emissions from operation of the Sandblasting Wheelabrator baghouse are calculated based on a maximum emission concentration of 0.005 gr/dscf, a rated airflow of 11,200 acfm, and 8,760 hrs/yr of potential operation. All emitted PM is assumed to be PM_{10} and $PM_{2.5}$.

Sandblasting Baghouse				
Rated Airflow =	11,200	scfm		
Grain Loading =	0.005	gr/dscf		
Hours of Operation =	8,760	hours per year		
Pollutant	Emission Factor lb/hr	lb/yr	tpy	Emission Factor Source
Total $PM/PM_{10}/PM_{2.5}$	0.48	4,205	2.10	Engineering estimate

6.h. Emergency Generator - Engine. Emissions of criteria air pollutants from the combustion of road-grade #2 diesel (0.0015% or less sulfur by weight) in the emergency generator engine were estimated assuming that the generator is operated 200 hours per year at full load.

Emergency Generator Engine

Hours of Operation =	200	hours
Power Output =	114	horsepower
Diesel Density =	7.206	pounds per gallon
Fuel Sulfur Content =	0.0015	% by weight
Fuel Consumption Rate =	5.76	gallons per hour (estimate)
Fuel Heat Content =	0.138	MMBtu/gal (for use with GHG factors from 40 CFR 98)
Annual Fuel Consumption =	1,152	gallons

Pollutant	Emission Factor lb/hp-hr	Emission Factor lb/hr	Emissions tpy	Emission Factor Source
NO_X	0.0150	1.71	0.17	John Deere
CO	0.0187	2.14	0.21	John Deere
VOC	0.00220	0.25	0.025	John Deere
SO_X as SO_2	0.000011	0.0012	0.00012	Mass Balance
PM	0.00090	0.10	0.010	John Deere
PM_{10}	0.00090	0.10	0.010	John Deere
$PM_{2.5}$	0.00090	0.10	0.010	John Deere

Greenhouse Gases	kg/MMBtu	GWP	CO_2e lb/MMBtu	CO_2e lb/gallon	tpy, CO_2e	Emission Factor Source
CO_2	73.96	1	163.054	22.501	12.961	40 CFR 98
CH_4	0.003	25	0.165	0.023	0.013	40 CFR 98
N_2O	0.0006	298	0.394	0.054	0.031	40 CFR 98
Total GHG - CO_2e	73.9636		163.613	22.579	13.005	

In the future, emissions must be calculated using the emission factors identified above unless new emission factors are provided by the manufacturer or developed through source testing.

6.i. Emissions Summary

Air Pollutant	Potential to Emit (tpy)	Project Impact (tpy)
NO_x	8.32	
CO	7.52	
VOC	26.50	

SO_2	0.05	
PM	5.58	0.75
PM_{10}	5.58	0.75
$PM_{2.5}$	5.55	0.75
TAPs	14.34	
HAPs	8.19	

7. REGULATIONS AND EMISSION STANDARDS

Regulations have been established for the control of emissions of air pollutants to the ambient air. Regulations applicable to the proposed facility that have been used to evaluate the acceptability of the proposed facility and establish emission limits and control requirements include, but are not limited to, the following regulations, codes, or requirements. These items establish maximum emissions limits that could be allowed and are not to be exceeded for new or existing facilities. More stringent limits are established in this ADP consistent with implementation of Best Available Control Technology (BACT):

7.a. Title 40 Code of Federal Regulations (40 CFR) 60 Subpart IIII [§60.4200 *et seq.*] "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines" applies to each compression ignition (CI) internal combustion engine (ICE) that commences construction after July 11, 2005, and is manufactured after April 1, 2006, or that is modified or reconstructed after July 11, 2005. This subpart does not apply to the emergency generator engine because the engine was manufactured prior to the applicability date.

7.b. 40 CFR 63 Subpart ZZZZ [§63.6580 *et seq.*] "National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines" establishes national emission limitations and operating limitations for HAP emitted from stationary reciprocating internal combustion engines located at major and area sources of HAP emissions. The existing emergency generator engine is located at an area source of HAP and used in emergency situations; therefore, this regulation applies to the existing engine.

SWCAA has not yet taken delegation of this regulation; therefore, at this time, EPA is the Administrator of this regulation, and the facility must communicate directly with EPA regarding compliance demonstrations and/or reporting required by this rule.

For purposes of this Subpart, "diesel fuel" also includes any non-distillate fuel with comparable physical and chemical properties (e.g., biodiesel) that is suitable for use in compression ignition engines per §63.6675.

7.c. 40 CFR 63 Subpart HHHHHH [63.11169 *et seq.*] "National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources" establishes standards and work practices for all area sources engaged in paint stripping operations using methylene chloride, autobody refinishing operations, or

spray coating of metal or plastic parts with coatings that contain chromium, lead, manganese, nickel, or cadmium (target HAPs). This facility does not spray coat the target HAPs, so this regulation is not applicable. SWCAA has only taken delegation of this regulation for Title V facilities.

7.d. 40 CFR 63 Subpart JJJJJJ [§63.11193 *et seq.*] "National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources" establishes national emission limitations and operating limitations for HAP emitted from boilers fired on specific fuels at area sources. The facility is an area source of HAP, but the boiler is classified as a gas boiler. Gas-fired boilers, which burn gaseous fuel and only burn liquid fuel during periods of gas curtailment, gas supply interruption, and periodic testing up to 48 hr/yr, are not covered under the regulation; therefore, this regulation does not apply to the boilers. SWCAA currently has delegation for this regulation for major sources only and has chosen not to independently implement the associated requirements. This facility is not a major source.

For purposes of this Subpart, "distillate oil" includes "biodiesel as defined by the American Society of Testing and Materials in ASTM D6751-11b" per §63.11237. Also, "liquid fuels" includes "distillate oil, residual oil, any form of liquid fuel derived from petroleum, used oil meeting the specification in 40 CFR 279.11, liquid biofuels, biodiesel, and vegetable oil, and comparable fuels as defined under 40 CFR 261.38."

7.e. 40 CFR 63 Subpart XXXXXX [63.11514 *et seq.*] "National Emissions Standards for Hazardous Air Pollutants Area Source Standards for Nine Metal Fabrication and Finishing Source Categories" establishes standards and work practices for dry abrasive blasting, machining, dry grinding and polishing, spray painting, and welding operations at area sources primarily engaged in one of nine selected metal fabrication and finishing source categories. This regulation is applicable to the facility. SWCAA has only taken delegation of this regulation for Title V facilities; therefore, requirements from this regulation have not been included in the ADP.

7.f. Revised Code of Washington (RCW) 70A.15.2040 empowers any activated air pollution control authority to prepare and develop a comprehensive plan or plans for the prevention, abatement and control of air pollution within its jurisdiction. An air pollution control authority may issue such orders as may be necessary to effectuate the purposes of the Washington Clean Air Act (RCW 70A.15) and enforce the same by all appropriate administrative and judicial proceedings subject to the rights of appeal as provided in Chapter 62, Laws of 1970 ex. sess.

7.g. RCW 70A.15.2210 provides for the inclusion of conditions of operation as are reasonably necessary to assure the maintenance of compliance with the applicable ordinances, resolutions, rules and regulations when issuing an ADP for installation and establishment of an air contaminant source.

7.h. WAC 173-460 "Controls for New Sources of Toxic Air Pollutants" (effective 8/21/1998) requires BACT for toxic air pollutants (T-BACT), identification and quantification of

emissions of toxic air pollutants and demonstration of protection of human health and safety.

7.i. WAC 173-476 "Ambient Air Quality Standards" establishes ambient air quality standards for PM_{10}, $PM_{2.5}$, lead, SO_2, NO_x, ozone, and CO in the ambient air, which must not be exceeded. The facility emits PM_{10}, $PM_{2.5}$, SO_x, NO_x, and CO; therefore, certain sections of this regulation apply.

7.j. SWCAA 400-040 "General Standards for Maximum Emissions" requires all new and existing sources and emission units to meet certain performance standards with respect to Reasonably Available Control Technology (RACT), visible emissions, fallout, fugitive emissions, odors, emissions detrimental to persons or property, SO_2, concealment and masking, and fugitive dust.

7.k. SWCAA 400-040(1) "Visible Emissions" requires that emissions of an air contaminant from any emissions unit must not exceed twenty percent opacity for more than three minutes in any one hour at the emission point, or within a reasonable distance of the emission point.

7.l. SWCAA 400-040(2) "Fallout" requires that emissions of PM from any source must not be deposited beyond the property under direct control of the owner(s) or operator(s) of the source in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material is deposited.

7.m. SWCAA 400-040(3) "Fugitive Emissions" requires that reasonable precautions be taken to prevent the fugitive release of air contaminants to the atmosphere.

7.n. SWCAA 400-040(4) "Odors" requires any source which generates odors that may unreasonably interfere with any other property owner's use and enjoyment of their property to use recognized good practice and procedures to reduce these odors to a reasonable minimum. This source must be managed properly to maintain compliance with this regulation.

7.o. SWCAA 400-040(6) "Sulfur Dioxide" requires that no person is allowed to emit a gas containing in excess of 1,000 ppmd of SO_2, corrected to 7% O_2 or 12% CO_2 as required by the applicable emission standard for combustion sources.

7.p. SWCAA 400-040(8) "Fugitive Dust Sources" requires that reasonable precautions be taken to prevent fugitive dust from becoming airborne, and minimize emissions.

7.q. SWCAA 400-050 "Emission Standards for Combustion and Incineration Units" requires that all provisions of SWCAA 400-040 be met and that no person is allowed to cause or permit the emission of PM from any combustion or incineration unit in excess of 0.23 g/Nm^3_{dry} (0.1 gr/dscf) of exhaust gas at standard conditions.

7.r. SWCAA 400-060 "Emission Standards for General Process Units" requires that all new and existing general process units do not emit PM in excess of 0.23 g/Nm^3_{dry} (0.1 gr/dscf) of exhaust gas.

7.s. SWCAA 400-109 "Air Discharge Permit Applications" requires that an ADP application be submitted for all new installations, modifications, changes, or alterations to process and emission control equipment consistent with the definition of "new source". Sources wishing to modify existing permit terms may submit an ADP application to request such changes. An ADP must be issued, or written confirmation of exempt status must be received, before beginning any actual construction, or implementing any other modification, change, or alteration of existing equipment, processes, or permits.

7.t. SWCAA 400-110 "New Source Review" requires that SWCAA issue an ADP in response to an ADP application prior to establishment of the new source, emission unit, or modification.

7.u. SWCAA 400-111 "Requirements for Sources in a Maintenance Plan Area" requires that no approval to construct or alter an air contaminant source will be granted unless it is evidenced that:

(1) The equipment or technology is designed and will be installed to operate without causing a violation of the applicable emission standards;
(2) Emissions will be minimized to the extent that the new source will not exceed emission levels or other requirements provided in the maintenance plan;
(3) BACT will be employed for all air contaminants to be emitted by the proposed equipment;
(4) The proposed equipment will not cause any ambient air quality standard to be exceeded; and
(5) If the proposed equipment or facility will emit any toxic air pollutant regulated under WAC 173-460, the proposed equipment and control measures will meet all the requirements of that Chapter.

The facility is located in a maintenance plan area; therefore, this regulation applies to the facility.

8. RACT/BACT/BART/LAER/PSD/CAM DETERMINATIONS

The proposed equipment and control systems incorporate BACT for the types and amounts of air contaminants emitted by the processes as described below:

New BACT Determination(s)

8.a. BACT Determination – K3000. The proposed use of cartridge-style filters would be the top choice in a "top-down" BACT analysis. The amount of underwater cutting and filtration proposed meets the requirements of BACT for the size and type of particulate matter generated from the plasma cutting activities.

"Secondary Emissions From Underwater Plasma-arc Cutting of Stainless Steel for Nuclear Decommissioning" by B. Waldie, G. Pilot, W. Harris, H. Loyer (1990) stated that the gaseous emissions would acidify the water, thereby dissolving the fine particles. "Plasma Cutting in Atmosphere and Under Water" by W. Bach and A. Gruchow (1992) stated that "… cutting under water reduces [aerosol emissions] to between 1/50 and 1/1000 compared with cutting in atmosphere." No emission factors on the system were found; however, SWCAA believes assuming a 0.005 gr/dscf of PM discharge is a conservative estimate.

Previous BACT Determination(s)

8.b. BACT Determination – Spray Coating. The use of complete enclosure (spray booths), high efficiency particulate filtration (capture efficiency > 95% by wt), high transfer efficiency spray coating equipment, and vertical atmospheric dispersion of exhaust streams has been determined to meet the requirements of BACT and T-BACT for the spray coating at this facility.

8.c. BACT Determination – Dust Collection System. The use of process enclosure (process building) and high efficiency particulate filtration (baghouse) has been determined to meet the requirements of BACT for the laser cutting equipment at this facility.

8.d. BACT Determination – Emergency Generator. The use of a modern diesel engine design, limited hours of operation (testing, maintenance, and emergency use only), and ultra-low sulfur distillate fuel (less than 0.0015% sulfur by weight) has been determined to meet the requirements of BACT for the emergency generator at this facility.

8.e. BACT Determination - Previously Installed Equipment. The following equipment has already been through New Source Review and determined to meet the requirements of BACT at the time of installation, or were installed prior to the establishment of BACT requirements:

1. Global Finishing Solutions paint booth, model SDG-1818-PDT-36 (Primer Booth)
2. Bleeker Brothers paint booth, model number SPF 121012 (New/Mold Booth)
3. Bleeker Brothers paint booth, standard drive-thru paint booth, model #T-DT-64 (Main Booth)
4. Spray Systems, Inc. paint booth, model I12127 (Warehouse Booth)
5. Sandblasting with Wheelabrator baghouse
6. Welding
7. Combustion sources: boiler, furnace, generator

8.f. Prevention of Significant Deterioration (PSD) Applicability Determination. This permitting action will not result in a potential increase in emissions equal to or greater than the PSD thresholds. Therefore, PSD review is not applicable to this action.

8.g. Compliance Assurance Monitoring (CAM) Applicability Determination. CAM is not applicable to any emission unit at this facility because it is not a major source and is not required to obtain a Part 70 (Title V) permit.

9. AMBIENT IMPACT ANALYSIS

9.a. Criteria Air Pollutant Review. Emissions of NO_x, CO, PM, VOC (as a precursor to O_3), and SO_2 are emitted at levels where no adverse ambient air quality impact is anticipated.

9.b. Toxic Air Pollutant Review. The calculated emissions for all toxic air pollutants were compared with the Small Quantity Emission Rates (SQER) and acceptable source impact level (ASIL) from WAC 173-460. With the exception of manganese, emissions of all TAPs are limited to at or below the small quantity emission rate (SQER) defined in WAC 173-460. The manganese limit established in SWCAA 95-1760 was determined using T-SCREEN modeling. The acceptable source impact level (ASIL) for manganese of 3.3 $\mu g/m^3$, identified in WAC 173-460-160, will not be exceeded if the facility does not exceed 660 lbs/year of manganese emissions.

Conclusions

9.c. Installation and operation of the new plasma cutter, as proposed in ADP application CL-3186, will not cause the ambient air quality requirements of 40 CFR 50 "National Primary and Secondary Ambient Air Quality Standards" to be violated.

9.d. Installation and operation of the new plasma cutter, as proposed in ADP application CL-3186, will not cause the requirements of WAC 173-460 "Controls for New Sources of Toxic Air Pollutants" or WAC 173-476 "Ambient Air Quality Standards" to be violated.

9.e. The new plasma cutter, as proposed in ADP application CL-3186, will not violate emission standards for sources as established under SWCAA General Regulations Sections 400-040 "General Standards for Maximum Emissions," 400-050 "Emission Standards for Combustion and Incineration Units," and 400-060 "Emission Standards for General Process Units."

10. DISCUSSION OF APPROVAL CONDITIONS

SWCAA has made a determination to issue ADP 22-3510 in response to ADP application CL-3186. ADP 22-3510 contains approval requirements deemed necessary to assure compliance with applicable regulations and emission standards as discussed below.

10.a. Supersession of Previous Permits. ADP 22-3510 will not supersede any ADP.

10.b. Emission Limits. Facility-wide emission limits are based on the sum of the emission limits for approved equipment calculated in Section 6 of this TSD.

Visible emissions from all operations except the diesel engine are limited to 0% opacity consistent with best work practices and proper equipment operation.

10.c. Operating Limits and Requirements. Only ultra-low sulfur (15 ppm or less) fuel may be used for the emergency generator engines. This is consistent with BACT and the requirements of 40 CFR 60 Subpart IIII.

Except for emergency operation, the emergency generator engines may only operate 100 hours or fewer per year for maintenance and readiness testing. This limitation also assures that emissions from the engine will be below a threshold where additional control equipment would be necessary to meet the requirements of BACT.

10.d. Monitoring, Recordkeeping, and Reporting Requirements. Sufficient reporting and recordkeeping was established to document compliance with the established emission limits, provide for general requirements (upset reporting, annual emission inventory submission), and assist in the compliance assessment during on-site inspections. Records of maintenance activities and the results of periodic inspections conducted by facility personnel are required because they are valuable tools for regulatory inspectors and plant personnel. In addition, these records can be used to determine appropriate operating and maintenance requirements in a future permitting action.

10.e. Reporting Requirements. ADP 22-3510 establishes general reporting requirements for annual air emissions, upset conditions and excess emissions. Specific reporting requirements are established for coating consumption, fuel consumption, and material throughput. Reports are to be submitted on a semi-annual basis.

11. START-UP AND SHUTDOWN/ALTERNATIVE OPERATING SCENARIOS/POLLUTION PREVENTION

11.a. Start-up and Shutdown Provisions. Pursuant to SWCAA 400-081 "Start-up and Shutdown", technology-based emission standards and control technology determinations must take into consideration the physical and operational ability of a source to comply with the applicable standards during start-up or shutdown. Where it is determined that a source is not capable of achieving continuous compliance with an emission standard during start-up or shutdown, SWCAA will include appropriate emission limitations, operating parameters, or other criteria to regulate performance of the source during start-up or shutdown.

To SWCAA's knowledge, this facility can comply with all applicable standards during startup and shutdown.

Emergency Generator – Engine. Visible emissions from the emergency generator's diesel engine are limited to 5% opacity or less during normal operation. However, the engine is not capable of reliably limiting visible emissions to less than 5% opacity until the engine achieves normal operating temperature. Therefore, the 5% opacity limit shall not apply to the generator exhaust during start-up periods.

11.b. Alternate Operating Scenarios. SWCAA conducted a review of alternate operating scenarios applicable to equipment affected by this permitting action. The permittee did not propose or identify any applicable alternate operating scenarios. Therefore, none were included in the approval conditions.

11.c. Pollution Prevention Measures. SWCAA conducted a review of possible pollution prevention measures for the facility. No pollution prevention measures were identified by either the permittee or SWCAA separate or in addition to those measures required under BACT considerations. Therefore, none were included in the approval conditions.

12. EMISSION MONITORING AND TESTING

12.a Emission Monitoring – Boiler. Permit requirements for the natural gas-fired boiler require annual emission monitoring for the purpose of tracking future performance and assuring compliance with facility-wide emission limits. All emission monitoring shall be conducted in accordance with the provisions of ADP 19-3339, Appendix A.

13. FACILITY HISTORY

13.a Previous Permit Applications. SWCAA has previously received the following permit applications from Columbia Machine:

Permit Number	Permit Application #	Date Issued	**Description**
19-3339	CL-3075	9-May-2019	Installation of two new spray booths and a paint mixing room. Also, the K5000 plasma cutter would be exhausted externally. Superseded ADP 16-3180.
16-3180	CL-2069	17-May-2016	Installation of a laser cutter with baghouse control. Superseded ADP 07-2754.
07-2754	CL-1805	1-Nov-2007	Installation of a natural gas-fired wastewater evaporator. Superseded ADP 07-2711.
07-2711	CL-1756	23-Jan-2007	Replacement of the Primer booth with a Global Finishing Solutions paint booth and replacement of the existing sandblasting equipment, including the installation of a Wheelabrator baghouse. Superseded by 07-2754.
95-1760R1	CL-1588	15-April-2003	Installation of a replacement Warehouse Spray Systems, Inc. model I12127 paint booth and consolidation of all existing permits. This permit superseded all other existing permits.

99-2246	CL-1443	16-Nov-1999	Installation of a Bleeker Brothers model SPF 121012 spray booth with an airflow of 18,135 acfm. This Permit was superseded entirely by SWCAA 95-1760R1.
95-1760	CL-1106	9-Jun-1995	Voluntarily limit on plant site potential emissions to ensure that federally enforceable plant site emission limits are less than the thresholds for the 1990 Clean Air Act Title V Air Operating Permit Program. Emission limits in SWCAA 83-705, 88-1012, 90-1188, 90-1216, and 90-1217 were amended, but the remaining requirements in the permits were not superseded.
91-1386	N/A	31-Oct-1991	Order Of Violation. Failure to limit excessive fugitive emissions, failure to utilize all control equipment, usage of coatings with VOC contents in excess of specified levels, and insufficient record-keeping procedures to demonstrate compliance with emissions limits.
90-1217	35-CL	21-May-1990	Respondent made Application for assignment of publicly held Emission Reduction Credits (ERCs) for emissions associated with operation of new spray painting facilities within the Ozone Nonattainment Area of Portland-Vancouver.
90-1216	CL-790	21-May-1990	Construction of a new "Bleeker Bros." standard drive through paint booth (Main Booth) model T-DT-64 measuring approximately 63 feet long by 16 feet wide by 16 feet high will be installed to exhaust through a filter bank of 117 square feet and 42", 10 hp fan.
90-1188	CL-789	22-Mar-1990	Installation of a single 1,100-gallon replacement gasoline storage tank. Installing a submerged fill line and two-point vapor return fitting on the tank provided vapor control.

88-1012	CL-697	6-Oct-1988	Modification of recently installed spray paint booth (Warehouse Booth to be replaced) adjacent to existing operations. A booth measuring approximately 6½ feet high by 8 feet wide by 5 feet deep will be exhausted through a filter bank of approximately 32 square feet by a six blade, 22" diameter fan and 1½ horsepower drive.
83-705	CL-508	30-Sep-1983	Installation of one 1,000-gallon capacity methanol storage tank with a submerged vertical fill line.

14. PUBLIC INVOLVEMENT OPPORTUNITY

14.a. Public Notice for ADP Application CL-3186. Public notice for ADP application CL-3186 was published on the SWCAA website for a minimum of fifteen (15) days beginning on March 23, 2022.

14.b. Public/Applicant Comment for ADP Application CL-3186. SWCAA did not receive specific comments, a comment period request, or any other inquiry from the public or the applicant regarding ADP application CL-3186. Therefore, no public comment period was provided for this permitting action.

14.c. State Environmental Policy Act. After review of the SEPA Checklist for this project, SWCAA has determined that the project does not have a probable significant impact on the environment and has issued Determination of Non-Significance 22-006. An Environmental Impact Statement is not required under RCW 43.21C.030(2)(c).