FACT SHEET FOR: OP26R1-018 **DATE: DRAFT**

DWEE ID: 35548

Name of Source: Nucor Corporation

Source Classification: Class I at time of issuance
Area Source of Hazardous Air Pollutants (HAPs)

Regulatory changes may supersede information in this document. If the source should add or change equipment or change processes such that a NESHAP or NSPS subpart becomes an applicable requirement, it is the source's obligation to comply with that subpart and applicable requirements whether or not they are identified in the associated permitting action or Title 129. Also note that the NESHAP and NSPS subparts are subject to change. Detailed information related to NESHAP and NSPS subparts can be found on the DWEE Air Toxics Notebook and DWEE NSPS Notebook located on the DWEE website (https://dwee.nebraska.gov/). The DWEE website can also be used to find other permit related and facility specific information that is not identified in this fact sheet.

The source is subject to and will comply with all applicable requirements found in Title 40 Protection of Environment, Code of Federal Regulations that apply to the source including those found at 40 CFR Part 52, Subpart CC or 40 CFR Part 70, Appendix A (federally enforceable requirements); the State Implementation Plan (SIP) approved Title 129 as amended September 28, 2022 cited in this permit and denoted by an asterisk (*) are federally enforceable; and the Environmental Protection Act, Neb. Rev. Stat. §§ 81-1501 to 81-1532, and Nebraska Administrative Code Title 129 as amended June 28, 2026. When Title 129 as amended June 28, 2026, cited in this permit becomes SIP approved and federally enforceable it will supersede Title 129 as amended September 28, 2022.

DESCRIPTION OF THE SOURCE OR ACTIVITY:

This operating permit OP26R1-018 approves the operation of a source that manufactures steel joists, bridging, decking and miscellaneous metal products. Nucor Corporation, by and through its Vulcraft Nebraska Division (hereafter Vulcraft) operates under the primary standard industrial classification (SIC) code 3441, Fabricated Structural Metal. The secondary SIC code is 3444, Sheet Metal Work.

Nucor Corporation, by and through its Vulcraft Nebraska Division, operates two adjacent manufacturing facilities in Norfolk, Nebraska: Vulcraft and Nucor Cold Finish. In a letter dated January 22, 2004, the DWEE made a determination that Vulcraft and Nucor Cold Finish were separate sources for purposes of determining the applicability of Prevention of Significant Determination (PSD) requirements in Title 129, Chapter 4*; Title 129, Chapter 4, and the Class I operating permit requirements in Title 129, Chapter 6*; Title 129, Chapter 6. While the two sources are contiguous and have the same owner/operator, the sources operate independently and under different SIC codes.

Emissions from hazardous air pollutants (HAP) from Vulcraft and Cold Finish must still be combined for the purpose of determining the applicability requirements in Title 129, Chapter 13, Sections 002*, 003*, and 004*; Title 129, Chapter 13, Sections 002, 003, and 004, and Title III of the 1990 Clean Air Act Amendment. In other words, Vulcraft and Cold Finish are considered a single source that is under common control, based on 40 CFR §63.2, because 40 CFR §63.2 does not have a provision for separating facilities that are under common control but have different SIC codes.

PERMIT HISTORY

Date Issued	Number	Status
3/15/1999	NPR (98-0083)	Not active; superseded by CP03-0024
2/28/2001	NPR (01-0009)	Active
3/9/2001	NPR (00-0033)	Not active
11/27/2002	NPR (02-0056)	Active

8/22/2003	NPR (02-0067)	Active
8/23/2004	N/A	Not active; superseded by OSPMOD-0021
5/16/2005[2]	NPR[1]	Active
6/29/2005[2]	NPR[1]	Active
9/14/2005	CP03-0024	Not active; Conditions XIII.(A)(4) and XIII.(I) superseded by CP08-004
11/3/2006	OPSPMOD-0021	Not active; superseded by OP09M1-011
6/20/2008	CP08-004	Not active; superseded by CP09-014
7/15/2009	OP09M1-011	Not active; superseded by OP09R1-005
7/15/2009	CP09-014	Not active; superseded by CP22-044
11/3/2009	CP09-008	Not active; superseded by CP22-044
1/8/2014	NPR[1]	Active
1/3/2017	OP9R1-005	Not active; superseded by OP21R1-026
1/26/2022	OP21R1-026	Not active; superseded by OP26R1-018
2/13/2023	CP22-044	Active
4/30/2024	OP24M1-015	Not active; superseded by OP26R1-018
TBD	OP26R1-018	Active

[1] Tracking number was not assigned.
[2] Date notification was received by the DWEE

PERMIT ACTION:

Permitted Emission Points are detailed in the table below:

Emission Point ID#	Control Equipment ID# and Description	Emission Unit Description	Relevant Standards
EP-1	None	Joist and miscellaneous metal product production – EU-1A, Thermal cutting, plasma and oxymethane torches, maximum capacity of 1.66 million feet (MMft) of 1" equivalent plate cut, process began 1964	None
		Joist and miscellaneous metal product production – EU-1B, Thermal cutting, plasma table, maximum capacity of 5.037 MMft of 3/4" equivalent plate cut, installed 2012	
		Joist and miscellaneous metal product production – EU-1C, Thermal cutting, beam coper, maximum capacity of 1.314 MMft of ¼" of equivalent plate cut, installed 2015	
EP-2	None	Joist and miscellaneous metal product production – EU-2, Gas metal arc welding (GMAW), maximum capacity of 16 lb. welding wire per ton of joist, process began 1964	40 CFR 63 Subpart A; Title 129, Chapter 13, Subpart 002.01*; Title 129, Chapter 13, Section 002.01
			40 CFR 63 Subpart XXXXXX; Title 129, Chapter 13, Section 002.113*; Title 129, Chapter 13, Section 002.115

Emission Point ID#	Control Equipment ID# and Description	Emission Unit Description	Relevant Standards
EP-3	None	Joist and miscellaneous metal product production – EU-3, Painting with hybrid water-based paint in dip tanks, maximum capacity of 359,160 tons joist painted per year, 2.2 gallons paint per ton of joist, process began in 1964, modified in October 2025	None
EP-20	None	Joist and miscellaneous metal product production – EU-20, Painting with solvent-based paint in hand-held aerosol cans, maximum capacity of 359,160 tons joist painted per year, 0.005 gallons paint per ton of joist, process began 1964	None
EP-25	None	Joist and miscellaneous metal product production – EU-25, Painting with hybrid water-based paint in a portable hand-held sprayer, maximum capacity of 1,095 tons joist painted per year, 0.4 gallons paint per ton of joist, process began 1964	None
EP-4	None	Bridging – EU-4, Painting with hybrid water-based paint in a dip tank, maximum capacity of 1,796 tons bridging painted per year, 2.2 gallons paint per ton of bridging, process began 1973	None
EP-5	CE-5, Airless Spray Box, 92% efficiency, installed January 2024	Bridging – EU-5, Painting with water-based paint in an airless spray box, maximum capacity of 12,130.75 tons bridging painted per year, 1.05 gallons paint per ton of bridging, process began January 2024	None
EP-21	None	Bridging – EU-21, Painting with solvent-based paint in hand-held aerosol cans, maximum capacity of 35,916 tons bridging painted per year, 0.005 gallons paint per ton of bridging, process began 1973	None
EP-7A	None	Deck – EU-7A, Alkaline cleaning tank heater, 8.0 MMBtu/hr. maximum heat input capacity, natural gas fired, installed December 2003	None
EP-7C	None	Deck – EU-7C, Phosphating tank heater, 3.6 MMBtu/hr. maximum heat input capacity, natural gas fired, installed 2000	None
EP-7D	None	Deck – EU-7D, Hot rinse tank heater, 3.6 MMBtu/hr. maximum heat input capacity, natural gas fired, installed January 1999	None

Emission Point ID#	Control Equipment ID# and Description	Emission Unit Description	Relevant Standards
EP-8	None	Deck – EU-8, Painting with water-based paint in an automatic reverse roller, maximum capacity of 289,080 tons deck painted per year, 1.65 gallons paint per ton of deck, process began 1977	40 CFR 60 Subparts A; Title 129, Chapter 12, Section 001.01*; Title 129, Chapter 12, Section 001.01 40 CFR 60 Subpart TT; Title 129, Chapter 12, Section 001.48*; Title 129, Chapter 12, Section 001.49
EP-22	None	Deck – EU-22, Painting with solvent-based paint in hand-held aerosol cans, maximum capacity of 399,982 tons deck painted per year, 0.0005 gallons paint per ton of deck, process began 1977	None
EP-24	None	Deck – EU-24, Painting with water-based paint in a portable hand-held sprayer, capacity of 24,640 gallons, process began 1977	None
EP-T9	None	Deck – EU-T9, Water-based paint storage tank, maximum capacity 5,000 gallons, fixed roof, installed September 2000	None
EP-T10	None	Deck – EU-T10, Water-based paint storage tank, maximum capacity 5,000-gallon, fixed roof, September 2000	None
EP-T35	None	Deck – EU-T35, Water-based paint storage tank, maximum capacity 1,050 gallons, fixed roof, installed September 2002	None
EP-40	None	RICE – EU-40, emergency lighting generator reciprocating internal combustion engine (RICE), 87 horsepower (hp), spark ignition, 4 cycle lean burn, 0.82 liters/cylinder, natural gas fired; installed 1972	40 CFR 63 Subparts A; Title 129, Chapter 13, Section 002.01*; Title 129, Chapter 13, Section 002.01 40 CFR 63 Subparts ZZZZ; Title 129, Chapter 13, Section 002.78*; Title 129, Chapter 13, Section 002.79

Emission Point ID#	Control Equipment ID# and Description	Emission Unit Description	Relevant Standards
EP-41	None	RICE – EU-41, emergency generator RICE, 114 hp, spark ignition, 4 cycle rich burn, 0.68 liters/cylinder, natural gas fired, model year 2006, installed July 2007	40 CFR 63 Subparts A; Title 129, Chapter 13, Section 002.01*; Title 129, Chapter 13, Section 002.01
			40 CFR 63 Subparts ZZZZ; Title 129, Chapter 13, Section 002.78*; Title 129, Chapter 13, Section 002.79
EP-T13	None	Tank #13; gasoline storage tank, 550-gallon maximum capacity	40 CFR 63 Subparts A; Title 129, Chapter 13, Section 002.01*; Title 129, Chapter 13, Section 002.01
			40 CFR 63 Subparts CCCCCC; Title 129, Chapter 13, Section 002.95*; Title 129, Chapter 13, Section 002.97
EP-T15	None	Tank #15; gasoline storage tank, 300-gallon maximum capacity	40 CFR 63 Subparts A; Title 129, Chapter 13, Section 002.01*; Title 129, Chapter 13, Section 002.01
			40 CFR 63 Subparts CCCCCC; Title 129, Chapter 13, Section 002.95*; Title 129, Chapter 13, Section 002.97
EP-15	None	EU-15-1, Haul roads, paved, joist and bridging storage and joist, bridging, and deck shipment, total length of 2.2 miles	None
		EU-15-2, Haul roads, unpaved, joist storage, length of 0.1 miles	

TYPE AND QUANTITY OF AIR CONTAMINANT EMISSIONS ANTICIPATED:

The following table summarizes the potential and actual emissions:

Regulated Pollutant	Potential Emissions as limited by permit (tons/year)	Actual Emissions[2] (tons/year)
Particulate Matter (PM)	168.50	--[3]
Particulate Matter less than or equal to 10 microns (PM_{10})	114.53	13.03
Particulate Matter less than or equal to 2.5 microns ($PM_{2.5}$)	99.58	10.72
Sulfur Dioxide (SO_2)	0.04	0.01
Oxides of Nitrogen (NO_x)	12.53	1.30
Carbon Monoxide (CO)	5.58	1.09
Volatile Organic Compounds (VOCs)	240.00	37.42
Greenhouse Gases (GHGs)[1]	7,967.78	1,559.62
Carbon Dioxide Equivalents (CO_2e)[1]	8,010.48[4]	1,567.36[4]
Hazardous Air Pollutants (HAPs)		
Greatest Individual HAP(s) Xylene	3.00	0.003
All Other HAPs	0.902	0.026
Total HAPs	5.01	0.18

[1] The U.S. Supreme Court ruled in 2014 that greenhouse gases (GHGs) may not be used to determine whether a source is a Class I (major) source. Utility Air Regulatory Group v. EPA, 134 S.Ct. 2427 (2014). Therefore, potential emissions of GHGs will not be used to determine a source's operating permit classification at this time. However, GHGs are still regulated air pollutants so GHGs and CO2e will continue to be calculated and reported in this fact sheet.

[2] Actual Emissions are from 2025 air emissions inventory report.

[3] Not reported on 2025 air emissions inventory report.

[4] Updated to reflect adjusted GWP conversion factors from 40 CFR Part 98, Subpart A, Table A-1 (January 1, 2025)

SUPPLEMENTAL INFORMATION:

Title 129, Chapter 4*; Title 129, Chapter 4 - Prevention of Significant Deterioration (PSD) of Air Quality

Vulcraft is subject to the 250-tpy PSD major source threshold because the source is not in one of the 28 source categories for which a 100-tpy threshold applies. Therefore, fugitive emissions are not included in the determination of applicability of PSD. Construction Permit #CP22-044 issued February 13, 2023, limited potential emissions below major source thresholds for any regulated PSD pollutants. Consequently, Vulcraft is not subject to PSD requirements at this time. If Vulcraft makes any significant changes in the future, PSD applicability will need to be re-evaluated.

Title 129, Chapter 12*; Title 129, Chapter 12 - New Source Performance Standards (NSPS) and Emission Limits for Existing Sources

The following NSPS are applicable requirements of certain emission units at Nucor.

40 CFR 60 Subpart A, General Provisions: as adopted by reference in Title 129, Chapter 12, Section 001.01*; Title 129, Chapter 12, Section 001.01, is an applicable requirement because EU-8 is subject to a NSPS. The source must comply with the applicable requirements of the General Provisions.

§60.19(e) states "If an owner or operator supervises one or more stationary sources affected by standards set under this part and standards set under Part 61, Part 63, or both he/she may arrange by mutual agreement between the owner or operator and the State a common schedule on which periodic reports required by each applicable standard shall be submitted throughout the year". 40 CFR 63 Subpart SSSS allows recordkeeping on either a fiscal basis or a calendar basis. The source requested the use of fiscal months in a letter to the DWEE received January 14, 2004. The DWEE determined that the use of fiscal months rather than calendar months is quantifiable, accountable, enforceable, and based on replicable procedures as required by Title 129, Chapter 6, Section 003.02*; Title 129, Chapter 6, Section 003.02. Subsequent permits issued since 2005, including this operating permit, have required that emissions calculations and recordkeeping are performed on a fiscal month basis.

40 CFR 60 Subpart TT, Standards of Performance for Metal Coil Surface Coating: as adopted by reference in Title 129, Chapter 12, Section 001.48*; Title 129, Chapter 12, Section 001.49, is applicable to EU-8 in Deck Manufacturing. The metal coil surface coating process was constructed, in part, and modified, in part, after January 5, 1981, the compliance date for Subpart TT. Vulcraft chose not to use a capture and control system to reduce emissions but rather changed the process paints and additives to reduce the amount of VOC emissions. Vulcraft demonstrates compliance with a limit of 0.28-kilogram VOC per liter of coating solids applied by computing the average VOC content of coatings applied during each fiscal month. VOC emissions are calculated for each fiscal month using equations provided in Subpart TT. The source must keep records and submit reports at the frequency specified in §60.465. Note that the operating permit is, however, more stringent than the NSPS. Condition I.(G)(1) in the operating permit requires records to be kept on-site for five years rather than the two years as required in the NSPS. This difference between the NSPS and the operating permit is noted as required by Title 129, Chapter 6, Section 003.01*; Title 129, Chapter 6, Section 003.01.

The following NSPS appear to be applicable requirements of certain emission units at Nucor but are not:

40 CFR 60 Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units: as adopted by reference in Title 129, Chapter 12, Section 001.05*; Title 129, Chapter 12, Section 001.06, is not an applicable requirement of EU-7A, EU-7C, EU-7D, two power washers in the truck shop, and the shower room boiler. All of these emission units have a heat input capacity of less than 2.9 megawatts (10 MMBtu/hr.), whereas the NSPS applies to steam generating units with a heat input capacity greater than 29 megawatts (100 MMBtu/hr.).

40 CFR 60 Subpart K, Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978: as adopted by reference in Title 129, Chapter 12, Section 001.17*; Title 129, Chapter 12, Section 001.18, appears to be applicable but is not because each petroleum storage tank (Tanks #11, #12, #13, #14A, #15, #16, #17, and #18) has a volume less than 40,000 gallons and each was not modified, reconstructed or constructed within the NSPS date range.

40 CFR 60 Subpart Ka, Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984: as adopted by reference in Title 129, Chapter 12, Section 001.18*; Title 129, Chapter 12, Section 001.19, is not applicable to the liquid petroleum product storage tanks (Tanks #11, #12, #13, #14A, #15, #16, #17, and #18) because each has a volume less than 40,000 gallons and each was not modified, reconstructed or constructed within the NSPS date range.

40 CFR 60 Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984: as adopted by reference in Title 129, Chapter 12, Section 001.19*; Title 129, Chapter 12, Section 001.20, is not applicable to the petroleum liquid or paint storage tanks (EU-T9, EU-T10, EU-

T35, and Tanks #11, #12, #13, and #14A, #15, #16, #17, #18) because each has a volume less than 75 cubic meters (19,815 gallons).

40 CFR 60 Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines: as adopted by reference in Title 129, Chapter 12, Section 001.80*; Title 129, Chapter 12, Section 001.81, does not apply to the RICE that power the emergency generators at Vulcraft. The RICE are spark ignition combustion engines rather than compression ignition engines.

40 CFR 60 Subpart JJJJ Standards of Performance for Stationary Spark Ignition Internal Combustion Engines: as adopted by reference in Title 129, Chapter 12, Section 001.81*; Title 129, Chapter 12, Section 001.82, appears to be applicable to the RICE at Vulcraft because they have spark ignition. However, Subpart JJJJ is not an applicable requirement of either emission unit. EU-40 was constructed in 1972, which is before the Subpart JJJJ applicability date of June 12, 2006, for commencement of construction. EU-41, which is a 114-hp RICE, was manufactured in November 2006 and constructed in July 2007 but is not subject to Subpart JJJJ because §60.4230(a)(4)(iv) states that emergency engines with a maximum engine power greater than 19 kW (25 hp) are subject to the NSPS only if the engine was manufactured after January 1, 2009.

Note that NSPS rules are subject to change. Detailed information related to NSPS subparts can be found on the DWEE NSPS Notebook located on the DWEE website (*https://dwee.nebraska.gov/*). It is the source's obligation to comply with applicable NSPS subparts and requirements whether or not they are identified in this permitting action or Title 129.

Title 129, Chapter 13, Sections 002* and 003*; Title 129, Chapter 13, Sections 002 and 003 - National Emission Standards for Hazardous Air Pollutants (NESHAP)

The following NESHAPS are applicable requirements of certain emission units at Vulcraft.

40 CFR 63 Subpart A, General Provisions: This subpart, adopted by reference in Title 129, Chapter 13, Section 002.01*; Title 129, Chapter 13, Section 002.01. All emission units subject to another NESHAP (Part 63) are also subject to Subpart A.

40 CFR 63 Subpart ZZZZ, Stationary Reciprocating Internal Combustion Engines: as adopted by reference in Title 129, Chapter 13, Section 002.78*; Title 129, Chapter 13, Section 002.79, applies to new and existing stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAPs. EU-40 is an existing RICE for Subpart ZZZZ because it was constructed prior to June 12, 2006. Vulcraft must comply with the operational, monitoring, and recordkeeping requirements for emergency RICE for EU-40. These requirements include but are not limited to routine maintenance requirements, minimizing engine idle at startup, installation of a non-resettable hour meter, maintenance records, records of any malfunctions and corrective actions, and hours of operation. Records must be in a form suitable and readily available for review and must be kept for five years.

The source can elect to change compliance options for EU-40 oil changes. Rather than changing the oil and filter every 500 hours of operation or annually, Vulcraft can elect to use an oil analysis program so that oil changes can be less frequent.

EU-41 is a new stationary RICE under Subpart ZZZZ because the RICE was manufactured in November 2006 and constructed in July 2007. §63.6590(c)(1) states that the source demonstrates compliance with Subpart ZZZZ for EU-41 by complying with applicable requirements in 40 CFR 60 Subpart JJJJ. However, in Subpart JJJJ, §60.4230(a)(4)(iv) states the NSPS applies to emergency engines with a maximum engine power greater than 19 KW (25 hp) manufactured on or after January 1, 2009. Because EU-41, which has a horsepower of 114 hp, was manufactured prior to this date, Subpart JJJJ does not apply. Therefore, EU-41 does not have any applicable requirements under 40 CFR 63 Subpart ZZZZ or 40 CFR 60 Subpart JJJJ.

40 CFR 63 Subpart CCCCCC, Gasoline Dispensing Facilities: as adopted by reference in Title 129, Chapter 13, Section 002.95*; Title 129, Chapter 13, Section 002.97, is an applicable requirement because Vulcraft has two gasoline storage tanks, Tank #13, and Tank #15. Each gasoline storage tank has a monthly throughput of less than 10, 000 gallons per month, so each tank is subject to the operational and recordkeeping requirements of §63.1116(a) and (b). Operational requirements include, but are not limited to, minimizing spills and releases of vapor and keeping open containers covered. If Vulcraft fills portable gasoline containers from either of the tanks, the containers must meet the requirements of §63.1116(d).

40 CFR 63 Subpart XXXXXX, Metal Fabrication Area Sources: as adopted by reference in Title 129, Chapter 13, Section 002.113*; Title 129, Chapter 13, Section 002.115, is an applicable requirement to each new and existing source listed and defined in paragraphs (b)(1) through (5) of §63.11514 if a source uses materials that contain or have the potential to emit metal fabrication or finishing metal HAP (MFHAP). Emission unit EU-2 utilizes a gas metal arc welding process that has the potential to emit MFHAPs, therefore, is subject to NESHAP Subpart XXXXXX.

There are numerous dry machining operations (punches, shears, saws, drills, etc.) located throughout Vulcraft's joist, miscellaneous metal products, bridging and decking manufacturing that are subject to Subpart XXXXXX. Dry machining operations create large MFHAP particles and/or metal shavings that are so large that they fall immediately to the floor and are not emitted into the air. As a result, these units are not considered a source of air emissions and have not been assigned as an emission unit or emission point. The source selected management practices as the compliance method for this subject equipment. Management methods include minimizing excess dust in the surrounding area so as to reduce MFHAP emissions as much as practicable. Dry machining equipment is also operated in accordance with manufacturer's instructions.

Thermal cutting, plasma and oxymethane torches, and beam coper (oxyacetylene torch) are not subject to NESHAP Subpart XXXXXX. These activities are not considered a machining operation under the NESHAP machining affected source, 40 CFR 63.111514(b)(2). EPA NESHAP XXXXXX Question and Answer #35 supports the position that torch cutting is not considered "machining". While the question posed specifically asks about laser cutting, torch cutting is analogous.

MHAPs are emitted during joist welding (EU-2). The welding process at Vulcraft is GMAW, which has reduced fume generation capabilities. The source selected management practices as the compliance method. Welding equipment is operated according to manufacturer's instructions. Welding filler metals, shielding gases, carrier gases, and/or other process materials are also capable of welding fume generation. Welding process variables, such as electrode diameter, voltage, amperage, welding angle, shield gas flow rate, and travel speed, are optimized to reduce the amount of welding fume generated where practicable.

Painting processes do not contain any of the MFHAP, so these processes are not subject to Subpart XXXXXX.

The following NESHAP appears to be applicable requirements of emission units at Vulcraft but are not:

40 CFR 63 Subpart N, Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks: as adopted by reference in Title 129, Chapter 13, Section 002.07*; Title 129, Chapter 13, Section 002.08, applies to sources that perform chromium electroplating or have chromium anodizing tanks. This NESHAP does not apply to the iron phosphating tank at Vulcraft because the process is non-electrolytic plating and uses iron rather than chromium.

40 CFR 63 Subpart Q, Industrial Process Cooling Towers: as adopted by reference in Title 129, Chapter 13, Section 002.09*; Title 129, Chapter 13, Section 002.10, is not applicable because Vulcraft does not use chromium-based water treatment chemicals in the north and south cooling towers associated with the Joist Manufacturing Building.

40 CFR 63 Subpart T, Halogenated Solvent Cleaning: as adopted by reference in Title 129, Chapter 13, Section 002.12*; Title 129, Chapter 13, Section 002.13, does not apply to the parts washers that are used in facility maintenance. While the parts washers are considered batch cold cleaning machines according to the definition in §63.461, the halogenated HAP solvent content of the cleaning solution is less than five percent by weight. Vulcraft periodically tests the parts washer solutions to verify the halogenated HAP content remains less than five percent as the washers are used over time.

40 CFR 63 Subpart VV, Oil-water Separators and Organic-water Separators: as adopted by reference in Title 129, Chapter 13, Section 002.35*; Title 129, Chapter 13, Section 002.36, is not an applicable requirement of the oil water separators for the Hotsy parts washers at truck shop(s) and joist maintenance shop(s), deck wastewater treatment plant, and deck wash line cleaning tank. This NESHAP applies only when oil separators are subject to another NSPS or NESHAP, and none of the oil water separators at Vulcraft are subject to a NSPS or NESHAP other than Subpart VV.

40 CFR 63 Subpart EEEE, Organic Liquids Distribution (non-gasoline): as adopted by reference in Title 129, Chapter 13, Section 002.58*; Title 129, Chapter 13, Section 002.59, is not applicable because Vulcraft/Cold Finish became an area source of HAP before the NESHAP compliance date of February 5, 2007, (existing sources) when the source requested and received HAP limits in Construction Permit #CP22-044 issued on February 13, 2023, and CP03-0025 issued to Cold Finish January 26, 2005.

40 CFR 63 Subpart MMMM, Surface Coating of Miscellaneous Metal Parts and Products: as adopted by reference in Title 129, Chapter 13, Section 002.65*; Title 129, Chapter 13, Section 002.66, applies to sources that conduct surface coating of metal parts and products, which includes but is not limited to metal components as well as complete products such as industrial machinery, metal pipes, and numerous industrial, household, and consumer products. These sources must also be major sources of HAP. Because Construction Permit #CP22-044 issued February 13, 2023, and CP03-0025 issued to Cold Finish January 26, 2005, limited HAP emissions from Vulcraft/Cold Finish to less than the major source HAP thresholds before the compliance date of Subpart MMMM, January 2, 2007, Vulcraft/Cold Finish is not subject to the requirements of Subpart MMMM.

40 CFR 63 Subpart SSSS, Surface Coating of Metal Coil: as adopted by reference in Title 129, Chapter 13, Section 002.71*; Title 129, Chapter 13, Section 002.72, applied to metal coil surface coating operations at major sources of HAP. Nucor Vulcraft were subject to this major source NESHAP because the compliance date of Subpart SSSS was June 10, 2005, which is prior to the limitation of HAP to less than major source thresholds by Construction Permit #CP22-044 issued on February 13, 2023.

Construction Permit #CP03-0024 limited Vulcraft/Cold Finish's HAP emissions to less than major source thresholds, and the associated Fact Sheet issued with the permit specifically noted that "after issuance of this permit, the source will be considered minor for HAPs and any future applicability determinations should be made on that basis". See Construction Permit #CP03-0024 Fact Sheet at Page 33. Despite Vulcraft/Cold Finish's minor HAP source status, EPA's "Once In, Always In" policy maintained the applicability of major source NESHAP Subpart SSSS to the facility.

U.S. EPA's November 19, 2020 final rule, Reclassification of Major Sources as Area Sources Under Section 112 of the Clean Air Act, formally repealed its former Once In, Always In Policy, and provided that a major source can be reclassified to area source status at any time upon reducing its potential to emit hazardous air pollutants to below the major source thresholds of 10 tons per year of any single HAP and 25 tpy of any combination of HAP. Therefore, DWEE has removed from the facility applicability of federal NESHAP Subpart SSSS.

Vulcraft/Cold Finish is still, however, subject to Construction Permit #CP22-044 and associated limits based on the applicability of the federal NESHAP at the time of issuance of the permit. Based on the applicable NESHAP Subpart SSSS emission limitations at that time, Vulcraft/Cold Finish selected compliance option #2b in §63.5170, Table 1, which is the As Applied Compliant Coatings option. This option has two possible emissions limits. Vulcraft/Cold Finish has chosen to comply with the limitation in which the average of all coating materials used cannot exceed 0.046 kg HAP per liter solids on a rolling 12-month average as applied basis, determined monthly. Vulcraft/Cold Finish uses Equation 3 in §63.5170(b) to demonstrate compliance with the limitation. Vulcraft/Cold Finish is allowed to change compliance options for its metal coil coating operations in the future if the source chooses to do so. If a change is made, the source must notify the DWEE in accordance with Condition III.(B)(1)(c).

Subpart SSSS defines month as "Month means a calendar month or a pre-specified period of 28 to 35 days to allow for flexibility in recordkeeping when data are based on a business accounting period". As discussed earlier in this fact sheet, Vulcraft requested and received permission from the DWEE to use fiscal months on the basis of this definition. The General Provisions allow the use of fiscal months for recordkeeping for other applicable NESHAP and NSPS.

40 CFR 63 Subpart DDDDD, Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters: as adopted by reference in Title 129, Chapter 13, Section 002.80*; Title 129, Chapter 13, Section 81 is an applicable requirement of boilers and process heaters at major sources of HAP. Construction Permit #CP22-044 issued February 13, 2023, and CP03-0025 issued to Cold Finish January 26, 2005, limited HAP emissions from Vulcraft/Cold Finish to less than the major source HAP threshold before the compliance date of Subpart DDDDD, January 31, 2016. Therefore, Vulcraft/Cold Finish is not subject to Subpart DDDDD.

40 CFR 63 Subpart GGGGG, Site Remediation: adopted by reference in Title 129, Chapter 13, Section 002.83*; Title 129, Chapter 13, Section 002.84, applies to sources that conduct site remediation as defined in §63.7957 and meet all three requirements of §63.7881(a)(1) through (3). §63.7881(a)(3) requires the source to be a major source of HAP in order for the NESHAP to be applicable. Vulcraft/Cold Finish was not a major source of HAP on the compliance date of the NESHAP, October 9, 2006, because Construction Permit #CP22-044 issued February 13, 2023, and CP03-0025 issued to Cold Finish January 26, 2005, limited HAP emissions from Vulcraft/Cold Finish to less than the major source HAP thresholds. Therefore, Subpart GGGGG is not an applicable requirement.

40 CFR 63 Subpart HHHHHH, Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources: as adopted by reference in Title 129, Chapter 13, Section 002.100*; Title 129, Chapter 13, Section 002.102, is not applicable because Vulcraft does not use paint strippers that contain methylene chloride, and the process paints and additives do not contain any of the target HAP listed in §63.11169(c). Additionally, because Vulcraft is subject to NESHAP Subpart XXXXXX, it is not subject to the miscellaneous surface coating provisions of subpart HHHHHH per 40 CFR § 63.11514(b)(4).

40 CFR 63 Subpart JJJJJJ, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources, as adopted by reference in Title 129, Chapter 13, Section 002.101*; Title 129, Chapter 13, Section 002.103, is not an applicable requirement. The boiler in the Joist Manufacturing Building shower room does not meet the definition of a hot water heater in §63.11237 because the boiler exceeds the maximum capacity of a water heater, which is 120 gallons. The boiler does fall under the definition of a gas-fired boiler and §63.11195(e) says that gas-fired boilers are not subject to Subpart JJJJJJ.

40 CFR 63 Subpart WWWWWW, Area Source Standards for Plating and Polishing Operations: as adopted by reference in Title 129, Chapter 13, Section 002.112*; Title 129, Chapter 13, Section 002.114, does not apply to the iron phosphating tank. While non-electrolytic plating occurs in the iron phosphating tank, iron is deposited rather than any of the plating and polishing HAP listed in §63. 11504(a)(3). Also, Vulcraft does not perform polishing.

Note that NESHAP rules are subject to change. Detailed information related to NESHAP subparts can be found on the DWEE Air Toxics Notebook located on the DWEE website (*https://dwee.nebraska.gov/*). It is the source's obligation to comply with applicable NESHAP subparts and requirements whether or not they are identified in this permitting action or Title 129.

Title 129, Chapter 15*; Title 129, Chapter 15 - Compliance

Title 129, Chapter 15, Section 001.01*; Title 129, Chapter 15, Section 001.01, limits PM (filterable) emissions to the amounts shown in Table 15-1*; Table 15-1 during any one hour. These process weight rate limits, which are based on throughput of the emission units, vary as throughputs change. Since the potential to emit for each emission point is less than the process weight rate limitations, these PM limitations were not included in Condition III of this permit.

Particulate Emissions from Combustion Sources

All of the PM emission points subject to Chapter 15, Section 001.02*; Chapter 15, Section 001.02 limitations are in compliance with those limitations, as the potential to emit for each emission point is less than the limitations. Therefore, these PM limitations were not included in Condition III of this permit.

Opacity Limitations from Emission Units (Section 001.04)*; (Section 001.04)

Specific Condition I.(J) specifies that no person shall cause or allow emissions, from any source, which has an opacity equal to or greater than twenty percent (20%). Opacity must be determined using an EPA-approved method or recorded by a continuous opacity monitoring system which has been operated and maintained pursuant to 40 CFR Part 60 Appendix B except as provided for in Chapter 15, Sections 001.05* and 001.05E*; Chapter 15, Sections 001.05 and 001.05E; ((Title 129, Chapter 15, Section 001.04)*; Title 129, Chapter 15, Section 001.04). Therefore, while not specifically stated in Condition III, this requirement is still applicable to all emission units at the source.

SPECIFIC PERMIT CONDITIONS DISCUSSION:

Condition III includes conditions that are specific to the emissions units and emission points listed in each respective condition. Permit conditions that require no additional discussion are not included in this section.

(A) Joist and Bridging Manufacturing

(A)(3)(a) The source must use water-based paints in the dip tanks and portable hand-held spray guns in Joist Manufacturing. Water based paints must also be used in the dip tank in Bridging Manufacturing [Construction Permit #CP22-044 issued February 13, 2023, Condition XIII.(A); Title 129, Chapter 6, Section 003.11*; Title 129, Chapter 6, Section 003.11].

The construction permit required the source to replace solvent-based paints with water-based paints. The change in paint type was made as required, so the operating permit condition does not include the word "replace". This difference is noted as required by Title 129, Chapter 6, Section 003.01*; Title 129, Chapter 6, Section 003.01.

(A)(3)(d) PM and PM_{10} emissions from EP-5 (EU-5 is the Bridging airless spray box painting operation) must be controlled by filters/cartridges (paint arrestor filter device). The sub-conditions contain the operating requirements of the filters/cartridges. These include, but are not limited to, operating the filters/cartridges at all times the airless spray box is operating; using a properly designed, installed, operated and maintained filter/cartridge system; equipping the filters/cartridges with a pressure indicator whose readings are recorded at least once daily; calibrating and maintaining the pressure indicator; inspecting and replacing airless spray box filters or cartridges according to manufacturer's recommendations or more frequently; routine daily observations of the airless spray box and corrective actions if problems are noted; and maintaining an inventory of filters or cartridges that are used in the airless spray box. The source must also handle, store, and transport waste material from the airless spray box in a manner that complies with Condition I.(L) [Construction Permit #CP22-044 issued February 13, 2023, Condition XIII.(D)].

(A)(3)(e) This condition differs from that in the construction permit because it identifies the specific emission units subject to the NESHAP. The operating permit condition also does not cite every paragraph in the NESHAP as the construction permit condition does because only the applicable requirements are included in the operating permit. These differences are noted as required by Title 129, Chapter 6, Section 003.01*; Title 129, Chapter 6, Section 003.01.

(A)(3)(e)(i) Vulcraft conducts dry machining operations in Joist, Miscellaneous Metal Products, Bridging and Decking lines. Dry machining operations create large MFHAP particles and/or metal shavings that are so large that they fall immediately to the floor and are not emitted into the air. As a result, these units have never been considered a source of air emissions and have never been assigned as an emission unit or emission point. The source requested that this requirement be placed in the operating permit. Although the dry machining operations are not considered emission units under the operating permit program, Vulcraft is still required to comply with all applicable requirements of NESHAP XXXXXX. The source must implement management practices that minimize emissions of metal fabrication and finishing hazardous air pollutants (MFHAP; see the discussion of Chapter 13/Subpart XXXXXX for a list of the MFHAP). The source must minimize dust generation and emission from the dry machining processes and operate all equipment in these processes in accordance with the manufacturer's instructions. If some materials undergoing dry machining do not contain MFHAP, then the requirements of Condition III.(A)(3)(c)(i) do not apply to those materials [§63.11516(b)].

(A)(3)(e)(ii) The requirements for the joist welding operations, EU-2, are in this condition. When the source uses more than 2,000 pounds of welding rod that contains one or more of the MFHAP within a rolling 12-month period, then the source must comply with the applicable requirements of 40 CFR 63 Subpart XXXXXX. The requirements do not apply when the source uses a welding rod that does not contain any of the MFHAPs or has the potential to emit MFHAPs [§63.11516(f)].

The source must operate the welding equipment according to manufacturer's instructions as well as implement one of the management practices that are listed in §63.11516(f)(2). For example, reduced fume generation during welding is a listed option. The source can consider welding quality when selecting an option.

The source must also comply with the visible emissions monitoring requirements for fugitive emissions from welding. The monitoring is done under a Tier approach depending upon whether emissions are seen or not and the opacity of the observed emissions. Conditions III.(A)(3)(c)(ii)3. through 7. contain the requirements for the visible emissions monitoring [§63.11516(f)(3) through (7)]. The source must also prepare a Site-Specific Welding Emissions Management Plan if opacity of observed excess emissions exceeds certain thresholds and update it annually. The required contents of the plan are in Condition III.(A)(3)(c)(ii)8. [§63.11516(f)(8)].

(A)(4)(d) The source must keep notifications and records required by 40 CFR 63 Subparts A and XXXXXX. Records include all reports and supporting documentation submitted to USEPA and DWEE to show compliance with 40 CFR 63 Subpart XXXXXX. Records of visible emissions surveys, opacity readings, corrective actions, and if necessary, the Site-Specific Welding Emissions Management Plan must be kept. If the source is following manufacturer's instructions for minimizing dust generation containing MFHAP, then the source must keep these instructions readily available for review by inspectors. If the source operates a welding affected source that uses less than 2,000 pounds per year of welding wire, the source would be required to maintain records of welding rod usage. Records must be kept in accordance with the requirements in §63.10(b)(1) except that the records must be kept on-site for five years as specified in Condition I.(G)(1) [Construction Permit #CP22-044 issued February 13, 2026, Condition XIII.(M)(11); §63.11519(c); Title 129, Chapter 13, Sections 002.01* and 002.113*; Title 129, Chapter 13, Sections 002.01 and 002.115].

§63.10(b)(1) requires records to be kept on-site for two years while Condition I.(G)(1) requires records to be kept on-site for five years. The source must comply with the more stringent operating permit requirement. This difference between the operating permit and §63.10(b)(1) is noted as required in Title 129, Chapter 6, Section 003.01*; Title 129, Chapter 6, Section 003.01.

(A)(4)(e) The source must prepare and submit an annual certification and compliance report by the alternate dates in Condition I.(G)(1) as part of the reporting requirements of 40 CFR 63 Subparts A and XXXXXX. The contents of the report, such as results of visible emissions surveys and the Site-Specific Welding Emissions Management Plan, are given in this condition [§63.11519(b); Title 129, Chapter 6, Section 003.03B*; Chapter 13, Sections 002.01* and 002.113*; Title 129, Chapter 6, Section 003.03B; Chapter 13, Sections 002.01 and 002.115].

(B) Deck Manufacturing

(B)(2)(b) The source chose to limit the amount of HAP by limiting HAP or volatile organic matter content in the coating materials used in EU-8. Because this compliance option was selected, the source must use one of the methodologies in Condition III.(B)(2)(b)(i) to determine the organic HAP weight fraction of each coating material used in EU-8. The available methods range from testing the coating to using formulation data from the manufacturer. The source must also determine the solids content of each coating or use the manufacturer's determination [Construction Permit #CP22-044 issued February 13, 2026, Condition XIII.(H)].

(B)(3)(b) 40 CFR 60 Subpart TT refers to calendar months in its requirements. The source requested the use of fiscal months in a letter received by the DWEE on January 14, 2004. The DWEE determined that use of fiscal months rather than calendar months is quantifiable, accountable, enforceable, and based on replicable procedures as required by Title 129, Chapter 6, Section 003.02*; Title 129, Chapter 6, Section 003.02, so fiscal months are used for all calculations requirements in this operating permit including those that apply to 40 CFR 60 Subpart TT. This difference between the NSPS and the operating permit is noted as required by Title 129, Chapter 6, Section 003.01*; Title 129, Chapter 6, Section 003.01.

(B)(4)(b) The source must maintain records of all calculations and supporting data that determines monthly VOC emissions. The source must submit a written report to the DWEE semiannually or quarterly depending upon whether the limit for volume-weighted average of the local mass of VOCs emitted to the atmosphere per volume of applied coating solids in Condition III.(B)(3)(a) is met or exceeded, respectively [Construction Permit #CP22-044 issued February 13, 2026, Condition XIII.(M)(6); §60.465(c); §60.465(e); Title 129, Chapter 12, Section 001.48*; Title 129, Chapter 12, Section 001.49].

§60.465(e) requires records to be kept for a period of at least two (2) years. However, Condition I.(G)(1) requires records to be kept on-site for five (5) years. The source must comply with the more stringent operating permit conditions. This difference in the NSPS and operating permit is noted as required by Title 129, Chapter 6, Section 003.01*; Title 129, Chapter 6, Section 003.01.

(B)(4)(d) Records of the amount of process paints and additives purchased and used in EU-24 must be kept in order to show compliance with Condition III.(B)(3)(d). The records must show the quantities purchased. MSDS or equivalent information showing the solids content of paints must be kept as well [Construction Permit #CP22-044 issued February 13, 2023, Condition XIII.(M)(13)].

Note: Purchase records are kept because it is easier for the source to track purchases than usage and this conservatively estimates emissions by assuming all process paints and additives purchased are used.

(C) Emergency RICE

(C)(3)(d) The source must operate EU-40 such that hours of operation are restricted to 50 hours per year for situations that are not emergency, maintenance, or testing. Emergency use is unlimited [§63.6640(f); Title 129, Chapter 6, Section 003.03*; Chapter 13, Section 002.78*; Title 129, Chapter 6, Section 003.03; Chapter 13, Section 002.79].

(D) **Gasoline Storage Tanks**

(D)(3) Operational requirements for minimizing VOC and HAP emissions from the gasoline tanks are in this condition. The source must minimize spills and clean up any that might occur. All open containers of gasoline must be covered. The storage tank fill pipes must be equipped with gasketed seals when they are not in use. The source must minimize gasoline getting into waste collection systems, such as oil/water separators. Finally, §63.1111(d) specifies types of portable gasoline containers that are acceptable under 40 CFR 63 Subpart CCCCCC [§63.11116(a) and (d); Title 129, Chapter 6, Section 003.03*; Chapter 13, Section 002.95*; Title 129, Chapter 6, Section 003.03; Chapter 13, Section 002.97].

(E) **Haul Roads**

(E)(3) The source demonstrates compliance with Condition I.(L) by controlling dust that can potentially come from the haul roads. Possible means of control include, but are not limited to, watering, sweeping, applying chemical dust suppressants, or improving road surfaces, such as by paving unpaved roads. A representative of Vulcraft must survey the plant property and haul roads daily to see if fugitive dust emissions are crossing the property line. If fugitive emissions are observed crossing the property line, then corrective action must be taken, that is, control methods must be implemented. The representative must document observations and any corrective actions taken in a log [Construction Permit #CP22-044 issued February 13, 2023, Condition XIII.(F)].

Insignificant Activities

The following table contains a description of insignificant activities at the source at the time of permit issuance, in accordance with operating permit application OP26R1-018, received May 8, 2026, including any supporting information received prior to issuance of the permit:

Insignificant Activity ID	Unit Description	Insignificance Criteria
N/A[1]	Two (2) process cooling towers (north and south) for the Joist Plant, North Compressor Room, each 65 gallons/minute	< 2,000 gallons/minute
Tank #11	Diesel fuel storage tank, 15,000-gallon maximum capacity	Annual source-wide aggregate fuel throughput < 1,000,000 gallons [2]
Tank #12	Diesel fuel storage tank, 15,000-gallon maximum capacity	Annual source-wide aggregate fuel throughput < 1,000,000 gallons [2]
Tank #14A	Diesel fuel storage tank, 1,000-gallon maximum capacity	Annual source-wide aggregate fuel throughput < 1,000,000 gallons [2]
N/A	Space heater (1), maximum heat input capacity of 0.056 MMBtu/hr., natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heater (1), maximum heat input capacity of 0.06 MMBtu/hr., natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heaters (4), maximum heat input capacity of 0.07 MMBtu/hr. each, natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heaters (4), maximum heat input capacity of 0.075 MMBtu/hr. each, natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heaters (2), maximum heat input capacity of 0.079 MMBtu/hr. each, natural gas fired	< 10 MMBtu/hr. maximum heat input capacity

Insignificant Activity ID	Unit Description	Insignificance Criteria
N/A	Space heaters (2), maximum heat input capacity of 0.08 MMBtu/hr. each, natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heater (1), maximum heat input capacity of 0.082 MMBtu/hr., natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heater (1), maximum heat input capacity of 0.088 MMBtu/hr., natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heater (1), maximum heat input capacity of 0.09 MMBtu/hr., natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heater (1), maximum heat input capacity of 0.099 MMBtu/hr., natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heaters (299), maximum heat input capacity of 0.1 MMBtu/hr. each, natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heaters (2), maximum heat input capacity of 0.105 MMBtu/hr. each, natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heaters (2), maximum heat input capacity of 0.108 MMBtu/hr. each, natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heaters (2), maximum heat input capacity of 0.115 MMBtu/hr. each, natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heaters (2), maximum heat input capacity of 0.12 MMBtu/hr. each, natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heater (1), maximum heat input capacity of 0.15 MMBtu/hr., natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heater (1), maximum heat input capacity of 0.165 MMBtu/hr., natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heaters (3), maximum heat input capacity of 0.175 MMBtu/hr. each, natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heater (1), maximum heat input capacity of 0.25 MMBtu/hr., natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heaters (2), maximum heat input capacity of 0.3 MMBtu/hr. each, natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Space heaters (2), maximum heat input capacity of 0.4 MMBtu/hr. each, natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Truck shop space heater (1), maximum heat input capacity of 0.35 MMBtu/hr., oil fired	< 2 MMBtu/hr. maximum heat input capacity
N/A	Power washers (2, stationary), maximum heat input capacity of 0.657 MMBtu/hr. each, natural gas fired	< 10 MMBtu/hr. maximum heat input capacity
N/A	Joist plant locker room boiler (1), natural gas fired	< 10 MMBtu/hr. maximum heat input capacity

Although not required, DWEE recommends that the source submit a written notification to DWEE if there are additions or changes to the list of insignificant activities identified above, containing the following suggested information:

- A brief description of the addition or change within the permitted source;
- The date on which the addition or change occurred;
- Any change in potential emissions; and
- The criteria, as defined in the Operating Permit Application Forms, are used to determine whether the addition or change to the list of insignificant activities qualifies as insignificant.

This notification helps the DWEE keep an up-to-date list on file for compliance purposes.

TYPE AND QUANTITY OF AIR CONTAMINANT EMISSIONS ANTICIPATED:

Vulcraft generates potential and actual emissions of several air pollutants including nitrogen oxides (NO_x), volatile organic compounds (VOCs), carbon monoxide (CO), sulfur dioxide (SO_2), hazardous air pollutants (HAP), particulate matter (PM), particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM_{10}), and particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$). Fuel combustion also results in the emission of greenhouse gases (GHGs) – methane (CH_4), nitrous oxide (N_2O), and carbon dioxide (CO_2). Certain actions that have occurred since 2001 have affected pollutant emissions at Vulcraft.

The Clean Air Act directs the USEPA to delist a chemical from the HAP list if "adequate data on the health and environmental effects of the substance to determine that emissions, ambient concentrations, bioaccumulation or deposition of the substance may not reasonably be anticipated to cause any adverse effects to human health or adverse environmental effects". Ethylene glycol butyl ether (EGBE), a constituent of some coatings used at Vulcraft, was delisted by the USEPA on November 18, 2004, and is thus no longer a HAP in this operating permit. EGBE continues to be regulated as a VOC.

For the purposes of this permitting action, the term "process paints and additives" means all VOC-containing products used at Vulcraft that are production-related, such as primers, paints, thinners, and aerosol cans of paint. Process paints and additives do not include VOC-containing materials that are used for incidental activities only, such as maintenance chemicals, household cleaners, and so forth.

Vulcraft switched from solvent based paints to water-based paints before and after Construction Permit #CP03-0024 was issued on September 14, 2005, which reduced VOC and HAP emissions.

It should be noted that, while there are facility-wide emission limits, permitting requirements for future modifications at Vulcraft must be evaluated pursuant to the requirements of Title 129, Chapters 3* and 4*; Title 129, Chapters 3 and 4. Vulcraft may remove or alter the location, size and/or depth of the joist and bridging dip coating tanks to facilitate production or pollution prevention measures, so long as the tanks remain in the existing joist manufacturing, bridging manufacturing, or modified Bay 3 structures. In addition, Vulcraft may alter the configuration, layout, and equipment on the permitted joist and bridging manufacturing lines consistent with the representations in the construction permit issued February 13, 2023 and its accompanying applications, so long as no new pollutant or new type of emission unit is added, and the total number of physical lines (4 joist manufacturing lines and 1 bridging manufacturing line) is not increased.

The following discussion of air pollutants emitted by the various emission units/points at Vulcraft provides information on some of the assumptions and information used to calculate potential emissions.

Joist Manufacturing and miscellaneous metal product manufacturing, thermal cutting (EP-1) utilizes thermal energy and generates respirable metal fumes and vapors resulting in emissions of filterable PM, PM_{10}, $PM_{2.5}$, and particulate (metal) HAP. Potential emissions were calculated using emission factors from Figures 5.1 and 5.2 in *Fumes and Gases in the Welding Environment* (Miami: American Welding

Society, 1987) and a method recommended by Mr. Ken Lee, legal counsel for the American Institute of Steel Construction (AISC). An average of the emission factors for oxyacetylene torch cutting and oxymethane torch cutting of carbon steel under normal operating conditions was used as the emission factor for plasma torch cutting. Metal HAP emissions were calculated using a method recommended by Mr. Ken Lee, which uses a formula from an AISC guidance document (AISC, General Bulletin #1890, April 30, 1991) and metal HAP emission factors from an USEPA Emergency Planning and Community Right-to-know (EPCRA) Section 313 guidance document, USEPA, *Section 313 Reporting Issue Paper: Clarification and Guidance for the Metal Fabrication Industry*, January 1990.

Joist Manufacturing and miscellaneous metal product manufacturing, welding (EP-2) generates respirable metal fumes and vapors resulting in filterable PM, PM_{10}, $PM_{2.5}$, and metal HAP emissions. Vulcraft uses GMAW to reduce emissions, which the facility has implemented as one of the specified management practices required by 40 CFR 63 Subpart XXXXXX (see Title 129, Chapter 13*; Title 129, Chapter 13 discussion of this NESHAP for more information). Potential emissions were calculated with emission factors from USEPA's *Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources* (AP-42), 5th edition, Section 12.19 Electric Arc Welding (January 1995) for source classification code (SCC) 3-09-052-54.

Joist Manufacturing, dip painting (EP-3) generates emissions of VOC and HAP from the hybrid water-based paint used in the dip tanks. The mass balance method of calculating potential emissions is used. The paint with the highest VOC or volatile HAP content is used in the calculations to be conservative and to provide Vulcraft with operational flexibility to change paints to one with less VOC and volatile HAP. The maximum application rate is based on engineering judgment and is assumed to be 2.2 gallons of paint per ton of joist. All VOC and volatile HAP contained in the paint is assumed to be emitted during the painting process. Due to the method of application, dipping, the paint is not expected to become aerosolized. Therefore, no filterable $PM/PM_{10}/PM_{2.5}$ emissions are expected from EP-3.

Joist Manufacturing and miscellaneous metal product manufacturing, portable hand-held sprayer (EP-25) generates emissions of VOC, HAP, PM, PM_{10}, and $PM_{2.5}$ from the water-based paints used in the sprayer. The mass balance method of calculating potential emissions is used. Potential emissions are calculated using the paint with the highest VOC, HAP, or solids content to be conservative and to provide Vulcraft with operational flexibility to change paints to one with less VOC, volatile HAP, or solids content. The maximum application rate is based on engineering judgment and is assumed to be 0.4 gallons per ton of joist. All VOC and HAP contained in the paint is assumed to be emitted. To calculate the filterable PM, PM_{10}, and $PM_{2.5}$ emitted by spraying, an overspray rate of 75 percent is assumed. The transfer efficiency estimate (25 percent) is based on information found for air atomized spray in AP-42, Section 4.2.2.12, Metal Furniture Surface Coating, Table 4.2.2.12-1 (May 1983). Because particle size is not known, emissions of the three types of filterable particulate matter are assumed to be equal.

Joist Manufacturing and miscellaneous metal product manufacturing, spray painting with aerosol cans (EP-20) is used to color-code joists and to apply primer paint for an occasional painted finish "touch-up". Emissions of VOCs, volatile HAP, PM, PM_{10}, and $PM_{2.5}$ result from the spraying process. Because Vulcraft uses a large number of spray paints, the method of using the spray paint with the highest individual HAP concentration would result in overestimation of potential HAP emissions. Vulcraft proposed, and the DWEE agreed, with the following methodology and assumptions for calculating potential emissions from spray painting in aerosol cans. Overspray is assumed to be 75 percent where the transfer efficiency estimate (25 percent) is based on information found for air atomized spray in AP-42, Section 4.2.2.12, Metal Furniture Surface Coating, Table 4.2.2.12-1 (May 1983). When MSDS are available for individual spray paints, emissions of VOC, volatile HAP, and filterable PM/PM_{10}/PM2.5 are calculated using the weight fraction or concentration of each individual HAP as well as VOCs and solids in each spray paint. If a range is given, the maximum is used in the emissions calculations. If the MSDS or chemical data sheet provides density information for a group of spray paints, then emissions of VOC, HAP, and filterable $PM/PM_{10}/PM_{2.5}$ are calculated from the lower of the maximum value from the range or 1.1 times the midpoint of the range. Emissions are calculated using the maximum value if a range is given for the weight fraction or concentration of each individual HAP, VOCs, and solids. A maximum spray paint application rate based on engineering judgment, which is 0.5 cans per ton of joist, is used. A spray paint can volume of twelve (12) fluid ounces is assumed. All VOCs and volatile HAP in the spray paints are assumed to be emitted during spray painting of joists. Because particle size is not known, emissions of the three types of filterable particulate matter are assumed to be equal.

Bridging Manufacturing, dip painting (EP-4) emits VOCs and volatile HAP from water-based paints used in the tank. The mass balance method of calculating potential emissions is used. The paint with the highest VOC or volatile HAP content is used in the calculations to be conservative and to provide Vulcraft with operational flexibility to change paints to one with less VOC and volatile HAP. The maximum application rate is based on engineering judgment and is assumed to be 2.2 gallons of paint per ton of bridging. All VOC and volatile HAP contained in the paint is assumed to be emitted. Due to the method of application, dipping, the paint is not expected to become aerosolized. Therefore, no filterable $PM/PM_{10}/PM_{2.5}$ emissions are expected from EP-4.

Bridging Manufacturing, airless spray box (EP-5) emits VOCs and volatile HAP from the water-based paint used in the process equipment. Filterable PM, PM_{10}, and $PM_{2.5}$ are also emitted. Potential emissions are calculated with the material balance method and the following assumptions. The paint with the highest VOC, volatile HAP, or solids content is used in the calculations to be conservative and to provide Vulcraft with operational flexibility to change paints to one with less VOC, volatile HAP, and solids content. The maximum application rate is based on engineering judgment and is assumed to be 1.05 gallons of paint per ton of bridging. All VOC and volatile HAP contained in the paint are assumed to be emitted. The manufacturer of the airless spray box unit provided a transfer efficiency of 75 percent (25 percent overspray). The ratio of PM to PM_{10} is from emission studies conducted on September 19, 2000. PM_{10} and $PM_{2.5}$ emissions are assumed to be equal. The performance test also provided an emission factor for chromium, a metal HAP, however, Vulcraft currently does not use the airless spray box with any chromium-containing paint.

Bridging Manufacturing, spray painting with aerosol cans (EP-21) is used to color-code joists and to apply primer paint for an occasional painted finish "touch-up". Emissions of VOCs, volatile HAP, PM, PM_{10}, and $PM_{2.5}$ result from the spraying process. Because Vulcraft uses a large number of spray paints, the method of using the spray paint with the highest individual HAP concentration would result in overestimation of potential HAP emissions. Vulcraft proposed, and the DWEE agreed, with the following methodology and assumptions for calculating potential emissions from spray painting in aerosol cans. Overspray is assumed to be 75 percent where the transfer efficiency estimate (25 percent) is based on information found for air atomized spray in AP-42, Section 4.2.2.12, Metal Furniture Surface Coating, Table 4.2.2.12-1 (May 1983). When MSDS are available for individual spray paints, emissions of VOC, volatile HAP, and filterable $PM/PM_{10}/PM_{2.5}$ are calculated using the weight fraction or concentration of each individual HAP as well as VOCs and solids in each spray paint. If a range is given, the maximum is used in the emissions calculations. If the MSDS or chemical data sheet provides density information for a group of spray paints, then emissions of VOC, HAP, and filterable $PM/PM_{10}/PM_{2.5}$ are calculated from the lower of the maximum value from the range or 1.1 times the midpoint of the range. Emissions are calculated using the maximum value if a range is given for the weight fraction or concentration of each individual HAP, VOCs, and solids. A maximum spray paint application rate based on engineering judgment, which is 0.05 cans per ton of bridging, is used. A spray paint can volume of twelve (12) fluid ounces is assumed. All VOCs and volatile HAP in the spray paints are assumed to be emitted during spray painting. Because particle size is not known, emissions of the three types of filterable particulate matter are assumed to be equal.

Deck Manufacturing, automatic reverse roller (EP-8) emits VOCs and volatile HAP from the water-based paints used in the roller. Potential emissions are calculated with the material balance method and the following assumptions. The paint with the highest VOC or volatile HAP is used in the calculations to be conservative and to provide Vulcraft with operational flexibility to change paints to one with less VOC or volatile HAP. The maximum application rate is based on engineering judgment and is assumed to be 1.65

gallons of paint per ton of deck. All VOC and volatile HAP contained in the paint is assumed to be emitted.

Deck Manufacturing, painting with water-based paints in a portable hand-held sprayer (EP-24) is used for one application at a time, either edge coating, cell deck painting, or repainting. Process paints used in the portable hand-held sprayer emit VOCs, volatile HAP, PM, PM_{10}, and $PM_{2.5}$. The mass balance method of calculating potential emissions is used. Potential emissions are calculated using the paint with the highest VOC, HAP, or solids content to be conservative and to provide Vulcraft with operational flexibility to change paints to one with less VOC, volatile HAP, or solids content. The maximum application rate is based on engineering judgment and is assumed to be 0.18 gallons per ton of deck. All VOC and HAP contained in the paint is assumed to be emitted. To calculate the filterable PM, PM_{10}, and $PM_{2.5}$ emitted by spraying, an overspray rate of 60 percent is assumed. The transfer efficiency estimate (40 percent) is based on information found for air atomized spray in AP-42, Section 4.2.2.11, Large Appliance Surface Coating, Table 4.2.2.11-1 (May 1983). Because particle size is not known, emissions of the three types of filterable particulate matter are assumed to be equal.

Deck Manufacturing, spray painting with aerosol cans (EP-22) is used to color-code decking bundles. Emissions of VOCs, volatile HAP, PM, PM_{10}, and $PM_{2.5}$ result from the spraying process. Because Vulcraft uses a large number of spray paints, the method of using the spray paint with the highest individual HAP concentration would result in overestimation of potential HAP emissions. Vulcraft proposed, and the DWEE agreed, with the following methodology and assumptions for calculating potential emissions from spray painting in aerosol cans. Overspray is assumed to be 75 percent where the transfer efficiency estimate (25 percent) is based on information found for air atomized spray in AP-42, Section 4.2.2.12, Metal Furniture Surface Coating, Table 4.2.2.12-1 (May 1983). When MSDS are available for individual spray paints, emissions of VOC, volatile HAP, and filterable PM/PM_{10}/$PM_{2.5}$ are calculated using the weight fraction or concentration of each individual HAP as well as VOCs and solids in each spray paint. If a range is given, the maximum is used in the emissions calculations. If the MSDS or chemical data sheet provides density information for a group of spray paints, then emissions of VOC, HAP, and filterable PM/PM_{10}/$PM_{2.5}$ are calculated from the lower of the maximum value from the range or 1.1 times the midpoint of the range. Emissions are calculated using the maximum value if a range is given for the weight fraction or concentration of each individual HAP, VOCs, and solids. A maximum spray paint application rate based on engineering judgment, which is 0.05 cans per ton of deck, is used. A spray paint can volume of twelve (12) fluid ounces is assumed. All VOCs and volatile HAP in the spray paints are assumed to be emitted during spray painting. Because particle size is not known, emissions of the three types of filterable particulate matter are assumed to be equal.

Deck Manufacturing, fuel combustion (EP-7A, EP-7C, EP-7D) potential emissions were calculated by multiplying the maximum firing capacity (in cubic feet of natural gas) by the maximum potential number of hours of operation in one year (8,760 hours). Emission factors from AP-42, Chapter 1, Section 1.4 Natural Gas Combustion (July 1998) were used to calculate most emissions. Note that propane is no longer used as a backup fuel at Vulcraft (propane tanks were removed in 2009) so pollutant emissions are from only natural gas combustion.

The RICE that powers the two emergency generators (EP-40, EP-41) combust only natural gas. Potential emissions for each RICE are calculated using emission factors from AP-42, Chapter 3, Section 3.2 Natural Gas-fired Reciprocating Engines (July 2000). Each RICE is assumed to operate for the maximum hours in one year, 8,760 hours for potential emissions calculations because 40 CFR 63 Subpart ZZZZ allows for unlimited operation during emergencies.

The two gasoline storage tanks (EP-T13 and EP-T15) have low potential emissions of VOCs and HAP. Emissions are calculated with USEPA's TANKS 4.09d.

Potential emissions from the haul roads (EP-15) consist of fugitive filterable PM, PM_{10}, and $PM_{2.5}$. Potential emissions due to truck traffic on paved and unpaved haul roads are calculated based on AP-42, Section 13.2.1 Paved Roads (January 2011) and Section 13.2.2 Unpaved Roads (November 2006). Assumptions used in the calculations are as follows. An average default silt content (6 percent) from AP-

42, Section 13.2.2, Table 13.2.2-1 for Iron and Steel Production (November 2006) and results of seven silt samples from Vulcraft/Cold Finish haul roads were averaged to obtain a silt content value. The silt loading value (9.7 gram/square meter) is from AP-42, Section 3.2.1, Table 3.2.1-4 for Iron and Steel Production (November 2006). A control efficiency of 50 percent is assumed to be used for best management practices (watering, sweeping, or using chemical suppressants).

Potential emissions of greenhouse gases (GHGs) from the combustion equipment at Vulcraft are included in this fact sheet. Emissions of CO_2, N_2O, and CH_4 are calculated with natural gas emission factors from 40 CFR 98 Subpart C, Tables C-1 and C-2. Carbon dioxide equivalents (CO_2e) are calculated by adjusting CO_2, N_2O, and CH_4 emissions with the respective global warming potentials (GWP). The GWPs are from 40 CFR 98 Subpart A, Table A-1, published on January 1, 2025, in the Federal Register [Title 129, Chapter 1, Section 002.47*; Title 129, Chapter 1, Section 002.49].

Joists are produced in four open bays in the Joist Manufacturing Building. Only one joist manufacturing line can run at a time in a bay. Joists are fabricated according to customer specifications and can vary in type and size. Components of the joists are produced by machining operations such as shearing, bending, crimping, punching, drilling, coping, saw cutting, and thermal cutting. Assembled joists are conveyed to a welding pit where the components are welded together using gas metal arc welding (GMAW). After welding, each joist is inspected and after passing inspection, the joists are conveyed to the painting operation. Joists are lowered into a dip tank (each bay has a dip tank and there is one portable dip tank used for customer specialty orders), raised, and set on racks to allow any excess paint to drain back into the dip tank. Occasionally the center section of an oversized joist is spray coated using portable handheld spray guns because the joist exceeds the dip tank dimensions. Paints in aerosol cans are used to touch up damaged coating finishes as well as to mark joists for color coding or inventory purposes. The painted joists are initially air dried by the dip tanks and banded together. Further drying takes place in an open area in the Joist Manufacturing Building or an outside storage area.

Bridging manufacturing takes place in the Bridging Plant. Bridging is made from steel angles (angle iron) that are cut to size with either the off-line punch or shear machine. Next the bridging materials are sent to either a vacuum coater or a dip tank for coating with primer. In May 2007 Vulcraft installed a replacement dip tank that was longer and able to handle longer pieces of bridging. Painted steel passes through preheaters and a drying tunnel. A mechanical printer marks or codes the bridging as it exits the drying tunnel. Hand-held aerosol cans are also used to color code painted steel. The painted pieces are kept in an outside storage area prior to shipping.

Other products are manufactured in the Bridging Plant, such as joist substitutes, outriggers, and joist headers. A shear is used to cut channel steel to make joist substitutes; another shear is used to cut bridging clips. These are fabricated by welding steel angles and/or pieces of channel steel together in different configurations. Only GMAW is used in the assembly of these other products.

Steel floor and roof decks are fabricated in the Deck Manufacturing Building from galvanized or cold rolled steel coil. Several different types of cellular decks can be made on the manufacturing line. These cold-formed steel products have various configurations that are based on whether the decking will support finished roofing materials or serve as a permanent form and/or positive reinforcement of concrete floor slabs. All cellular deck is composed of two pieces of galvanized deck, a flat piece (pan) and a corrugated piece (hat). Pan pieces are either roll formed on the automatic deck line or manufactured on an off-line roll former. Various dies or tooling are used to make different types of corrugated cross sections of deck. The deck material is cut into appropriate lengths by a flying shear. Rust preventative and surface oils may be left on the steel that goes into the decking, the steel may be cleaned, or the steel may be cleaned and painted. Coated metal is dried in an electric infrared oven. The completed deck materials are fed into an automatic stacker, and bundles are banded. Hand-held aerosol paint cans may be used to color code or label deck materials after banding. Bundles are moved by a track and crane to finished goods storage or loaded onto a truck for shipment.

Deck accessories and certain joist components are also fabricated in the Deck Manufacturing Building using mechanical operations such as uncoiling, straightening, shearing, slitting, and bending. Types of deck accessories include ridge and valley plates, flat plates, filler sheets, cant strips, pour stops, girder fillers, and different types of closure. Some base plates that are to be used as joist components are sheared and bent on the deck accessories line.

Miscellaneous metal products, including but not limited to, machine guards, stairs and railings, building canopies and other metal fabrication products are assembled and manufactured in the existing joist, deck and bridging plants as well as Vulcraft's specialty project fabrication shop, formerly known as the old maintenance shop. Miscellaneous metal product fabrication activities only constitute a minor fraction of Vulcraft's overall joist and deck production. Manufacture of these miscellaneous metal products uses the relatively same fabrication processes and equipment currently utilized for Vulcraft's joist and deck product, including cutting, shearing, drilling, grinding, torching and welding. Miscellaneous products are either dipped, hand painted or sprayed with paint using hand-held, air-atomized spray paint guns.

Vulcraft has two emergency generators powered by natural gas fired reciprocating internal combustion engines (RICE). EU-40 powers an emergency lighting generator, while EU-41 provides backup power for Vulcraft's computers.

Two small gasoline tanks at the truck shop hold fuel for vehicles used on the Vulcraft and Cold Finish properties. Diesel fuel for company fleet vehicles that operate on public roads is stored in two 15,000-gallon capacity storage tanks, EU-T11 and EU-T12. A third diesel fuel storage tank, EU-14A, has a storage capacity of 1,000 gallons and fuels vehicles used on the Vulcraft and Cold Finish properties. The diesel tanks are included in the permit in the insignificant activities list because the aggregate annual fuel throughput (all fuels) for Vulcraft and Cold Finish is less than 1,000,000 gallons.

The truck shop also has three storage tanks that are not included in the permit. EU-T16 stores used oil outdoors (1,000-gallon capacity), EU-T17 stores used oil indoors (275-gallon capacity), and EU-T18 stores new oil indoors (1,500-gallon capacity).

In addition to the diesel fuel tanks, insignificant activities at Vulcraft include all of the space heaters located in the different manufacturing buildings and the truck shop. Two small cooling towers associated with the Joist Manufacturing Building are also insignificant activities because each has a flow rate less than the significant activity threshold of 2,000 gallons per minute.

Several RICE at Vulcraft meet the definition of a nonroad engine in 40 CFR 89.2 and in the Federal Clean Air Act, Section 216(10). That is, these small engines are not assigned to a single location at Vulcraft, are moved around the source or areas of the source as needed, and do not stay in a single location for more than twelve (12) months. The Nebraska Department of Water, Environment, and Energy (DWEE) does not regulate non-road engines. The non-road engines at Vulcraft are as follows.

RICE ID Number	Fuel Type	Maximum Capacity	Description
T36 (SM)	Gasoline	16 hp	Starting motor (jump starting)
VD07	Gasoline	5 hp	Honda paint sprayer
VD08	Gasoline	5 hp	Coleman Power Washer
VD11	Gasoline	20 hp	Miller Trailblazer Welder #1
VD	Gasoline	20 hp	Miller Trailblazer Welder #2
VD09	Gasoline	14 hp	Clipper Concrete Saw
VD10	Gasoline	3.5 kW	Wen Generator
VD14	Gasoline	5 hp	Pacer Water Pump-Briggs
VD04	Gasoline	4.8 hp	Pacer Water Pump-Honda 160
VD02	Gasoline	3.5 hp	Honda 120 Water Pump
VD06	Gasoline	3.5 hp	Honda 120 Water Pump
VD05	Gasoline	3.5 hp	Honda 120 Water Pump
VD15	Gasoline	4.8 hp	Honda GX 160 Water Pump
VD01	Gasoline	5.5 hp	Red Lion Water Pump
VD04	Gasoline	5.5 hp	Red Lion Water Pump

RICE ID Number	Fuel Type	Maximum Capacity	Description
D3	Gasoline	20 hp	Miller Trailblazer Welder

Vulcraft also has several pieces of mobile equipment with gasoline or diesel fuel-fired RICE that are used onsite, such as shag trucks, yard pickups, road sweeper(s), water truck(s), and forklifts; and in addition, a portable kerosene space heater. The DWEE does not regulate mobile sources, so this equipment is not included in the operating permit.

Argon, carbon dioxide, and oxygen are stored on-site in pressurized tanks for use in welding operations in Joist Manufacturing. Emissions from these tanks are not expected. Also, the DWEE does not regulate pressurized tanks, so the tanks are not included in the operating permit.

Facility maintenance activities are exempt from inclusion in the operating permit. The deck line infrared ovens for drying paint are not included in the operating permit because they are electric and all VOC and/or HAP emissions are assumed to be emitted during the painting process.

Vulcraft utilizes 4 parts washers that vary in size from 14 gallons to 86 gallons in capacity as shown in the table below. The non-halogenated solvent in the parts washers is changed out as needed. The spent solvent is collected and disposed off-site. Emissions from the parts washers are expected to be negligible.

Type of Solvent	Location	Capacity (Gal)	Length	Width	Depth
140 Solvent	Joist Maintenance West	86	41.5”	30”	16”
140 Solvent	Deck	38	42”	21”	10”
Dip Paint Reducer	Bridging	14	28.5”	19”	6”
Dip Paint Reducer	Joist Plant Bay 3	55	55 Gallon Drum		

Vulcraft has various process-related emission sources that have been identified in the joist and miscellaneous metal product manufacturing process as small emission sources. These each potentially emit less than 0.5 tpy of HAPs and less than 0.5 tpy of VOCs, PM10, or other pollutants at each of these locations. These activities include:

Joist and Miscellaneous Metal Manufacturing

- The use of a torch coolant during plasma cutting
- The use of natural gas as a fuel in oxymethane torch cutting
- The use of cutting fluids/lubricants in hand-held aerosol cans during hole drilling operations

Bridging

- The use of solvent-based ink and solvent-based cleaner in the mechanical printer on the south conveyor of the vacuum coater line
- The use of natural gas as a fuel in oxymethane torch cutting
- Gas metal arc welding

Deck

- Plasma and oxymethane torch cutting
- The use of a torch coolant during plasma cutting
- The use of natural gas as a fuel in oxymethane torch cutting

- The use of a water-based cleaner to remove rust preventative and oils from a small area of decking product that has not been previously cleaned to apply a small adhesive label
- Use of cleaning chemicals in washing and phosphatizing tanks that contain small quantities of VOC and HAP

Since the last operating permit was issued, Vulcraft stopped using propane as backup fuel for combustion equipment at the source. The propane tanks were emptied and removed in September and October 2009. Vulcraft also removed the propane vaporizer. On October 18, 2012, Vulcraft removed two of the three process tanks associated with the vacuum flow coater (EU-5). The two tanks had not been used for several years because Vulcraft was using a single paint color in the vacuum flow coater. Additionally, the vacuum flow coater was removed and replaced with an airless spray box (EU-05) in January 2024. According to email communications with the source, the airless spray box (EU-05) was manufactured in house, with fabrication beginning in 2023 and completed in 2024. The airless spray box (EU-05) began operations in January 2024.

SUPPORT DATA
WORKSHEETS
Title V Renewal Application - April 2026

Fact Sheet Attachment

Worksheet List

Summary of Worksheets and Changes Made in Support of OP21-R1-026 permit renewal

Worksheet Name	Figure #	Changes Made
Hourly PTE Summary	Figure A1	Revised to include removal of Vacuum Coater EU-5 and installation of Spray Box (CP22-044) and Off Permit Change (10/16/2025) to add new dip tank (EU-4) and additional welding activities (EU-2)
Annual PTE Summary	Figure A3	Revised to include removal of Vacuum Coater EU-5 and installation of Spray Box (CP22-044) and Off Permit Change (10/16/2025) to add new dip tank (EU-4) and additional welding activities (EU-2)
Annual PTE HAP Summary	Figure A5	Revised to include removal of Vacuum Coater EU-5 and installation of Spray Box (CP22-044) and Off Permit Change (10/16/2025) to add new dip tank (EU-4) and additional welding activities (EU-2)
Joist Rates	Figure A7	Revised to include Off Permit Change (10/16/2025) to add new dip tank (EU-4)
Joist Painting Rates	Figure A8	Revised to include Off Permit Change (10/16/2025) to add new dip tank (EU-4)
Joist Paints	Figure A9	Revised to include Off Permit Change (10/16/2025) to add new dip tank (EU-4)
Joist EU-3 EU-25 & EU-20 PTE	Figure A12	Updated with 2025 emissions.
Bridging Rates	Figure A13	Updated with 2025 emissions.
Bridging Painting Rates	Figure A14	Updated with 2025 emissions.
Bridging Paints	Figure A15	Updated with 2025 emissions.
Bridging Vacuum Coater PM	Figure A16	Updated with 2025 emissions.
Bridging EU-4 -5 & -21 PTE	Figure A18	Updated with 2025 emissions.
Deck Rates	Figure A19	Updated with 2025 emissions.
Deck Painting Rates	Figure A20	Updated with 2025 emissions.
Deck Paints	Figure A21	Updated with 2025 emissions.
Deck EU-8 EU-22 & EU-24 PTE	Figure A23	Updated with 2025 emissions.
Bridging Heaters Fuel Consume	Figure A24	Updated with 2020-2025 fuel usage.
Deck Tank Heaters Fuel Consume	Figure A29	Updated with 2020-2025 fuel usage.
Deck Tank Heaters EU-7A	Figure A30	Updated with 2020-2025 fuel usage.
Deck Tank Heaters HAP EU-7A	Figure A31	Updated with 2020-2025 fuel usage.
Deck Tank Heaters EU-7CD	Figure A32	Updated with 2020-2025 fuel usage.
Deck Tank Heaters HAP EU-7CD	Figure A33	Updated with 2020-2025 fuel usage.
Propane Vaporizer EU-37	Figure A34	The propane tanks were emptied and removed from the site in the fall of 2009 - no longer an emission point
Propane Vaporizer HAP EU-37	Figure A35	
Joist Cut Out PM EU-1	Figure A36	no changes
Joist Cut Out HAP EU-1	Figure A37	no changes
PlasmaTablePM	Figure A36-1B	no changes
PlasmaTable HAPs	Figure A37-1B	no changes
Beam CoperPM	Figure A36-1C	no changes
Beam Coper HAP	Figure A37-1C	no changes
Joist Welding EU-2	Figure A38	Revised to include Off Permit Change (10/16/2025) to add additional welding activities (EU-2)
Haul Road Distances	Figure A39	no changes - haul distances remain the same
Haul Road VMT	Figure A40	no changes
Haul Road PM	Figure A41	no changes
Cooling Towers	Figure A42	no changes - cooling towers have not changed
Space Heaters	Figure A43	Updated list.
Other Heaters	Figure A44	Updated list.
Nonroad Engines	Figure A45	no changes
Storage Tanks	Figure A46	no changes
Process Weight Rate		no changes

Hourly PTE Summary

Supplement to Section 3.1a: Potential Pollutant Emissions Summary
Figure A1: Potential Pollutant Emissions Summary Hourly Rate

VOC emissions are currently limited by permit to 240 tons per rolling 12-month period.
Potential emissions represented below are based on potential production and paint application rates except for EP-24.
The emissions for EP-24 are based on the permitted edge coating volume limit of 24,640 gallons paint per year containing 7 pounds per gallon solids or less, per AQ Construction Permit 09-008, condition XIII (L) (1) & (2).
NOTE: No Deck Line edge coating (EP-24) performed during 2021-2025

Emission Point	Potential Emissions						
	PM (lbs/hour)	PM_{10} (lbs/hour)	$PM_{2.5}$ (lbs/hour)	NOx (lbs/hour)	SOx (lbs/hour)	CO (lbs/hour)	VOC (lbs/hour)
EP-1	2.848	2.848	1.771	1.345	NA	NA	NA
EP-2	2.223	2.223	2.223	NA	NA	NA	NA
EP-3	NA	NA	NA	NA	NA	NA	36.092
EP-20	0.086	0.086	0.086	NA	NA	NA	0.348
EP-25	7.404	7.404	7.404	NA	NA	NA	0.700
EP-4	NA	NA	NA	NA	NA	NA	0.094
EP-5	0.000	0.000	0.000	NA	NA	NA	1.292
EP-21	0.000	0.000	0.000	NA	NA	NA	0.000
EP-7A *	0.062	0.062	0.062	0.810	0.005	0.680	0.045
EP-7C *	0.027	0.027	0.027	0.353	0.002	0.296	0.019
EP-7D *	0.027	0.027	0.027	0.353	0.002	0.296	0.019
EP-8	NA	NA	NA	NA	NA	NA	60.833
EP-22	0.008	0.008	0.008	NA	NA	NA	0.033
EP-24	10.175	10.175	10.175	NA	NA	NA	0.810
EP-T9 **	NA	NA	NA	NA	NA	NA	0.000
EP-T10 **	NA	NA	NA	NA	NA	NA	0.000
EP-T35 **	NA	NA	NA	NA	NA	NA	0.000
EP-T37 **	NA	NA	NA	NA	NA	NA	0.000
EP-15	16.468	3.301	0.802	NA	NA	NA	NA
EP-37 *							
EP-T13	NA	NA	NA	NA	NA	NA	0.066
EP-T15	NA	NA	NA	NA	NA	NA	0.072
Total	**39.327**	**26.160**	**22.584**	**2.861**	**0.009**	**1.273**	**100.424**

* Used fuel with higher emissions to estimate potential emissions.
** Emissions accounted for at EP-8.

Fact Sheet Attachment
Annual PTE Summary

Supplement to Section 3.2a: Potential Pollutant Emissions Summary
Figure A3: Potential Pollutant Emissions Summary Annual Rate

VOC emissions are currently limited by permit to 240 tons per rolling 12-month period.
Potential emissions are based on potential production and paint application rates except for EP-24 or where they would otherwise exceed the facility-wide VOC limit.
The emissions for EP-24 are based on the permitted edge coating volume limit of 24,640 gallons paint per year containing 7 pounds per gallon solids or less, per AQ Construction Permit 09-008, condition XIII (L) (1) & (2).
NOTE: No Deck Line edge coating performed during 2021-2025

	Potential Emissions											
Emission Point	**PM (tons/year)**	**PM_{10} (tons/year)**	**$PM_{2.5}$ (tons/year)**	**NOx (tons/year)**	**SOx (tons/year)**	**CO (tons/year)**	**VOC*** (tons/year)**	**CO_2 (tons/year)**	**N_2O (tons/year)**	**CH_4 (tons/year)**	**GHG (tons/year)**	**CO_2e **** (tons/year)**
EP-1	12.475	12.475	7.756	5.889	NA	NA	NA					
EP-2	9.737	9.737	9.737	NA	NA	NA	NA					
EP-3	NA	NA	NA	NA	NA	NA	158.083					
EP-20	0.375	0.375	0.375	NA	NA	NA	1.525					
EP-25	32.428	32.428	32.428	NA	NA	NA	3.066					
EP-4	NA	NA	NA	NA	NA	NA	0.413					
EP-5	0.880	0.880	0.880	NA	NA	NA	5.657					
EP-21	0.000	0.000	0.000	NA	NA	NA	0.000					
EP-7A	0.270	0.270	0.270	3.548	0.021	2.980	0.195	4257.360	0.078	0.082	4257.520	4,280.326
EP-7C	0.117	0.117	0.117	1.546	0.009	1.299	0.085	1855.059	0.034	0.036	1855.129	1,865.077
EP-7D	0.117	0.117	0.117	1.546	0.009	1.299	0.085	1855.059	0.034	0.036	1855.129	1,865.077
EP-8	NA	NA	NA	NA	NA	NA	240.000					
EP-22	0.036	0.036	0.036	NA	NA	NA	0.146					
EP-24	44.565	44.565	44.565	NA	NA	NA	3.547					
EP-T9 **	NA	NA	NA	NA	NA	NA	0					
EP-T10 **	NA	NA	NA	NA	NA	NA	0					
EP-T35 **	NA	NA	NA	NA	NA	NA	0					
EP-T37 **	NA	NA	NA	NA	NA	NA	0					
EP-15	67.495	13.523	3.294	NA	NA	NA	NA					
EP-37 *												
EP-T13	NA	NA	NA	NA	NA	NA	0.291					
EP-T15	NA	NA	NA	NA	NA	NA	0.317					
Total	**168.496**	**114.525**	**99.576**	**12.529**	**0.040**	**5.577**	**240.000**	**7,967.48**	**0.15**	**0.15**	**7967.778**	**8,010.48**

* Bridging Line Heaters EP-6A and 6B are no longer used with Spray Box coating and were removed when the Vacuum Coater was replaced with an Airless Spray Box.
** Emissions accounted for at EP-8.
***VOC emissions from the combined use of paints and other VOC containing substances shall not exceed 240 tons per any period of twelve (12) consecutive fiscal months." Facility-wide VOC emissions have been adjusted to reflect this limit.
****Updated to reflect most current GWP conversion factors from 40 CFR Part 98, Subpart A, Table A-1 (January 1, 2025).

Fact Sheet Attachment
Annual PTE HAP Summary

Supplement to Section 3.3a: Potential Hazardous Air Pollutant (HAP) Emissions Summary
Figure A5: Potential HAP Emissions Summary Annual Rate (tons/year)

HAP emissions are currently limited by permit to 9.2 tons of combined HAPs, 3.6 tons of xylene, 5.0 tons of HAP glycol ether (other than EGBE) and 2.4 tons of any other individual HAP per rolling 12-month period.
Potential emissions represented below are based on potential production and paint application rates.

Hazardous Air Pollutants	Emission Point ID#										
	EP-1	EP-2	EP-3	EP-20	EP-25	EP-4	EP-5	EP-21	EP-7A	EP-7C	EP-7D
	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year
HAPs from Thermal Cutting, Welding and Combustion											
Chromium	0.006	0.002	NA	NA	NA	NA	NA	NA	4.97E-05	2.16E-05	2.16E-05
Cobalt	0.001	0.002	NA	NA	NA	NA	NA	NA	2.98E-06	1.30E-06	1.30E-06
Copper	0.057	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	NA	NA	NA	NA	NA	NA	NA	NA	1.77E-05	7.73E-06	7.73E-06
Manganese	0.501	0.595	NA	NA	NA	NA	NA	NA	1.35E-05	5.87E-06	5.87E-06
Molybdenum	0.000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.002	0.002	NA	NA	NA	NA	NA	NA	7.45E-05	3.25E-05	3.25E-05
n-Hexane	NA	NA	NA	NA	NA	NA	NA	NA	6.39E-02	2.78E-02	2.78E-02
Toluene [1]	NA	NA	NA	NA	NA	NA	NA	NA	1.21E-04	5.26E-05	5.26E-05
Other Combustion HAPs	NA	NA	NA	NA	NA	NA	NA	NA	2.86E-03	1.25E-03	1.25E-03
HAPs from Painting & Gasoline											
Benzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium Compounds	NA	NA	NA	NA	NA	NA	0.000	NA	NA	NA	NA
Cumene	NA	NA	0.000	0.000	0.000	0.000	0.000	NA	NA	NA	NA
Dibutylphthalate	NA	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA
Ethylbenzene	NA	NA	0.00	0.035	0.000	NA	NA	NA	NA	NA	NA
Glycol Ethers [2]	NA	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA
Toluene [1]	NA	NA	0.00	0.000	0.000	NA	NA	NA	NA	NA	NA
Vinyl Acetate	NA	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA
Xylene	NA	NA	2.804	0.127	0.056	0.000	0.000	0.000	NA	NA	NA
TOTAL HAPs (tons/year)	**0.567**	**0.601**	**2.804**	**0.162**	**0.056**	**0.000**	**0.000**	**0.000**	**6.70E-02**	**2.92E-02**	**2.92E-02**

Hazardous Air Pollutants	Emission Point ID#											
	EP-8	EP-22	EP-24	EP-T9	EP-T10	EP-T35	EP-T37	EP-15	EP-37	EP-T13	EP-T15	Total
	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year
HAPs from Thermal Cutting, Welding and Combustion												
Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.008
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.003
Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.096
Molybdenum	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.004
n-Hexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.120
Toluene [1]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000
Other Combustion HAPs	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.005
HAPs from Painting & Gasoline												
Benzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.24E-05	2.44E-05	0.000
Chromium Compounds	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000
Cumene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000
Dibutylphthalate	NA	NA	0.734	NA	NA	NA	NA	NA	NA	NA	NA	0.734
Ethylbenzene	0.000	0.003	0.000	NA	NA	NA	NA	NA	NA	1.16E-06	1.27E-06	0.039
Glycol Ethers [2]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000
Toluene [1]	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.92E-05	2.09E-05	0.000
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000
Xylene	0.000	0.012	0.000	NA	NA	NA	NA	NA	NA	NA	NA	2.999
TOTAL HAPs	**0.000**	**0.016**	**0.734**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**4.28E-05**	**4.65E-05**	**5.008**

1. Toluene generated as a combustion by-product should be added to toluene emissions from spray paints for the total amount of toluene emissions.
2. Not ethylene glycol monobutyl ether (EGBE). Emissions from the storage tanks (EP-T9, EP-T10, EP-T35 and EP-T37) are accounted for at EP-8.

<u>**Fact Sheet Attachment**</u>

Joist Rates

Supplement to Section 5.6.1 Surface Coating Facility Information for Joist Painting Processes

Figure A7: Joist Production Rates, Welding Wire Use Rates and Paint Application Rates

	2021	2022	2023	2024	2025	Average	PTE	
Annual Joist Production (tons/year)	81,849.00	65,186.00	42,679.00	41,105.00	57,556.00	57,675.00	**222,733**	tons/year
Annual Joist Production Line Hours (5 Lines)	14,108.59	12,223.01	8,795.74	9,352.44	11,409.95	11,177.95	**22,356**	hours/year
Operating Time (hours/year) [1]	5,643.44	4,889.20	3,518.30	3,740.98	4,563.98	4,471.18	**8,760**	hours/year
Hourly Joist Production (tons/hour)	14.50	13.33	12.13	10.99	12.61	12.71	**25.43**	tons/hour
Joist Production (lbs/hour)	29,007	26,665	24,261	21,976	25,222	25,426	**50,852**	lbs/hour
Annual Structural Production (tons/year)	2,278.10	4,010.67	2,055.16	2,674.21	3,680.19	2,939.67	**11,331**	tons/year
Welding Wire Usage (lbs/year) [2]	876,579	623,000	450,000	484,212	637,507	614,260	**3,563,726**	lbs/year
Welding Wire Use Rate (lbs/ton)	6.60	5.51	5.53	6.14	6.22	6.00	**16.00**	lbs/ton
Joist Not Painted (tons/year)	1,227.74	977.79	640.19	616.58	863.34	865.13	**0**	tons/year
Joist Painted (tons/year)	80,621.27	64,208.21	42,038.82	40,488.43	56,692.66	56,809.88	**222,733**	tons/year
Structural Not Painted (tons/year)	227.81	401.00	205.50	267.40	368.00	293.94	**0**	tons/year
Structural Painted (tons/year)	2,050.29	3,609.67	1,849.66	2,406.81	3,312.19	2,645.72	**11,331**	tons/year
PAINTING USING DIP TANKS								
Joist Painted with Hybrid Water-Based Paint (tons/year) [3]	80,621.27	64,208.21	42,038.82	40,488.43	56,692.66	56,809.88	**222,733**	tons/year
Bridging Painted with Hybrid Water-Based Paint (tons/year) [3]	190.00	150.00	159.00	176.00	140.00	163.00	**262**	tons/year
Structural Painted with Hybrid Water-Based Paint (tons/year) 3	0.00	0.00	0.00	0.00	0.00	0.00	**0**	tons/year
Hybrid Water-Based Paint Usage in Dip Tanks (gal/year)	122,817.00	98,114.00	55,178.00	63,885.00	72,339.00	82,466.60	**641,094**	gals/year
Hybrid Water-Based Paint Application Rate in Dip Tanks (gal/ton)	1.52	1.52	1.31	1.57	1.27	1.44	**2.88**	gal/year
Reducer Usage in Dip Tanks (gals/year) [4]	860.00	1,019.00	897.00	770.00	685.00	846.20	**7,036**	gals/year
Reducer Use Rate in Dip Tanks (gal/ton)	0.011	0.016	0.021	0.019	0.012	0.016	**0.03**	gal/ton
Additive Usage in Dip Tanks (gals/year) [4]	0.00	0	0	0	0	0.000	**0**	gal/year
Additive Use Rate in Dip Tanks (gal/ton)	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	**0.000**	gal/ton
PAINTING USING SPRAYER								
Longspan and Girders Produced in Bays 3 and 4 (tons/year)	61,777.00	45,638.00	27,303.00	24,796.00	23,008.00	36,504.40	**222,733**	tons/year
Amount of Longspan and Girders Painted with Portable Spray Gun (0.5% of Total) (tons/year)	308.89	228.19	136.52	123.98	115.04	182.52	**1,114**	tons/year
Structural Painted with Hand-Held Portable Spray Gun (tons/year)	2,050.29	3,609.67	1,849.66	2,406.81	3,312.19	2,645.72	**11,331**	tons/year
Hand-Held Portable Spray Gun Paint Usage (gals/year)	2,125	1,745	1,596	1,650	2,745	1,972.20	**13,484**	gals/year
Hand-Held Portable Spray Gun Paint Use Rate (gal/ton) [4]	0.901	0.455	0.804	0.652	0.801	0.72	**1.08**	gals/ton
Reducer Usage in Portable Spray Gun (gals/year)	3.00	0.64	0.64	9.54	24.67	7.70	**37**	gals/year
Reducer Use Rate in Portable Spray Gun (gal/ton) [4]	0.001	0.000	0.000	0.002	0.004	0.001	**0.003**	gals/ton
PAINTING USING AEROSOL CANS								
Aerosol Can Spray Paint Usage (gals/year) [5]	138.4	95.6	100.5	20.3	52.3	81.41	**616**	gals/year
Aerosol Can Spray Paint Use Rate (gal/ton)	0.0017	0.0015	0.0024	0.0005	0.0009	0.0014	**0.003**	gals/ton

1. Operational Time is the number of hours "lights are on" in the Joist Plant, and was computed by multipling the average of the Total Line hours by the two shifts.
2. Welding Wire Use is for both Joist Production and Structural Production.
3. Dip Paint is not tracked by individual tanks, so Bridging and Structural dip painted tonnage is added to the Joist dip painted tonnage.
4. Hand-Held Portable Spray Gun Use Rate and Reducer Use Rate need to include the Structural tonnage.
5. Vulcraft Total Spray Paint purchases are tracked. The spray paint purchases allocated to each process (Joist, Bridging, and Deck) are estimated.

lbs = pounds, gal = gallon

Fact Sheet Attachment

Joist Painting Rates

Supplement to Section 5.6.1 Surface Coating Facility Information for Joist Painting Processes

Figure A8: Joist Production and Paint Application Rates (EU-3, EU-20 and EU-25)

POTENTIAL PRODUCTION

Joist, Structural, and Bridging

	2021	2022	2023	2024	2025	Average		
Joist Production Line	14,108.59	12,223.01	8,795.74	9,352.44	11,409.95	11,177.95	(hours)	
Annual Joist Production	81,849.00	65,186.00	42,679.00	41,105.00	57,556.00	57,675.00	(tons)	
Annual Joist Production	14.50	13.33	12.13	10.99	12.61	12.71	25.43 tons/hour x	8,760 hours/year =
Potential Joist Production	127,049.77	116,793.93	106,263.95	96,252.90	110,471.68	111,366.45	222,732.90 tons/year	
Bridging Dip Tank Paint Production Line	70.00	70.67	70.67	70.67	70.67	70.53	(hours)	
Annual Bridging Production Dip Tank Painted	190.00	150.00	159.00	176.00	140.00	163.00	(tons)	
Annual Bridging Dip Tank Painted Application rate	0.01	0.01	0.02	0.02	0.01	0.01	0.03 tons/hour x	8,760 hours/year =
Potential Bridging Production Dip Tank Painted	117.97	107.50	158.35	164.85	107.49	131.23	262 tons/year	
Structural Production Line	2,500.00	2,500.00	2,500.00	2,500.00	2,500.00	2,500.00	(hours)	
Annual Structural Production	2,278.10	4,010.67	2,055.16	2,674.21	3,680.19	2,939.67	(tons)	
Annual Structural	0.91	1.60	0.82	1.07	1.47	1.18	1.29 tons/hour x	8,760 hours/year =
Potential Structural Production	7,982.46	14,053.39	7,201.28	9,370.43	12,895.39	10,300.59	11,331 tons/year	

POTENTIAL PAINT USAGE

In Dip Tanks (EU-3)

	2021	2022	2023	2024	2025	Average			
Potential Hybrid Water-Based Paint Dip Tank Paint Application rate	1.520	1.524	1.308	1.571	1.273	1.439	2.878 gal/ton		
The estimate for potential Hybrid Water-Based Dip Tank Paint Usage	205,401.34	199,640.44	148,574.57	166,196.33	157,163.61	175,395.26	2.878 gal/ton x	234,326 tons/year =	674,463 gal/year
Potential Reducer Dip Tank Application rate	0.011	0.016	0.021	0.019	0.012	0.016	0.032 gal/ton		
The estimate for potential Reducer Dip Tank Usage	1,441.67	2,078.29	2,424.43	2,011.86	1,491.91	1,889.63	0.032 gal/ton x	234,326 tons/year =	7,402 gal/year
Potential Additive Dip Tank Appliction rate	0.000	0.000	0.000	0.000	0.000	0.000	0.000 gal/ton		
The estimate for potential Additive Dip Tank Usage	0.00	0.00	0.00	0.00	0.00	0.00	0.000 gal/ton x	234,326 tons/year =	0 gal/year

From Hand-Held Aerosol Spray Paint Cans (EU-20)

Paint in aerosol spray cans may be used for paint touch up or spot marking	2021	2022	2023	2024	2025	Average			
Potential Aerosol Spray Can Paint Application rate	0.0017	0.0015	0.0024	0.0005	0.0009	0.0014	0.0028 gal/ton		
The estimate for potential Aerosol Spray Can Paint Usage	214.79	171.33	250.23	47.42	100.41	156.8358	0.0028 gal/ton x	222,733 tons/year =	616 gal/year

In Hand-Held Portable Spray Gun (EU-25)

The center sections of Longspan Joists and Girders that are too deep	2021	2022	2023	2024	2025	Average			
Potential Longspan Joist and Girder Production	127,049.77	116,793.93	106,263.95	96,252.90	110,471.68	111,366.45	222,732.90 tons/year		
Potential Longspan Joist and Girder painted with Portable Spray Gun (0.5%)	635.25	583.97	531.32	481.26	552.36	556.83	1.0836 gal/ton	1,113.66 tons/year =	1,207 gal/year
Potential Hand-Held Portable Spray Gun Application rate	0.901	0.455	0.804	0.652	0.801	0.722	1.0836 gal/ton		
Potential Structural Production painted with Hand-Held Portable Spray Gun	7,190.11	6,389.80	5,786.62	6,109.24	10,328.41	7,160.84	1.0836 gal/ton x	11,331 tons/year =	12,277 gal/year
Potential paint usage	7,048.60	3,170.84	5,076.81	4,296.82	8,714.82	5,661.58			
Potential reducer Application rate	0.001	0.000	0.000	0.002	0.004	0.001	0.0030 gal/ton		
Potential reducer usage	5.62	0.83	1.17	15.50	44.32	13.49	0.0030 gal/ton x	12,444 tons/year =	37 gal/year

gal. = gallon

Fact Sheet Attachment

Joist Paints

Supplement to Section 5.6.1 Surface Coating Facility Information for Joist Painting Processes

Figure A9: VOC, Volatile HAP and Solids Content of Joist Paints (EU-3, EU-20 and EU-25)

Joist Paints

Product	Specific Gravity	Density	Solids Content		VOC Content	Volatile HAPs							
						Cumene		Ethylbenzene		Toluene		Xylene	
	(unitless)	(lbs/gal)	(% by wt)	(lbs/gal)	(lbs/gal)	(% by wt)	(lbs/gal)	(% by wt)	(lbs/gal)	(% by wt)	(lbs/gal)	(% by wt)	(lbs/gal)
A	B	C = B * 8.34	D	E = C * D	F	M	N = C * M	G	H = C * G	I	J = C * I	K	L = C * K
Joist Hybrid Water-Based Dip Paints													
WP1-D101	1.332	10.970	58.46%	6.41	0.450	0.000%	0.000	0.000%	0.000	0.000%	0.000	0.075%	0.008
Joist Reducers for Hybrid Water-Based Paints													
WR1-C103	0.964	8.040	0.00%	0.00	1.710	0.000%	0.000	0.000%	0.000	0.000%	0.000	0.100%	0.008
Joist Additive for Hybrid Water-Based Paints													
15-D-399	1.025	8.549	75.00%	6.41	0.170	0.000%	0.000	0.000%	0.000	0.000%	0.000	0.000%	0.000

Product	Specific Gravity	Density	Solids Content		VOC Content	Volatile HAPs							
						Cumene		Ethylbenzene		Toluene		Xylene	
	(unitless)	(lbs/gal)	(% by wt.)	(lbs/gal)	(lbs/gal)	(% by wt)	(lbs/gal)	(% by wt)	(lbs/gal)	(% by wt)	(lbs/gal)	(% by wt)	(lbs/gal)
A	B	C = B * 8.34	D	E = C * D	F	M	N = C * M	G	H = C * G	I	J = C * I	K	L = C * K
Joist Hybrid Water-Based Paints - Hand Held Spray Gun													
WP4-D446	1.166	9.724	52.58%	5.11	0.350	0.000%	0.000	0.336%	0.000	0.075%	0.007	0.085%	0.008
216-G-113	1.156	9.641	51.89%	5.00	0.360	0.000%	0.000	0.344%	0.033	0.075%	0.008	0.085%	0.008
220-D300-177	1.241	10.350	52.58%	5.44	0.020	0.000%	0.000	0.000%	0.000	0.000%	0.000	0.000%	0.000

Color of Paint	Specific Gravity	Density	Solids Content		VOC Content	Volatile HAPs							
						Cumene		Ethylbenzene		Toluene		Xylene	
	(unitless)	(lbs/gal)	(% by wt.)	(lbs/gal)	(lbs/gal)	(% by wt)	(lbs/gal)	(% by wt)	(lbs/gal)	(% by wt)	(lbs/gal)	(% by wt)	(lbs/gal)
A	B	C = B * 8.34	D	E = C * D	F	K	L = C * K	G	H = C * G	I	J = C * I	K	L = C * K
Spray Paints													
Spray Gloss Black	0.761	6.35	18.52%	1.18	4.70	0.00%	0.00	1.75%	0.11	0.00%	0.00	6.25%	0.40
Spray Gloss White	0.777	6.48	20.36%	1.32	4.81	0.00%	0.00	0.55%	0.04	0.00%	0.00	6.25%	0.41
Spray Gray Primer	0.809	6.75	21.92%	1.48	4.88	0.00%	0.00	0.55%	0.04	0.00%	0.00	1.75%	0.12
Spray Lawn Green	0.788	6.57	24.70%	1.62	4.27	0.00%	0.00	1.75%	0.12	0.00%	0.00	6.25%	0.41
Spray Java Brown	0.752	6.27	16.81%	1.05	4.40	0.00%	0.00	0.55%	0.03	0.00%	0.00	6.25%	0.39
Spray Orange	0.751	6.26	10.92%	0.68	4.95	0.00%	0.00	0.55%	0.03	0.00%	0.00	6.25%	0.39
Spray Purple	0.757	6.31	19.16%	1.21	4.28	0.00%	0.00	0.55%	0.03	0.00%	0.00	6.25%	0.39
Spray Red	0.763	6.36	19.25%	1.22	4.60	0.00%	0.00	1.75%	0.11	0.00%	0.00	6.25%	0.40
Spray Sky Blue	0.755	6.30	21.19%	1.33	4.20	0.00%	0.00	1.75%	0.11	0.00%	0.00	6.25%	0.39
Spray Yellow	0.781	6.51	21.55%	1.40	4.62	0.00%	0.00	0.55%	0.04	0.00%	0.00	6.25%	0.41
High		6.75	24.70%	1.62	4.95		0.00		0.12		0.00		0.41
Low		6.26	10.92%	0.68	4.20		0.00		0.03		0.00		0.12

Fact Sheet Attachment

Joist EU-3 EU-25 & EU-20 PTE

Supplement to Section 5.6.1 Surface Coating Facility Information for Joist Painting Processes

Figure A12: Potential Emissions from Joist Painting (EU-3, EU-20 and EU-

VOC and HAP emissions are currently limited by permit.

Potential emissions represented below are based on potential production and paint application rates.

SCC Numbers: EU-3 Paint Dip Tanks - 4-02-002-10 Surface Coating Application - General (Paint: Water-Based) and 4-02-025-44 Single Coat Application: Dip
EU-20 Aerosol Can Spray Paint - 4-02-001-10 Surface Coating Application - General (Paint: Solvent-Based)
EU-25 Hand-Held Portable Sprayer - 4-02-002-10 Surface Coating Application - General (Paint: Water-Based)

VOC Emissions

Product A	Potential Usage (gal/year) B	Operating Hours (hours/year) C	Highest VOC Content [1] (lbs/gal) D	VOC Emissions (lbs/year) E = B * D	(lbs/hour) F = E / C	(tons/year) G = E / 2000
Dip Tanks (EU-3)						
Hybrid Water-Based Paint	674,463		0.45	303,508		
Reducer	7,402		1.71	12,658		
Additive	0		0.17	0		
TOTAL		**8,760**		**316,166**	**36.092**	**158.083**
Hand-Held Aerosol Spray Can Paints (EU-20)						
Aerosol Spray Paint	616	8,760	4.95	3,049	0.348	1.525
Hand-Held Portable Spray Gun (EU-25)						
Hybrid Water-Based Paint	13,484		0.45	6,068		
Reducer	37		1.71	63		
TOTAL		**8,760**		**6,131**	**0.700**	**3.066**

1. VOC, HAP and solids contents from Figure A9.

Volatile HAP Emissions

Product A	Potential Usage (gal/year) B	Operating Hours (hours/year) C	Cumene Content [1] (lbs/gal) G	Cumene Emissions (lbs/year) H = B * G	Cumene Emissions (tons/year) I = H / 2000	Ethylbenzene Content [1] (lbs/gal) J	Ethylbenzene Emissions (lbs/year) K = B * J	Ethylbenzene Emissions (tons/year) L = K / 2000	Toluene Content [1] (lbs/gal) M	Toluene Emissions (lbs/year) N = B * M	Toluene Emissions (tons/year) O = N / 2000	Xylene Content [1] (lbs/gal) D	Xylene Emissions (lbs/year) E = B * D	Xylene Emissions (tons/year) F = E / 2000
Dip Tanks (EU-3)														
Hybrid Water-Based Paint	674,463		0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000	0.008	5,549.14	2.775
Reducer	7,402		0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000	0.008	59.51	0.030
Additive	0		0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000
TOTAL		**8,760**			**0.000**			**0.000**			**0.000**			**2.804**
Hand-Held Aerosol Spray Can Paints (EU-20)														
Aerosol Spray Paint	616	8,760	0.00	0.00	0.000	0.115	70.84	0.035	0.00	0.00	0.000	0.41	253	0.127
Hand-Held Portable Spray Gun (EU-25)														
Hybrid Water-Based Paint	13,484		0.000	0.00	0.0000	0.000	0.00	0.000	0.000	0.00	0.000	0.008	110.94	0.0555
Reducer	37		0.000	0.00	0.0000	0.000	0.00	0.000	0.000	0.00	0.000	0.008	0.30	0.0001
TOTAL		**8,760**			**0.0000**			**0.000**			**0.000**			**0.0556**

PM/PM_{10} Emissions

Product A	Potential Usage (gal/year) B	Operating Hours (hours/year) C	Highest Solids Content [1] (lbs/gal) D	Overspray* (%) E	$PM/PM_{10}/PM_{2.5}$ Emissions (lbs/year) F = B * D * E	(lbs/hour) G = F / C	(tons/year) H = F / 2000
Dip Tanks (EU-3)							
Hybrid Water-Based Paint	674,463		Not Sprayed				
Reducer	7,402						
Additive	0						
TOTAL		8,760					
Hand-Held Aerosol Spray Can Paints (EU-20)							
Aerosol Spray Paint	616	8,760	1.62	75%	750	0.086	0.375
Hand-Held Portable Spray Gun (EU-25)							
Hybrid Water-Based Paint	13,484		6.41	75%	64,856		
Reducer	37		0.00	75%	0.0		
TOTAL		**8,760**			**64,856**	**7.404**	**32.428**

* Transfer Efficiency 25% Overspray 75%

AP-42, 4.2.2.12 Metal Furniture Surface Coating, Table 4.2.2.12-1. Coating Method Transfer Efficiencies, Air Atomized Spray (May 1983).

lbs = pounds, gal = gallon

Fact Sheet Attachment

Bridging Rates

Supplement to Section 5.6.1 Surface Coating Facility Information for Bridging Painting Processes

Figure A13: Bridging Production and Paint Application Rates

	2021	2022	2023	2024	2025	Average	PTE
Joist Production (tons/year)	81,849.00	65,186.00	42,679.00	41,105.00	57,556.00	57,675.00	**222,733**
Bridging Production (tons/year)	4,467.00	3,931.00	2,840.00	2,395.00	2,668.00	3,260.20	**12,742**
Bridging vs. Joist (%)	5.46%	6.03%	6.65%	5.83%	4.64%	5.72%	**5.72%**
Operating Time (hours/year)	2,284.11	2,031.09	1,712.33	1,519.25	1,640.50	1,837.46	**8,760**
Bridging Production (tons/hour)	1.96	1.94	1.66	1.58	1.63	1.77	**1.45**
Bridging Production (lbs/hour)	3,911.37	3,870.83	3,317.12	3,152.87	3,252.67	3,548.60	**2,909**
Bridging Tons Not Painted	67.01	58.97	42.60	35.93	40.02	48.90	**0**
Percent of Bridging Production Not Painted	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	**1.50%**
Bridging Tons Painted	4,400.00	3,872.04	2,797.40	2,359.08	2,627.98	3,211.30	**12,742**
Percent of Bridging Production Painted	98.50%	98.50%	98.50%	98.50%	98.50%	98.50%	**98.50%**
PAINTING USING SPRAY BOX							
Painted Bridging Production (tons/year)	4,400.00	3,066.58	3,412.56	3,132.28	3,105.25	3,423.33	**12,130.75**
SPRAY BOX Bridging vs. Total Bridging Painted (%)	95.68%	95.11%	95.34%	94.38%	95.49%	95.20%	**95%**
Operating Time (hours/year)	2,214.11	1,961.09	1,642.33	1,449.25	1,570.50	1,767.46	**8,760**
Painted Bridging Production (tons/hour)	1.99	1.56	2.08	2.16	1.98	1.94	**1.38**
Painted Bridging Production (lbs/hour)	3,975	3,127	4,156	4,323	3,954	3,874	**2,770**
Water-Based Paint Usage in Spray Box (gal/year) 1	2,650	2,436	2,745	2,453	2,387	2,534.20	**13,470**
Water-Based Paint Application Rate in Spray Box (gal/ton)	0.60	0.79	0.80	0.78	0.77	0.74	**1.11**
Defoamer Usage (gal/year) [1]	0	0	0	0	0	0.00	**0**
Defoamer Use Rate (gal/ton)	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
Reducer Usage (gal/year) [1]	0	0	0	0	0	0.00	
Reducer Use Rate (gal/ton)	0.000	0.000	0.000	0.000	0.000	0.000	**0**
PAINTING USING DIP TANK							
Painted Bridging Production (tons/year)	190.00	150.00	159.00	176.00	140.00	163.00	**611.53**
Dip Painted Bridging vs. Total Bridging Painted (%)	4.32%	3.87%	5.68%	7.46%	5.33%	5.33%	**5%**
Operating Time (hours/year) [3]	70.00	70.67	70.67	70.67	70.67	70.53	**8,760**
Painted Bridging Production (tons/hour)	2.71	2.12	2.25	2.49	1.98	2.31	**0.07**
Painted Bridging Production (lbs/hour)	5,428.57	4,245.32	4,500.04	4,981.18	3,962.30	4,623.48	**140**
Hybrid Water-Based Paint Usage in Dip Tank (gal/year) [1]	200	180	150	150	150	166.00	**1,760**
Hybrid Water-Based Paint Application Rate in Dip Tank (gal/ton)	1.05	1.20	0.94	0.85	1.07	1.02	**2.88**
Reducer Usage in Dip Tanks (gal/year) [1]	1.41	2.71	150.00	150.00	75.00	75.82	**19**
Reducer Application Rate in Dip Tanks (gal/ton)	0.01	0.02	0.94	0.85	0.54	0.47	**0.03**
Additive Usage (gal/year) [1]					0		**0**
Additive Use Rate (gal/ton)							**0.000**
PAINTING USING AEROSOL CANS							
Aerosol Can Spray Paint Usage (gal/year) [2]	0.00	0.00	0.00	0.00	0.00	0.00	**0**
Aerosol Can Spray Paint Use Rate (gal/ton)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.000**

1. Usage reflects inventoried and not purchased amounts.
2. Vulcraft total spray paint purchases are tracked. The spray paint purchases allocated to each process (Joist, Bridging, and Deck) are estimated.
3. Operating hours are not tracked but an estimate of 20 minutes per day of operations is used.

lbs = pounds, gal = gallon

Bridging Painting Rates
Supplement to Section 5.6.1 Surface Coating Facility Information for Bridging Painting Processes
Figure A14: Bridging Production and Paint Application Rates (EU-4, EU-5 and EU-21)

The potential amount of bridging produced is dependent upon the potential amount of joist produced.
Bridging is approximately 5 to 7% of the potential weight of the joist.
The potential amount of bridging coated using the spray box is estimated to be 95% of the total bridging produced.
The potential amount of bridging coated using the dip tank is estimated to be 5% of the total bridging produced.

Potential Production Rate - Bridging	222732.90	tons/year joist x	0.06	=	12742	tons/year
Potential Production Rate - Bridging Painted Using Spray Box	12742.28	tons/year bridging x	0.95	=	12131	tons/year
Potential Production Rate - Bridging Painted Using Dip Tank	12742.28	tons/year bridging x	0.05	=	612	tons/year

POTENTIAL PAINT USAGE

In Dip Tanks (EU-4)

Potential hybrid water-based paint application rate	2.88	gal/ton				
The estimate for potential paint usage is	2.88	gal/ton x	612	tons/year =	1,760	gal/year
Potential hybrid water-based paint reducer use rate	0.03	gal/ton				
The estimate for potential reducer usage is	0.03	gal/ton x	612	tons/year =	19	gal/year
Potential additive use rate	0.00	gal/ton				
The estimate for potential additive usage is	0.00	gal/ton x	612	tons/year =	0	gal/year

In Spray Box (EU-5)

Potential water-based paint application rate	1.110	gal/ton				
The estimate for potential paint usage is	1.110	gal/ton x	12131	tons/year =	13,470	gal/year
Potential defoamer use rate	0.000	gal/ton				
The estimate for potential defoamer usage is	0.000	gal/ton x	12131	tons/year =	0	gal/year
Potential reducer use rate	0.000	gal/ton				
The estimate for potential reducer usage is	0.000	gal/ton	12131	tons/year =	0	gal/year

From Hand-Held Aerosol Spray Cans Paint (EU-21)

Paint in aerosol spray cans may be used for paint touch up or spot marking (color coding).

Potential Aerosol Spray Can Paint Application rate (gal./ton)	0.000	gal/ton				
The estimate for potential Aerosol Spray Can Paint Usage is	0.000	gal/ton x	12742	tons/year =	0	gal/year

gal = gallon

Fact Sheet Attachment

Bridging Paints

Supplement to Section 5.6.1 Surface Coating Facility Information for Bridging Painting Process

Figure A15: VOC, Volatile HAP and Solids Content of Bridging Paints (EU-4, EU-5 and EU-21

Bridging Paints

Product A	Specific Gravity (unitless) B	Density (lbs/gal) C = B * 8.34	Solids Content (% by wt) D	Solids Content (lbs/gal) E = C * D	VOC Content (lbs/gal) F	Volatile HAPs: Xylene (% by wt) K	Xylene (lbs/gal) L = C * K	Cumene (% by wt) M	Cumene (lbs/gal) N = C * M	Glycol Ethers (% by wt) O	Glycol Ethers (lbs/gal) P = C * O	Vinyl Acetate (% by wt) Q	Vinyl Acetate (lbs/gal) R = C * Q	Dibutylphthalate (% by wt) S	Dibutylphthalate (lbs/gal) T = C * S
Bridging Hybrid Water-Based Dip Paints															
WP2-D222A	1.22	10.175	58.46%	6.41	0.450	0.000%	0.000	0.000%	0.000	0.000%	0.000	0.000%	0.000	0.000%	0.000
Bridging Reducer for Hybrid Water-Based Dip Paints															
15-C-198B	0.964	8.040	0.00%	0.00	1.710	0.100%	0.008	0.000%	0.000	0.000%	0.000	0.000%	0.000	0.000%	0.000
Bridging Additive for Hybrid Water-Based Dip Paints															
15-D-399	1.025	8.549	75.00%	6.41	0.170	0.000%	0.000	0.000%	0.000	0.000%	0.000	0.000%	0.000	0.000%	0.000

Product A	Specific Gravity (unitless) B	Density (lbs/gal) C = B * 8.34	Solids Content (% by wt) D	Solids Content (lbs/gal) E = C * D	VOC Content (lbs/gal) F	Volatile HAPs: Xylene (% by wt) K	Xylene (lbs/gal) L = C * K	Cumene (% by wt) M	Cumene (lbs/gal) N = C * M	Glycol Ethers (% by wt) O	Glycol Ethers (lbs/gal) P = C * O	Vinyl Acetate (% by wt) Q	Vinyl Acetate (lbs/gal) R = C * Q	Dibutylphthalate (% by wt) S	Dibutylphthalate (lbs/gal) T = C * S
Bridging Water-Based Spray Box Paints															
WP4-D446	1.24	10.342	45.72%	4.73	0.840	0.000%	0.000	0.000%	0.000	0.000%	0.000	0.000%	0.000	0.813%	0.084
~~Bridging Strippable Coating for Vac-U-Coater~~ NO LONGER USED															
05E030	9.61	80.147	NA	NA	0.500	0.000%	0.000	0.000%	0.000	5.000%	4.007	1.000%	0.801	0.000%	0.000
Bridging Reducer for Spray Box Paints															
15-C-243	0.892	7.439	3.50%	0.26	5.500	0.000%	0.000	0.000%	0.000	0.000%	0.000	0.000%	0.000	0.000%	0.000
Bridging Defoamer for Spray Box Paints															
15-C-380	0.953	7.948	12.40%	0.99	0.003	0.000%	0.000	0.000%	0.000	0.000%	0.000	0.000%	0.000	0.000%	0.000
15-C-383	1.11	9.257	52.32%	4.84	0.880	0.000%	0.000	0.000%	0.000	0.000%	0.000	0.000%	0.000	1.268%	0.117

Color of Paint A	Specific Gravity (unitless) B	Density (lbs/gal) C = B * 8.34	Solids Content (% by wt.) D	Solids Content (lbs/gal) E = C * D	VOC (lbs/gal) F	Volatile HAPs: Ethylbenzene (% by wt) G	Ethylbenzene (lbs/gal) H = C * G	Toluene (% by wt) I	Toluene (lbs/gal) J = C * I	Xylene (% by wt) K	Xylene (lbs/gal) L = C * K
Spray Paints											
Spray Gloss Black	0.761	6.35	18.52%	1.18	4.70	1.75%	0.111	0.00%	0.000	6.25%	0.397
Spray Gloss White	0.777	6.48	20.36%	1.32	4.81	0.55%	0.036	0.00%	0.000	6.25%	0.405
Spray Gray Primer	0.809	6.75	21.92%	1.48	4.88	0.55%	0.037	0.00%	0.000	1.75%	0.118
Spray Hunter Green	0.788	6.57	24.70%	1.62	4.27	1.75%	0.115	0.00%	0.000	6.25%	0.411
Spray Java Brown	0.752	6.27	16.81%	1.05	4.40	0.55%	0.034	0.00%	0.000	6.25%	0.392
Spray Orange	0.751	6.26	10.92%	0.68	4.95	0.55%	0.034	0.00%	0.000	6.25%	0.391
Spray Purple	0.757	6.31	19.16%	1.21	4.28	0.55%	0.035	0.00%	0.000	6.25%	0.395
Spray Red	0.763	6.36	19.25%	1.22	4.60	1.75%	0.111	0.00%	0.000	6.25%	0.398
Spray Sky Blue	0.755	6.30	21.19%	1.33	4.20	1.75%	0.110	0.00%	0.000	6.25%	0.394
Spray Yellow	0.781	6.51	21.55%	1.40	4.62	0.55%	0.036	0.00%	0.000	6.25%	0.407
High		6.75	24.70%	1.62	4.95		0.115		0.000		0.411
Low		6.26	10.92%	0.68	4.20		0.034		0.000		0.118

Fact Sheet Attachment

Bridging Spray Box PM

Bridging Spray Box PM Emissions from CP22-044 Minor Permit Revision

ASSUMPTIONS:

Airless Spray Transfer Efficiency	75.00	%		
Spray Box Capture	92.00	%		
Paint Application Rate	1.05	Gal/ton	*NOTE: average paint application rate =	0.74
Solids Content	4.73	lbs/Gal		

Particulate Emissions

					Potential Emission Rates						
	Bridging Production Rates in Spray Box				PM (lbs/year)	$PM_{10}/PM_{2.5}$ (lbs/year)	Cr (lbs/year)	PM (tons/year)	$PM_{10}/PM_{2.5}$ (tons/year)	Dibutylphthalate (tons/year)	Cr [1] (tons/year)
Year	(potential tons/year)	(potential hours/year)	(tons/hour)								
A	B	C	D = B / C					L = I / 2000	M = J / 2000		N = K / 2000
PTE	12,130.75	8,760	1.385		1,760.00	1,760.00	0.00	0.880	0.880		0.000

1. Bridging Spray Box Paint does NOT contain Chromium Compounds.

Fact Sheet Attachment

Bridging EU-4 -5 & -21 PTE
Supplement to Section 5.6.1 Surface Coating Facility Information for Bridging Painting Processes
Figure A18: Potential Emissions from Bridging Painting (EU-4, EU-5 and EU-21)

VOC and HAP emissions are currently limited by permit.
Potential emissions represented below are based on potential production and paint application rates.

SCC Numbers: EU-4 Paint Dip Tank - 4-02-002-10 Surface Coating Application - General (Paint: Water-Based) and 4-02-025-44 Single Coat Application: Dip
EU-5 Spray Box per CP22-044 Minor Construction Permit
EU-21 Aerosol Can Spray Paint - 4-02-001-10 Surface Coating Application - General (Paint: Solvent-Based)

VOC Emissions

Product	Potential Usage	Operating Hours	Highest VOC Content	VOC Emissions		
Product	**(gal/year)**	**(hours/year)**	**(lbs/gal)**	**(lbs/year)**	**(lbs/hour)**	**(tons/year)**
A	**B**	**C**	**D**	**E = B * D**	**F = E / C**	**G = E / 2000**
Dip Tank (EU-4)						
Hybrid Water-Based Paint	1,760		0.45	792		
Reducer	19		1.71	33		
Additive	0		0.17	0		
TOTAL		**8,760**		**825**	**0.094**	**0.413**
Spray Box (EU-5)						
Water-Based Paint	13,470		0.84	11,315		
Reducer	0		0.5	0		
Defoamer	0		0.54	0		
TOTAL		8,760		11,315	1.292	5.657
Hand-Held Aerosol Spray Can Paints (EU-21)						
Aerosol Spray Paint	0	8,760	4.88	0	0.000	0.000

1. VOC, HAP and solids contents from Figure A15.

Volatile HAP Emissions

Product	Potential Usage	Operating Hours	Xylene			Cumene			Glycol Ethers			Vinyl Acetate			Dibutylphthalate		
			Content [1]	Emissions		Content [1]	Emissions		Content [1]	Emissions		Content [1]	Emissions		Content [1]	Emissions	
Product	**(gal/year)**	**(hours/year)**	**(lbs/gal)**	**(lbs/year)**	**(tons/year)**	**(lbs/gal)**	**(lbs/year)**	**(tons/year)**	**(lbs/gal)**	**(lbs/year)**	**(tons/year)**	**(lbs/gal)**	**(lbs/year)**	**(tons/year)**	**(lbs/gal)**	**(lbs/year)**	**(tons/year)**
A	**B**	**C**	**G**	**H = $B * G**	**I = H / 2000**	**J**	**K = $B * J**	**L = K / 2000**	**M**	**N = $B * M**	**O = N / 2000**	**P**	**Q = $B * P**	**R = Q / 2000**	**S**	**T = $B * S**	**U = T / 2000**
Dip Tank (EU-4)																	
Hybrid Water-Based Paint	1,760		0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000		0.00	0.000
Reducer	19		0.008	0.16	0.000	0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000		0.00	0.000
Additive	0		0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000		0.00	0.000
TOTAL		**8,760**		**0.16**	**0.000**		**0.00**	**0.000**		**0.00**	**0.000**		**0.00**	**0.000**		**0.00**	**0.000**
Spray Box (EU-5)																	
Water-Based Paint	13,470		0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000		0.00	0.000
Reducer	1,911		0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000		0.00	0.000
Defoamer	0		0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000		0.00	0.000
TOTAL		**8,760**		**0.00**	**0.000**		**0.00**	**0.000**		**0.00**	**0.000**		**0.00**	**0.000**		**0.00**	**0.000**
Hand-Held Aerosol Spray Can Paints (EU-21)																	
Aerosol Spray Paint	0	8,760	0.411	0.00	0.000												

PM/PM$_{10}$ Emissions

Product	Potential Usage	Operating Hours	Highest Solids Content	Overspray*	PM/PM$_{10}$ Emissions		
Product	**(gal/year)**	**(hours/year)**	**(lbs/gal)**	**(%)**	**(lbs/year)**	**(lbs/hour)**	**(tons/year)**
A	**B**	**C**	**D**	**E**	**F = B * D * E**	**G = F / C**	**H = F / 2000**
Dip Tank (EU-4)							
Hybrid Water-Based Paint	1,760		Not Sprayed				
Reducer	19						
Additive	0						
TOTAL		**8,760**					
Hand-Held Aerosol Spray Can Paints (EU-21)							
Aerosol Spray Paint	0	8,760	1.62	75%	0.000	0.000	0.000

* Transfer Efficiency 25% Overspray 75%
AP-42, 4.2.2.12 Metal Furniture Surface Coating, Table 4.2.2.12-1. Coating Method Transfer Efficiencies, Air Atomized Spray (May 1983).
lbs = pounds, gal = gallon
Refer to BRIDGING SPRAY BOX PM

Fact Sheet Attachment

Deck Rates

Supplement to Section 5.6.1 Surface Coating Facility Information for Deck Painting Processes

Figure A19: Deck Production and Paint Application Rates

	2021	2022	2023	2024	2025	Average	PTE
Deck Line Production (tons/year)	67,452.00	66,118.00	49,801.00	41,176.00	50,989.00	55,107.20	333,061
Operating Time (hours/year)	1,783.00	1,695.00	1,340.00	1,121.00	1,308.00	1,449.40	8,760
Deck Line Production (tons/hour)	37.83	39.01	37.16	36.73	38.98	38.02	38.02
Deck Line Production (lbs/hour)	75,661	78,015	74,330	73,463	77,965	76,041	76,041
Deck Line Not Painted (tons/year)	19,851.00	21,233.00	18,928.00	19,468.00	29,281.00	21,752.20	0
Deck Line Painted (tons/year)	47,601.00	44,885.00	30,873.00	21,708.00	21,708.00	33,355.00	333,061
Deck Accessories Production (tons/year)	909.99	944.88	780.47	675.76	724.44	807.11	7,215
Operating Time (hours/year)	1,960.00	1,960.00	1,960.00	1,960.00	1,960.00	1,960.00	8,760
Deck Accessories Production (tons/hour)	0.46	0.48	0.40	0.34	0.37	0.41	0.82
Deck Accessories Production (lbs/hour)	929	964	796	690	739	824	1,647
Automated Deck line vs. Deck Accessories (%)	1.35%	1.43%	1.57%	1.64%	1.42%	1.48%	2.96%
Cell Deck Production (tons/year)	1,768.75	1,086.75	994.11	814.74	3,223.24	1,577.52	48,066
Operating Time (hours/year)	650.00	450.00	450.00	350.00	850.00	575.00	8,760
Cell Deck Production (tons/hour)	2.72	2.42	2.21	2.33	3.79	2.74	5.49
Cell Deck Production (lbs/hour)	5,442	4,830	4,418	4,656	7,584	5,487	10,974
Pan Deck Fabricated on Cell Deck Line (tons/year)	340.85	421.91	420.23	612.07	772.37	513.49	1,027

PAINTING USING AUTOMATIC REVERSE ROLLER							
Painting Time - Estimated (hours/year)	1,000.00	1,000.00	850.00	850.00	850.00	910.00	8,760
Water-Based Paint Usage (gals/year)	54,072	51,634	33,343	22,823	32,451	38,864.60	666,123
Water-Based Paint Application Rate (gals/ton)	1.14	1.15	1.08	1.05	1.49	1.17	2.00
Defoamer Usage (gals/year)	5	5	5	5	5	5.00	86
Defoamer Application Rate (gals/ton)	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0003
EDGE COATING PAINTING USING SPRAYER							
Painting Time - Estimated (hours/year)	0	0	0	0	0	0.00	8,760
Water-Based Paint Usage (gals/year)	0	0	0	0	0	0.00	0
Edge Coating Production (tons/year)	0	278	0	272	361	182.22	364.44
Water-Based Paint Application Rate (gals/ton) [1]	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PAINTING USING AEROSOL CANS							
Aerosol Can Spray Paint Usage (gals/year) [3]	3.94	3.38	3.54	4.61	4.50	3.99	59
Aerosol Can Spray Paint Use Rate (gals/ton)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002

1. Edge coating is typically applied to galvanized deck painted white.
2. Information not tracked or estimated during reporting year.
3. Vulcraft total spray paint purchases are tracked. The spray paint purchases for each process (Joist, Bridging, and Deck) are estimated.

lbs = pounds, gal = gallon

Fact Sheet Attachment

Deck Painting Rates

Supplement to Section 5.6.1 Surface Coating Facility Information for Deck Painting Processes

Figure A20: Deck Production and Paint Application Rates (EU-8, EU-22, and EU-24)

Potential Production Rate - Automated Deck Line	38.02	tons/hour x	8,760	hours/year =	333,061	tons/year
Potential Production Rate - Cell Deck Line	5.49	tons/hour x	8,760	hours/year =	48,066	tons/year
Potential Production Rate - Deck Accessories (2% of Automated Deck Line Production)	0.76	tons/hour x	8,760	hours/year =	6,661	tons/year
					387,789	

POTENTIAL PAINT USAGE

In Automatic Roller (EU-8)

Potential water-based paint application rate	2.00	gal/ton				
The estimate for potential paint usage is	2.00	gal/ton x	333,061	tons/year =	666,123	gal/year
Potential defoamer use rate	0.0003	gal/ton				
The estimate for potential defoamer usage is	0.0003	gal/ton x	333,061		86	gal/year

Hand-Held Aerosol Spray Paint Cans (EU-22)

Paint in aerosol spray cans may be used for paint touch up or spot marking (color coding).

Potential Aerosol Spray Can Paint Application rate (gal./ton)	0.0002	gal/ton				
The estimate for potential Aerosol Spray Can Paint Usage is	0.0002	gal/ton x	387,789	tons/year =	59	gal/year

In Hand-Held Portable Spray Gun (EU-24)

The portable hand-held sprayer may be used to coat the edges of a bundle of stacked decking material on the deck line, paint cell deck or repaint deck with an unsatisfactory finish.

The portable sprayer may be used for one painting application at a time (i.e. edge coating, cell deck painting or repainting).

Based on the construction permit 09-008 issued on 11/3/2009, the limits for EU-24 are:

Volume Limit for Portable Hand-Held Sprayer	***24,460***	***gallons/year***
Solids Limit for Paint Used in Portable Hand-Held Sprayer	***7***	***lbs/gallon***

gal = gallon

Fact Sheet Attachment

Deck Paints

Supplement to Section 5.6.1 Surface Coating Facility Information for Deck Painting Processes

Figure A21: VOC, Volatile HAP and Solids Content of Deck Paints (EU-8, EU-22, and EU-24)

Deck Paints

Product	Specific Gravity	Density	Solids Content		VOC Content	Chromium Compounds	Volatile HAPs					
							Dibutylphthalate		Ethylbenzene		Xylene	
	(unitless)	(lbs/gal)	(% by wt)	(lbs/gal)	(lbs/gal)	(% by wt)	(% by wt)	(lbs/gal)	(% by wt)	(lbs/gal)	(% by wt)	(lbs/gal)
A	B	C = B * 8.34	D	E = C * D	F	G	H	I = C * H	J	K = C * J	L	M = C * L
Deck Water-Based Paints												
220-D-215B	1.149	9.583	48.29%	4.63	0.680	10.00%	1.36%	0.130	0.00%	0.000	0.00%	0.000
WP5-562	1.267	10.567	47.21%	4.99	0.800	0.00%	0.00%	0.000	0.00%	0.000	0.00%	0.000
220-W-167C	1.325	11.051	56.23%	6.21	1.430	0.00%	1.00%	0.111	0.00%	0.000	0.00%	0.000
Deck Water-Based Paint Defoamer												
15-C-391	0.963	8.031	9.75%	0.78	0.003	0.00%	0.00%	0.000	0.00%	0.000	0.00%	0.000
Deck Edge Coating												
200-W-1148A	1.332	11.109	54.67%	6.07	0.290	0.00%	0.90%	0.100	0.00%	0.000	0.00%	0.000

Color of Paint	Specific Gravity	Density	Solids Content		VOC Conent	Volatile HAPs					
						Dibutylphthalate		Ethylbenzene		Xylene	
	(unitless)	(lbs/gal)	(% by wt.)	(lbs/gal)	(lbs/gal)	(% by wt)	(lbs/gal)	(% by wt)	(lbs/gal)	(% by wt)	(lbs/gal)
A	B	C = B * 8.34	D	E = C * D	F	I	J = C * I	G	H = C * G	K	L = C * K
Spray Paints											
Spray Gloss Black	0.761	6.35	18.52%	1.18	4.70	0.00%	0.000	1.75%	0.111	6.25%	0.397
Spray Gloss White	0.777	6.48	20.36%	1.32	4.81	0.00%	0.000	0.55%	0.036	6.25%	0.405
Spray Gray Primer	0.809	6.75	21.92%	1.48	4.88	0.00%	0.000	0.55%	0.037	1.75%	0.118
Spray Hunter Green	0.788	6.57	24.70%	1.62	4.27	0.00%	0.000	1.75%	0.115	6.25%	0.411
Spray Java Brown	0.752	6.27	16.81%	1.05	4.40	0.00%	0.000	0.55%	0.034	6.25%	0.392
Spray Orange	0.751	6.26	10.92%	0.68	4.95	0.00%	0.000	0.55%	0.034	6.25%	0.391
Spray Purple	0.757	6.31	19.16%	1.21	4.28	0.00%	0.000	0.55%	0.035	6.25%	0.395
Spray Red	0.763	6.36	19.25%	1.22	4.60	0.00%	0.000	1.75%	0.111	6.25%	0.398
Spray Sky Blue	0.755	6.30	21.19%	1.33	4.20	0.00%	0.000	1.75%	0.110	6.25%	0.394
Spray Yellow	0.781	6.51	21.55%	1.40	4.62	0.00%	0.000	0.55%	0.036	6.25%	0.407
High		**6.75**	**24.70%**	**1.62**	**4.95**		**0.000**		**0.115**		**0.411**
Low		**6.26**	**10.92%**	**0.68**	**4.20**		**0.000**		**0.034**		**0.118**

Fact Sheet Attachment

Deck EU-8 EU-22 & EU-24 PTE

Supplement to Section 5.6.1 Surface Coating Facility Information for Deck Painting Processes

Figure A23: Potential Emissions from Deck Painting (EU-8, EU-22 and EU-24)

VOC and HAP emissions are currently limited by permit.
Potential emissions represented below are based on potential production and paint application rates.

SCC Numbers: EU-8 Automatic Reverse Roller - 4-02-002-10 Surface Coating Application - General (Paint: Water-Based) and 4-02-018-01 Metal Coil Coating - Prime Coating Application
EU-22 Aerosol Can Spray Paint - 4-02-001-10 Surface Coating Application - General (Paint: Solvent-Based)
EU-24 Hand-Held Portable Sprayer - 4-02-002-10 Surface Coating Application - General (Paint: Water-Based)

VOC Emissions

Product	Potential Usage	Operating Hours	Highest VOC Content	VOC Emissions		
Product	(gal/year)	(hours/year)	(lbs/gal)	(lbs/year)	(lbs/hour)	(tons/year)
A	B	C	D	E = B * D	F = E / C	G = E / 2000
Automatic Reverse Roller (EU-8)						
Water-Based Paint*	666,122.63		0.800	532,898.11		
Defoamer	85.70		0.003	0.26		
TOTAL		8,760		532,898.36	60.833	266.449
Hand-Held Aerosol Spray Can Paints (EU-22)						
Aerosol Spray Paint	59.08	8,760	4.950	292.47	0.033	0.146
Hand-Held Portable Spray Gun (EU-24)						
Water-Based Paint	24,460.00	8,760	0.290	7,093.40	0.810	3.547

1. Dibutylphthlate is only a volatile HAP under extreme temperatures. EU-8, EU-22 and EU-24 do not operate anywhere near the volatilization temperature of this HAP. Therefore, Dibutylthalate is not emitted as a volatile HAP. However, a small portion is emitted as
2. VOC, HAP and solids contents from Figure A21.
3. VOC based on worst-case deck coating in current use, WP5-562

Volatile HAP Emissions

Product	Potential Usage	Operating Hours	Dibutylphthalate[1]			Xylene			Ethylbenzene		
			Content [2]	Emissions		Content [1]	Emissions		Content [1]	Emissions	
Product	(gal/year)	(hours/year)	(lbs/gal)	(lbs/year)	(tons/year)	(lbs/gal)	(lbs/year)	(tons/year)	(lbs/gal)	(lbs/year)	(tons/year)
A	B	C	D	E = B * D	F = E / 2000	G	H = B * G	I = H / 2000	G	H = B * G	I = H / 2000
Automatic Reverse Roller (EU-8)											
Water-Based Paint	666,122.63		0.130	NA		0.000	0.00		0.000	0.00	
Defoamer	85.70		0.111	NA		0.000	0.00		0.000	0.00	
TOTAL		8,760		NA	NA		0.00	0.00		0.00	0.00
Hand-Held Aerosol Spray Can Paints (EU-22)											
Aerosol Spray Paint	59.08	8,760	0.000	0.00	0.00	0.411	24.27	0.01	0.115	6.80	0.00
Hand-Held Portable Spray Gun (EU-24)											
Water-Based Paint	24,460.00	8,760	0.100	1,468.94	0.73	0.000	0.00	0.00	0.000	0.00	0.00

* Glycol ethers other than ethylene glycol monobutyl ether.

PM/PM_{10} Emissions

Product	Potential Usage	Operating Hours	Highest Solids Content	Overspray*	$PM/PM_{10}/PM_{2.5}$ Emissions		
	(gal/year)	(hours/year)	(lbs/gal)		(lbs/year)	(lbs/hour)	(tons/year)
A	B	C	D	E	F = B * D * E	G = F / C	H = F / 2000
Automatic Reverse Roller (EU-8)							
Water-Based Paint	666,122.63		Not Sprayed				
Defoamer	85.70						
TOTAL		8,760					
Hand-Held Aerosol Spray Can Paints (EU-22)							
Aerosol Spray Paint	59.08	8,760	1.62	0.75	71.93	0.008	0.036
Hand-Held Portable Spray Gun (EU-24)							
Water-Based Paint	24,460.00	8,760	6.07	0.60	89,130.65	10.175	44.565

Transfer Efficiency 25% Overspray 75%
AP-42, 4.2.2.12 Metal Furniture Surface Coating, Table 4.2.2.12-1. Coating Method Transfer Efficiencies, Air Atomized Spray (May 1983).
Transfer Efficiency 40% Overspray 60%
AP-42, 4.2.2.11 Large Appliance Surface Coating, Table 4.2.2.11-1. Transfer Efficiencies, Air Atomized Spray (May 1983).
lbs = pounds, gal = gallon

Fact Sheet Attachment

Deck Tank Heaters Fuel Consume
Supplement to Section 6.1 External Combustion Unit Information for Deck Processes
Figure A29: Fuel Allocation for Deck Tank Heaters (EU-7A, EU-7C and EU-7D)

SCC Numbers: EU-7A, 7C and 7D Process Heaters - 3-09-900-03 Process Heaters (Primary Fuel Natural Gas) and 3-09-999-99 Other Not Classified (Secondary Fuel Propane)

Alkaline Wash Tank (EU-7A)

Burner Size	8.0	MMBtu per hour	
Natural Gas Consumption Rate	8,100	cf natural gas per hour *	* Per manufacturer
	0.008100	MMcf natural gas per hour	= cf/hour x 1 MMcf/1,000,000 cf
	70.956	MMcf natural gas per year	= MMcf/year x 8,760 hours/year

Phosphatizing Tank (EU-7C)

Burner Size	3.6	MMBtu per hour	
Natural Gas Heat Value	1,020	Btu per cf natural gas	* The assumption was made that one cubic foot of natural gas has a heat input value of 1,020 Btus.
Natural Gas Consumption Rate	3,529	cf natural gas per hour (calculated)	= MMBtu/hour x 1,000,000 Btu/1 MMBtu x 1 cf natural gas/1,020 Btu
	0.003529	MMcf natural gas per hour	= cf/hour x 1 MMcf/1,000,000 cf
	30.918	MMcf natural gas per year	= MMcf/year x 8,760 hours/year

Hot Rinse Tank (EU-7D)

Burner Size	3.6	MMBtu per hour	
Natural Gas Heat Value	1,020	Btu per cf natural gas	* The assumption was made that one cubic foot of natural gas has a heat input value of 1,020 Btus.
Natural Gas Consumption Rate	3,529	cf natural gas per hour (calculated)	= MMBtu/hour x 1,000,000 Btu/1 MMBtu x 1 cf natural gas/1,020 Btu
	0.003529	MMcf natural gas per hour	= cf/hour x 1 MMcf/1,000,000 cf
	30.918	MMcf natural gas per year	= MMcf/year x 8,760 hours/year

The actual fuel usage to the three heaters is metered. The tank heaters are not equipped with separate meters. Metered fuel usage is allocated to each burner based on the size of the burner. Potential fuel usage is based on the size of the burners.

Heat Input / Fuel Allocation

8.0	MMBtu/hour	52.63%
3.6	MMBtu/hour	23.68%
3.6	MMBtu/hour	23.68%
15.2	MMBtu/hour	100.00%

Fuel Allocation

	Natural Gas Consumption Rate			
		Allocated		
Year A	Metered (MMcf/year) B	EU-7A (MMcf/year) C = B * 52.63%	EU-7B (MMcf/year) D = B * 23.68%	EU-7C (MMcf/year) E = B * 23.68%
2021	16.106	8.477	3.815	3.815
2022	21.96	11.558	5.201	5.201
2023	18.067	9.509	4.279	4.279
2024	17.714	9.323	4.195	4.195
2025	25.994	13.681	6.156	6.156

MMBtu = million Btu, Btu = British Thermal Unit, cf = cubic foot, MMcf = million cubic feet, gal = gallon, Mgal = 1,000 gallons, lbs = pounds

Fact Sheet Attachment

Deck Tank Heaters EU-7A
Supplement to Section 6.1 External Combustion Unit Information for Deck Processes
Figure A30: Criteria Pollutant Emissions from Deck Tank Heater (EU-7A)

Combustion By-Products	Year	Operating Hours	Natural Gas Emission Factors *	Natural Gas Consumption Rate	EU-7A-1 Total Emissions Natural Gas Combustion 8.0 MMBtu/hour Burner		
		(hours/year)	(lbs/MMcf)	(MMcf/year)	(lbs/year)	(lbs/hour)	(tons/year)
A	B	C	D	E	F = D * E	G = F / C	H = G / 2000
Carbon Monoxide	2021	1,783.00	8.40E+01	8.477	712.055		0.356
	2022	1,695.00		11.558	970.863		0.485
	2023	1,340.00		9.509	798.752		0.399
	2024	1,121.00		9.323	783.145		0.392
	2025	1,308.00		13.681	1,149.208	0.879	0.575
	Average	1,449.40					0.441
	Potential	8,760		70.956	5,960.304	0.680	2.980
Nitrogen Oxides	2021	1,783.00	1.00E+02	8.477	847.684		0.424
	2022	1,695.00		11.558	1,155.789		0.578
	2023	1,340.00		9.509	950.895		0.475
	2024	1,121.00		9.323	932.316		0.466
	2025	1,308.00		13.681	1,368.105	1.046	0.684
	Average	1,449.40					0.525
	Potential	8,760		70.956	7,095.600	0.810	3.548
PM, Total	2021	1,783.00	7.60E+00	8.477	64.424		0.032
	2022	1,695.00		11.558	87.840		0.044
	2023	1,340.00		9.509	72.268		0.036
	2024	1,121.00		9.323	70.856		0.035
	2025	1,308.00		13.681	103.976	0.079	0.052
	Average	1,449.40					0.040
	Potential	8,760		70.956	539.266	0.062	0.270
$PM_{10}/PM_{2.5}$, Total	2021	1,783.00	7.60E+00	8.477	64.424		0.032
	2022	1,695.00		11.558	87.840		0.044
	2023	1,340.00		9.509	72.268		0.036
	2024	1,121.00		9.323	70.856		0.035
	2025	1,308.00		13.681	103.976	0.079	0.052
	Average	1,449.40					0.040
	Potential	8,760		70.956	539.266	0.062	0.270
Sulfur Dioxide **	2021	1,783.00	6.00E-01	8.477	5.086		0.003
	2022	1,695.00		11.558	6.935		0.003
	2023	1,340.00		9.509	5.705		0.003
	2024	1,121.00		9.323	5.594		0.003
	2025	1,308.00		13.681	8.209	0.006	0.004
	Average	1,449.40					0.003
	Potential	8,760		70.956	42.574	0.005	0.021
Volatile Organice Compounds ***	2021	1,783.00	5.50E+00	8.477	46.623		0.023
	2022	1,695.00		11.558	63.568		0.032
	2023	1,340.00		9.509	52.299		0.026
	2024	1,121.00		9.323	51.277		0.026
	2025	1,308.00		13.681	75.246	0.058	0.038
	Average	1,449.40					0.029
	Potential	8,760		70.956	390.258	0.045	0.195

* Source: AP-42, Section 1.4 Natural Gas Combustion (7/98) for SCC 1-02-006-02 and Section 1.5 Liquified Petroleum Gas Combustion (7/08) for SCC 1-03-010-02.

** The facility uses HD-5 grade propane. The sulfur content is 10 grains per 100 cubic feet for HD-5 grade propane based on NPGA Publication 2140-62: "Specifications and Test Methods for LP-Gas".
Therefore, SO_2 emission factor = 0.1 x 10 = 1.0 lb/Mgal.

*** The emission factor is TOC or total organic compounds for propane.

MMBtu = million Btu, Btu = British Thermal Unit, cf = cubic foot, MMcf = million cubic feet, gal = gallon, Mgal = 1,000 gallons, lbs = pounds

Fact Sheet Attachment

Deck Tank Heaters HAP EU-7A
Supplement to Section 6.1 External Combustion Unit Information for Deck Processes
Figure A31: HAP Emissions from Deck Tank Heater (EU-7A)

Natural Gas Consumption (EU-7A-1)

2021	8.477	MMcf/year
2022	11.558	MMcf/year
2023	9.509	MMcf/year
2024	9.323	MMcf/year
2025	13.681	MMcf/year
Potential	70.956	MMcf/year

Combustion By-Products	CAS Number	Emission Factors * (lbs/MMcf)	Emission Factors * (tons/MMcf)	8.0 MMBtu/hour Burner Emissions						
				2015 (tons/year)	2016 (tons/year)	2017 (tons/year)	2018 (tons/year)	2019 (tons/year)	5-Year Average (tons/year)	Potential (tons/year)
A	B	C	D = C / 2000	E = MMcf/year * D	F = MMcf/year * D	G = MMcf/year * D	H = MMcf/year * D	I = MMcf/year * D	J = AVE(E:I)	K = MMcf/year * D
Chromium	7440-47-3	1.40E-03	7.00E-07	5.93E-06	8.09E-06	6.66E-06	6.53E-06	9.58E-06	7.36E-06	4.97E-05
Cobalt	7440-48-4	8.40E-05	4.20E-08	3.56E-07	4.85E-07	3.99E-07	3.92E-07	5.75E-07	4.41E-07	2.98E-06
Lead	7439-92-1	5.00E-04	2.50E-07	2.12E-06	2.89E-06	2.38E-06	2.33E-06	3.42E-06	2.63E-06	1.77E-05
Manganese	7439-96-5	3.80E-04	1.90E-07	1.61E-06	2.20E-06	1.81E-06	1.77E-06	2.60E-06	2.00E-06	1.35E-05
Nickel	7440-02-0	2.10E-03	1.05E-06	8.90E-06	1.21E-05	9.98E-06	9.79E-06	1.44E-05	1.03E-05	7.45E-05
n-Hexane	110-54-3	1.80E+00	9.00E-04	7.63E-03	1.04E-02	8.56E-03	8.39E-03	1.23E-02	8.86E-03	6.39E-02
Toluene	108-88-3	3.40E-03	1.70E-06	1.44E-05	1.96E-05	1.62E-05	1.58E-05	2.33E-05	1.79E-05	1.21E-04
Other Combustion HAPs										
2-Methyl Naphthalene	91-57-6	2.40E-05	1.20E-08	1.02E-07	1.39E-07	1.14E-07	1.12E-07	1.64E-07	1.26E-07	8.51E-07
3-Methylcholanthrene	56-49-5	1.80E-06	9.00E-10	7.63E-09	1.04E-08	8.56E-09	8.39E-09	1.23E-08	9.46E-09	6.39E-08
Acenaphthene	83-32-9	1.80E-06	9.00E-10	7.63E-09	1.04E-08	8.56E-09	8.39E-09	1.23E-08	9.46E-09	6.39E-08
Acenaphthylene	208-96-8	1.80E-06	9.00E-10	7.63E-09	1.04E-08	8.56E-09	8.39E-09	1.23E-08	9.46E-09	6.39E-08
Anthracene	120-12-7	2.40E-06	1.20E-09	1.02E-08	1.39E-08	1.14E-08	1.12E-08	1.64E-08	1.26E-08	8.51E-08
Benzo (a) anthracene	56-55-3	1.80E-06	9.00E-10	7.63E-09	1.04E-08	8.56E-09	8.39E-09	1.23E-08	9.46E-09	6.39E-08
Benzo (a) pyrene	50-32-8	1.20E-06	6.00E-10	5.09E-09	6.93E-09	5.71E-09	5.59E-09	8.21E-09	6.31E-09	4.26E-08
Benzo (b) fluoranthene	205-99-2	1.80E-06	9.00E-10	7.63E-09	1.04E-08	8.56E-09	8.39E-09	1.23E-08	9.46E-09	6.39E-08
Benzo (g,h,i) perylene	191-24-2	1.20E-06	6.00E-10	5.09E-09	6.93E-09	5.71E-09	5.59E-09	8.21E-09	6.31E-09	4.26E-08
Benzo (k) fluoranthene	207-08-9	1.80E-06	9.00E-10	7.63E-09	1.04E-08	8.56E-09	8.39E-09	1.23E-08	9.46E-09	6.39E-08
Chrysene	218-01-9	1.80E-06	9.00E-10	7.63E-09	1.04E-08	8.56E-09	8.39E-09	1.23E-08	9.46E-09	6.39E-08
Dibenzo (a,h) anthracene	53-70-3	1.20E-06	6.00E-10	5.09E-09	6.93E-09	5.71E-09	5.59E-09	8.21E-09	6.31E-09	4.26E-08
Dimethylbenz (a) anthracene	57-97-6	1.60E-05	8.00E-09	6.78E-08	9.25E-08	7.61E-08	7.46E-08	1.09E-07	8.41E-08	5.68E-07
Fluoranthene	206-44-0	3.00E-06	1.50E-09	1.27E-08	1.73E-08	1.43E-08	1.40E-08	2.05E-08	1.58E-08	1.06E-07
Fluorene	86-73-7	2.80E-06	1.40E-09	1.19E-08	1.62E-08	1.33E-08	1.31E-08	1.92E-08	1.47E-08	9.93E-08
Indeno (1,2,3-cd) pyrene	193-39-5	1.80E-06	9.00E-10	7.63E-09	1.04E-08	8.56E-09	8.39E-09	1.23E-08	9.46E-09	6.39E-08
Phenanthrene	85-01-8	1.70E-05	8.50E-09	7.21E-08	9.82E-08	8.08E-08	7.92E-08	1.16E-07	8.93E-08	6.03E-07
Pyrene	129-00-0	5.00E-06	2.50E-09	2.12E-08	2.89E-08	2.38E-08	2.33E-08	3.42E-08	2.63E-08	1.77E-07
Arsenic	7440-38-2	2.00E-04	1.00E-07	8.48E-07	1.16E-06	9.51E-07	9.32E-07	1.37E-06	1.05E-06	7.10E-06
Beryllium	7440-41-7	1.20E-05	6.00E-09	5.09E-08	6.93E-08	5.71E-08	5.59E-08	8.21E-08	6.31E-08	4.26E-07
Cadmium	7440-43-9	1.10E-03	5.50E-07	4.66E-06	6.36E-06	5.23E-06	5.13E-06	7.52E-06	5.78E-06	3.90E-05
Mercury	7439-97-6	2.60E-04	1.30E-07	1.10E-06	1.50E-06	1.24E-06	1.21E-06	1.78E-06	1.37E-06	9.22E-06
Selenium	7782-49-2	2.40E-05	1.20E-08	1.02E-07	1.39E-07	1.14E-07	1.12E-07	1.64E-07	1.26E-07	8.51E-07
Benzene	71-43-2	2.10E-03	1.05E-06	8.90E-06	1.21E-05	9.98E-06	9.79E-06	1.44E-05	1.10E-05	7.45E-05
Dichlorobenzene, mixed isomers	25321-22-6	1.20E-03	6.00E-07	5.09E-06	6.93E-06	5.71E-06	5.59E-06	8.21E-06	6.31E-06	4.26E-05
Formaldehyde	50-00-0	7.50E-02	3.75E-05	3.18E-04	4.33E-04	3.57E-04	3.50E-04	5.13E-04	3.94E-04	2.66E-03
Naphthalene	91-20-3	6.10E-04	3.05E-07	2.59E-06	3.53E-06	2.90E-06	2.84E-06	4.17E-06	3.21E-06	2.16E-05
Total Other Combustion HAPs				**3.42E-04**	**4.66E-04**	**3.83E-04**	**3.76E-04**	**5.51E-04**	**4.24E-04**	**2.86E-03**
Total HAPs				**8.00E-03**	**1.09E-02**	**8.98E-03**	**8.80E-03**	**1.29E-02**	**9.33E-03**	**6.70E-02**

* Source: AP-42, Section 1.4 Natural Gas Combustion (7/98) for SCC 1-02-006-02.

Note: There are no HAP emission factors for propane combustion. Assume HAP emissions are the same as for natural gas combustion.

MMBtu = million Btu, Btu = British Thermal Unit, cf = cubic foot, MMcf = million cubic feet, gal = gallon, Mgal = 1,000 gallons, lbs = pounds

Fact Sheet Attachment

Deck Tank Heaters EU-7CD
Supplement to Section 6.1 External Combustion Unit Information for Deck Processes
Figure A32: Criteria Pollutant Emissions from Deck Tank Heaters (EU-7C and EU-7D)

The burners in the Phosphatizing Tank and the Hot Rinse Tank are the same size. The emissions in the table below represent emissions from one burner.

Combustion By-Products	Year	Operating Hours	Natural Gas Emission Factors *	Natural Gas Consumption Rate	EU-7C-1 or EU-7D-1 Total Emissions Natural Gas Combustion 3.6 MMBtu/hour Burner		
		(hours/year)	(lbs/MMcf)	(MMcf/year)	(lbs/year)	(lbs/hour)	(tons/year)
A	B	C	D	E	F = D * E	G = F / C	H = G / 2000
Carbon Monoxide	2021	1,783.00	8.40E+01	3.815	320.425		0.160
	2022	1,695.00		5.201	436.888		0.218
	2023	1,340.00		4.279	359.438		0.180
	2024	1,121.00		4.195	352.415		0.176
	2025	1,308.00		6.156	517.144	0.395	0.259
	Average	1,449.40					0.199
	Potential	8,760		30.918	2,597.082	0.296	1.299
Nitrogen Oxides	2021	1,783.00	1.00E+02	3.815	381.458		0.191
	2022	1,695.00		5.201	520.105		0.260
	2023	1,340.00		4.279	427.903		0.214
	2024	1,121.00		4.195	419.542		0.210
	2025	1,308.00		6.156	615.647	0.471	0.308
	Average	1,449.40					0.236
	Potential	8,760		30.918	3,091.765	0.353	1.546
PM, Total	2021	1,783.00	7.60E+00	3.815	28.991		0.014
	2022	1,695.00		5.201	39.528		0.020
	2023	1,340.00		4.279	32.521		0.016
	2024	1,121.00		4.195	31.885		0.016
	2025	1,308.00		6.156	46.789	0.036	0.023
	Average	1,449.40					0.018
	Potential	8,760		30.918	234.974	0.027	0.117
$PM_{10}/PM_{2.5}$, Total	2021	1,783.00	7.60E+00	3.815	28.991		0.014
	2022	1,695.00		5.201	39.528		0.020
	2023	1,340.00		4.279	32.521		0.016
	2024	1,121.00		4.195	31.885		0.016
	2025	1,308.00		6.156	46.789	0.036	0.023
	Average	1,449.40					0.018
	Potential	8,760		30.918	234.974	0.027	0.117
Sulfur Dioxide **	2021	1,783.00	6.00E-01	3.815	2.289		0.001
	2022	1,695.00		5.201	3.121		0.002
	2023	1,340.00		4.279	2.567		0.001
	2024	1,121.00		4.195	2.517		0.001
	2025	1,308.00		6.156	3.694	0.003	0.002
	Average	1,449.40					0.001
	Potential	8,760		30.918	18.551	0.002	0.009
Volatile Organice Compounds ***	2021	1,783.00	5.50E+00	3.815	20.980		0.010
	2022	1,695.00		5.201	28.606		0.014
	2023	1,340.00		4.279	23.535		0.012
	2024	1,121.00		4.195	23.075		0.012
	2025	1,308.00		6.156	33.861	0.026	0.017
	Average	1,449.40					0.013
	Potential	8,760		30.918	170.047	0.019	0.085

* Source: AP-42, Section 1.4 Natural Gas Combustion (7/98) for SCC 1-02-006-02 and Section 1.5 Liquified Petroleum Gas Combustion (7/08) for SCC 1-03-010-02.

** The facility uses HD-5 grade propane. The sulfur content is 10 grains per 100 cubic feet for HD-5 grade propane based on NPGA Publication 2140-62: "Specifications and Test Methods for LP-Gas".
Therefore, SO_2 emission factor = 0.1 x 10 = 1.0 lb/Mgal.

*** The emission factor is TOC or total organic compounds for propane.

MMBtu = million Btu, Btu = British Thermal Unit, cf = cubic foot, MMcf = million cubic feet, gal = gallon, Mgal = 1,000 gallons, lbs = pounds

Fact Sheet Attachment

Deck Tank Heaters HAP EU-7CD
Supplement to Section 6.1 External Combustion Unit Information for Deck Processes
Figure A33: HAP Emissions from Deck Tank Heaters (EU-7C and EU-7D)

The burners in the phosphatizing tank and the hot rinse tank are the same size. The emissions in the table below represent emissions from one burner.

Natural Gas Consumption (EU-7C-1 or EU-7D-1)

2021	3.815	MMcf/year
2022	5.201	MMcf/year
2023	4.279	MMcf/year
2024	4.195	MMcf/year
2025	6.156	MMcf/year
Potential	30.918	MMcf/year

Combustion By-Products	CAS Number	Emission Factors *	Emission Factors *	3.6 MMBtu/hour Burner Emissions						
				2015	2016	2017	2018	2019	5-Year Average	Potential
		(lbs/MMcf)	(tons/MMcf)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)
A	B	C	D = C / 2000	E = MMcf/year * D	F = MMcf/year * D	G = MMcf/year * D	H = MMcf/year * D	I = MMcf/year * D	J = AVE(E:I)	K = MMcf/year * D
Chromium	7440-47-3	1.40E-03	7.00E-07	2.67E-06	3.64E-06	3.00E-06	2.94E-06	4.31E-06	3.31E-06	2.16E-05
Cobalt	7440-48-4	8.40E-05	4.20E-08	1.60E-07	2.18E-07	1.80E-07	1.76E-07	2.59E-07	1.99E-07	1.30E-06
Lead	7439-92-1	5.00E-04	2.50E-07	9.54E-07	1.30E-06	1.07E-06	1.05E-06	1.54E-06	1.18E-06	7.73E-06
Manganese	7439-96-5	3.80E-04	1.90E-07	7.25E-07	9.88E-07	8.13E-07	7.97E-07	1.17E-06	8.42E-07	5.87E-06
Nickel	7440-02-0	2.10E-03	1.05E-06	4.01E-06	5.46E-06	4.49E-06	4.41E-06	6.46E-06	4.65E-06	3.25E-05
n-Hexane	110-54-3	1.80E+00	9.00E-04	3.43E-03	4.68E-03	3.85E-03	3.78E-03	5.54E-03	4.26E-03	2.78E-02
Toluene	108-88-3	3.40E-03	1.70E-06	6.48E-06	8.84E-06	7.27E-06	7.13E-06	1.05E-05	8.04E-06	5.26E-05
Other Combustion HAPs										
2-Methyl Naphthalene	91-57-6	2.40E-05	1.20E-08	4.58E-08	6.24E-08	5.13E-08	5.03E-08	7.39E-08	5.68E-08	3.71E-07
3-Methylcholanthrene	56-49-5	1.80E-06	9.00E-10	3.43E-09	4.68E-09	3.85E-09	3.78E-09	5.54E-09	4.26E-09	2.78E-08
Acenaphthene	83-32-9	1.80E-06	9.00E-10	3.43E-09	4.68E-09	3.85E-09	3.78E-09	5.54E-09	4.26E-09	2.78E-08
Acenaphthylene	208-96-8	1.80E-06	9.00E-10	3.43E-09	4.68E-09	3.85E-09	3.78E-09	5.54E-09	4.26E-09	2.78E-08
Anthracene	120-12-7	2.40E-06	1.20E-09	4.58E-09	6.24E-09	5.13E-09	5.03E-09	7.39E-09	5.68E-09	3.71E-08
Benzo (a) anthracene	56-55-3	1.80E-06	9.00E-10	3.43E-09	4.68E-09	3.85E-09	3.78E-09	5.54E-09	4.26E-09	2.78E-08
Benzo (a) pyrene	50-32-8	1.20E-06	6.00E-10	2.29E-09	3.12E-09	2.57E-09	2.52E-09	3.69E-09	2.84E-09	1.86E-08
Benzo (b) fluoranthene	205-99-2	1.80E-06	9.00E-10	3.43E-09	4.68E-09	3.85E-09	3.78E-09	5.54E-09	4.26E-09	2.78E-08
Benzo (g,h,i) perylene	191-24-2	1.20E-06	6.00E-10	2.29E-09	3.12E-09	2.57E-09	2.52E-09	3.69E-09	2.84E-09	1.86E-08
Benzo (k) fluoranthene	207-08-9	1.80E-06	9.00E-10	3.43E-09	4.68E-09	3.85E-09	3.78E-09	5.54E-09	4.26E-09	2.78E-08
Chrysene	218-01-9	1.80E-06	9.00E-10	3.43E-09	4.68E-09	3.85E-09	3.78E-09	5.54E-09	4.26E-09	2.78E-08
Dibenzo (a,h) anthracene	53-70-3	1.20E-06	6.00E-10	2.29E-09	3.12E-09	2.57E-09	2.52E-09	3.69E-09	2.84E-09	1.86E-08
Dimethylbenz (a) anthracene	57-97-6	1.60E-05	8.00E-09	3.05E-08	4.16E-08	3.42E-08	3.36E-08	4.93E-08	3.78E-08	2.47E-07
Fluoranthene	206-44-0	3.00E-06	1.50E-09	5.72E-09	7.80E-09	6.42E-09	6.29E-09	9.23E-09	7.09E-09	4.64E-08
Fluorene	86-73-7	2.80E-06	1.40E-09	5.34E-09	7.28E-09	5.99E-09	5.87E-09	8.62E-09	6.62E-09	4.33E-08
Indeno (1,2,3-cd) pyrene	193-39-5	1.80E-06	9.00E-10	3.43E-09	4.68E-09	3.85E-09	3.78E-09	5.54E-09	4.26E-09	2.78E-08
Phenanthrene	85-01-8	1.70E-05	8.50E-09	3.24E-08	4.42E-08	3.64E-08	3.57E-08	5.23E-08	4.02E-08	2.63E-07
Pyrene	129-00-0	5.00E-06	2.50E-09	9.54E-09	1.30E-08	1.07E-08	1.05E-08	1.54E-08	1.18E-08	7.73E-08
Arsenic	7440-38-2	2.00E-04	1.00E-07	3.81E-07	5.20E-07	4.28E-07	4.20E-07	6.16E-07	4.73E-07	3.09E-06
Beryllium	7440-41-7	1.20E-05	6.00E-09	2.29E-08	3.12E-08	2.57E-08	2.52E-08	3.69E-08	2.84E-08	1.86E-07
Cadmium	7440-43-9	1.10E-03	5.50E-07	2.10E-06	2.86E-06	2.35E-06	2.31E-06	3.39E-06	2.60E-06	1.70E-05
Mercury	7439-97-6	2.60E-04	1.30E-07	4.96E-07	6.76E-07	5.56E-07	5.45E-07	8.00E-07	6.15E-07	4.02E-06
Selenium	7782-49-2	2.40E-05	1.20E-08	4.58E-08	6.24E-08	5.13E-08	5.03E-08	7.39E-08	5.68E-08	3.71E-07
Benzene	71-43-2	2.10E-03	1.05E-06	4.01E-06	5.46E-06	4.49E-06	4.41E-06	6.46E-06	4.97E-06	3.25E-05
Dichlorobenzene, mixed isomers	25321-22-6	1.20E-03	6.00E-07	2.29E-06	3.12E-06	2.57E-06	2.52E-06	3.69E-06	2.84E-06	1.86E-05
Formaldehyde	50-00-0	7.50E-02	3.75E-05	1.43E-04	1.95E-04	1.60E-04	1.57E-04	2.31E-04	1.77E-04	1.16E-03
Naphthalene	91-20-3	6.10E-04	3.05E-07	1.16E-06	1.59E-06	1.31E-06	1.28E-06	1.88E-06	1.44E-06	9.43E-06
Total Other Combustion HAPs				**1.54E-04**	**2.10E-04**	**1.72E-04**	**1.69E-04**	**2.48E-04**	**1.91E-04**	**1.25E-03**
Total HAPs				**3.60E-03**	**4.91E-03**	**4.04E-03**	**3.96E-03**	**5.81E-03**	**4.47E-03**	**2.92E-02**

* Source: AP-42, Section 1.4 Natural Gas Combustion (7/98) for SCC 1-02-006-02.

Note: There are no HAP emission factors for propane combustion. Assume HAP emissions are the same as for natural gas combustion.

MMBtu = million Btu, Btu = British Thermal Unit, cf = cubic foot, MMcf = million cubic feet, gal = gallon, Mgal = 1,000 gallons, lbs = pounds

Fact Sheet Attachment

Joist Cut Out PM EU-1
Supplement to Section 6.5 Uncontrolled Emission Point for EP-1

Figure A36: Potential Particulate Emissions from Joist Thermal Cutting (EU-1)

Per guidance provided by Ken Lee (legal counsel for American Institute of Steel Construction, Inc. (AISC) in March 1996), particulate matter and HAP emissions are estimated using methods recommended in the AISC General Bulletin #1890 (April 30, 1991). Since particulate and HAP emission factors do not exist for plasma cutting, the averages of the emission factors for oxyacetylene cutting and oxymethane cutting of carbon steel under normal operating conditions are used.

PM/PM_{10} Emission Factors

Particulate matter emissions generated by torch cutting are considered to have an aerodynamic diameter of < 10 microns.
Particulate matter emission factors for oxyacetylene and oxymethane cutting were obtained from Figures 5.1 and 5.2 in Fumes and Gases in the Welding Environment (1987).

Plate Thickness (inches)	Torch Cutting (Mass PM/PM_{10} per Length Cut)				
	Oxyacetylene		Oxymethane		Average
	(g/meter cut)	(g/inch cut)	(g/meter cut)	(g/inch cut)	(g/inch cut)
A	B	C = B / 39.37	D	E = D / 39.37	F = (C + E) / 2
3/16	0.44	0.011	1.07	0.027	0.019
1/4	0.70	0.018	1.30	0.033	0.025
1/2	1.15	0.029	1.37	0.035	0.032
3/4	1.63	0.041	1.55	0.039	0.040
1	2.11	0.054	1.59	0.040	0.047

PM/PM_{10} Emissions

As part of the permit reapplication process, the use of hand-held cutting torches and information regarding the lengths of cuts were reviewed.
The potential length of cuts were adjusted to account for the increased use of hand-held plasma cutters and the decreased use of hand-held oxymethane torches.

Cutting Operations	Length of Cut		Operating Time	Length of Cut	PM/PM_{10} Emission Factors	PM/PM_{10} Emissions			
	(ft/8 hour shift)	(in/hour)	(hours/year)	(in/year)	(g/inch cut)	(g/year)	(lbs/year)	(lbs/hour)	(tons/year)
A	B	C = (B*12)/8	D	E = C * D	F	G = E * F	H = G / 454	I = H / D	J = H / 2000
POTENTIAL EMISSIONS									
Plasma Cutting (3-09-030-08 Machining Operations Plasma Torch)									
Bay 1-Bent Base Plates (3/16")	240.0	360.0	8,760	3,153,600	0.019	60,477	133.2	0.015	0.067
Bay 1-Rod Webbing (3/4")	675.0	1,012.5	8,760	8,869,500	0.040	358,204	789.0	0.090	0.394
Bay 4-Gusset Plates (1")	10.0	15.0	8,760	131,400	0.047	6,174	13.6	0.002	0.007
Subtotal							935.8	0.1	0.5
Oxymethane Cutting (3-09-046-00 Machining Operations Oxyfuel Cutting)									
Bay 3 (1")	960.0	1,440	8,760	12,614,400	0.040	509,446	1,122.1	0.128	0.561
Bays 1, 2 and 4 (1/4")	1,920.0	2,880	8,760	25,228,800	0.033	833,057	1,834.9	0.209	0.917
Subtotal							**2,957.1**	**0.3**	**1.5**
Total							**3,892.9**	**0.44**	**1.9**

Fact Sheet Attachment
Joist Cut Out HAP EU-1
Supplement to Section 6.5 Uncontrolled Emission Point for EP-1

Figure A37: Potential Particulate Metal HAP Emissions from Joist Thermal Cutting (EU-1)
Per guidance provided by Ken Lee (legal counsel for American Institute of Steel Construction, Inc. (AISC) in March 1996), particulate matter and HAP emissions are estimated using methods recommended in the AISC General Bulletin #1890 (April 30, 1991). Since particulate and HAP emission factors do not exist for plasma cutting, the average of the emission factors for oxyacetylene cutting and oxymethane cutting of carbon steel under normal operating conditions is used.

HAP Emission Factors
Hazardous air pollutant metal emissions were estimated using a formula from AISC and emission factors taken from an EPCRA 313 guidance document (Section 313 Reporting: Issue Paper, Clarification and Guidance for the Metal Fabrication Industry. Office of Toxic Substances [January 1990]).

Type of Cutting	Chromium	Cobalt	Manganese	Nickel
	Emission factor units are in pounds of metal HAPs per million feet of 1" plate burned.			
Oxyacetylene Cutting	2.8	0.3	4.2	0.7
Oxymethane Cutting	2.0	0.2	2.9	0.5
Plasma Cutting (Average)	**2.4**	**0.3**	**3.6**	**0.6**

Estimate of Thickness of Plate Multiplied by the Length of Plate Cut
As part of the permit reapplication process, the use of hand-held cutting torches and information regarding the lengths of cuts were reviewed.
The potential length of cuts were adjusted to account for the increased use of hand-held plasma cutters and the decreased use of hand-held oxymethane torches.

	POTENTIAL EMISSIONS			
Cutting Operation A	**Plate Thickness (inches) B**	**Length of Cut (in/year) C [1]**	**Length of Cut (million ft/year) D = C / 12 / 1,000,000**	**Plate Thickness * Length of Cut (million feet of 1" plate burned/year) E = B * D**
Plasma Cutting (3-09-030-08 Machining Operations Plasma Torch)				
Bay 1-Bent Base Plates (3/16")	3/16	3,153,600	0.2628	0.049
Bay 1-Rod Webbing (3/4")	3/4	8,869,500	0.7391	0.554
Bay 4-Gusset Plates (1") [1]	1	131,400	0.0110	0.011
Total				**0.615**
Oxymethane Cutting (3-09-046-00 Machining Operations Oxyfuel Cutting)				
Bay 3 (1" and 1/2")	1/2	12,614,400	1.0512	0.526
Bays 1, 2 and 4 (1/4")	1/4	25,228,800	2.1024	0.526
Total				**1.051**

1. From column E in Figure A36.

HAP Emissions

Metal HAP A	**Plate Thickness * Length of Cut (million feet of 1" plate burned/year) Plasma B (Link)**	**Oxymethane C (Link)**	**Emission Factors (lbs/million feet of 1" plate burned) Plasma D (Link)**	**Oxymethane E (Link)**	**Metal HAPs Released from Thermal Cutting (lbs/year) F=(B*D)+(C*E)**	**(lbs/hour) G = F / 8,760**	**(tons/year) H = F / 2000**
POTENTIAL EMISSIONS							
Chromium	0.615	1.051	2.4	2.0	3.577	0.00041	0.0018
Cobalt	0.615	1.051	0.3	0.2	0.364	0.00004	0.0002
Manganese	0.615	1.051	3.6	2.9	5.230	0.00060	0.0026
Nickel	0.615	1.051	0.6	0.5	0.894	0.00010	0.0004
TOTAL					**10.066**	**0.00115**	**0.0050**

Fact Sheet Attachment

Plasma Table PM

Supplement to Section 6.4 Uncontrolled Emission Point for EP-1B

Figure A36-1B: Potential Particulate Emissions from Joist Thermal Cutting - Plasma Table (EU-1B)

ESTIMATION OF ANNUAL POTENTIAL THROUGHPUT AND PROCESS WEIGHT RATE

Plate Thickness	Cut Speed	Length of Cut	PTE Operating Time	Maximum Cut
inches	(in/min)	(in/hr)	(hours/year)	(in cut/yr)
A	B	C=B*60	D	E = C * D
Plasma Cutting (3-09-030-08 Machining Operations Plasma Torch)				
3/4	115	6,900	8,760	60,444,000
1	85	5,100	8,760	44,676,000
1 1/4	65	3,900	8,760	34,164,000
2	30	1,800	8,760	15,768,000

Maximum Throughput Based on Cutting Speed

Plate Thickness	Cut Rate	Maximum Cut	AVG Sheet Length	AVG Sheet Width	Sheet Area	Cuts/ Sheet(1)	Cut Length	Total Cut Length per Sheet	Estimated Time to Cut Sheet	Potential Throughput		Density of Mild Steel	Potential Throughput	
inches	(in/min)	(in cut/yr)	(ft)	(ft)	(in^2/sheet)	(qty)	(feet)	(in/sheet)	(min/sheet)	(sheets/yr)	(in^3/yr)	(lb/in^3)	(lb/yr)	(tons/yr)
A	B=Link	C=Link	D	E	F=D*E*144	G	H	I=G*H*12	J=I/B	K=C/I	L=A*F*K	M	N=L*M	O=N/2000
3/4	115	60,444,000	6	12	10,368	12	6	864	8	69,958	543,996,000	0.284	154,494,864	77,247
1	85	44,676,000							10	51,708	536,112,000		152,255,808	76,128
1 1/4	65	34,164,000							13	39,542	512,460,000		145,538,640	72,769
2	30	15,768,000							29	18,250	378,432,000		107,474,688	53,737

Process Weight Rate Calculation

Plate Thickness	Maximum Potential Throughput	Operational Hours	Maximum Potential Throughput	Adjusted Potential Throughput(2)	Adjusted Potential Throughput(3)	Ratio Adjusted/ Maximum
	(tons/yr)	(hr/yr)	(tons/hr)	(tons/hr)	(tons/yr)	
A	B=Link	C	D=B/C	E	F=C*E	G=F/B
3/4	77,247	8,760	8.8	3.5	44,160	0.5717
1	76,128	8,760	8.7	3.5	44,160	0.5801
1 1/4	72,769	8,760	8.3	3.5	44,160	0.6068
2	53,737	8,760	6.1	3.5	44,160	0.8218

(1) Based on a width of cut steel of 1 foot. This column assumes 12 6-foot cuts to yield 864 inches per sheet throughput. However, using 1 foot cut steel width, orienting the steel sheet 90º and cutting 6 12-foot cuts yields the same figure of 864 inches per sheet.

(2) Maximum cut speed does not account for operational delays which include programming, setup and positioning, product removal. Adjusted Potential Throughput is based on site experience which includes operational delays.

(3) Includes adjusted potential throughput (tons/yr) from addition of RediCor (Formally CorTek) plasma table (11/2/2017 Notice of Change Without Permit Revision).

Fact Sheet Attachment

Plasma Table PM

Supplement to Section 6.4 Uncontrolled Emission Point for EP-1B

Figure A36-1B: Potential Particulate Emissions from Joist Thermal Cutting - Plasma Table (EU-1B)

(Continued)

PM_{10} EMISSIONS - PTE

Per guidance provided by Ken Lee (legal counsel for American Institute of Steel Construction, Inc. (AISC) in March 1996), particulate matter and HAP emissions are estimated using methods recommended in the AISC General Bulletin #1890 (April 30, 1991).

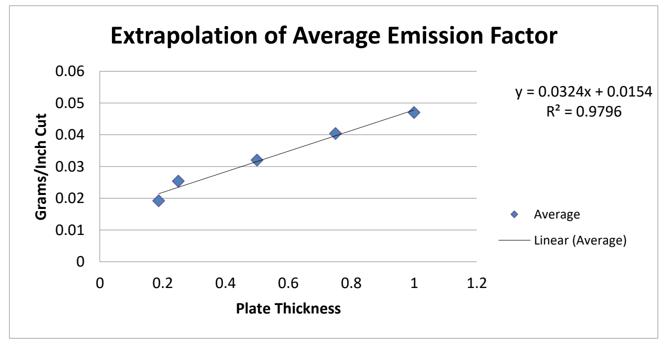
Since particulate and HAP emission factors do not exist for plasma cutting, the averages of the emission factors for oxyacetylene cutting and oxymethane cutting of carbon steel under normal operating conditions are used.

PM_{10} Emission Factors (Amount Emitted in Grams per Length of Cut)

Particulate matter emissions generated by torch cutting are considered to have an aerodynamic diameter of < 10 microns. Particulate matter emission factors for oxyacetylene and oxymethane cutting were obtained from Figures 5.1 and 5.2 in Fumes and Gases in the Welding Environment (1987).

(1 meter = 39.37 inches)

Plate Thickness (inches) A	Torch Cutting (Mass PM/PM_{10} per Length Cut) Oxyacetylene (grams/ meter cut) B	Oxyacetylene (grams/ inch cut) C = B / 39.37	Oxymethane (grams/ meter cut) D	Oxymethane (grams/ inch cut) E = D / 39.37	Average (grams/ inch cut) F = (C+E)/2	Extrapolation of Average G = A * 0.032 + 0.0154
3/16	0.44	0.011	1.07	0.027	0.019	0.021
1/4	0.70	0.018	1.30	0.033	0.025	0.024
5/16					0.026	0.026
1/2	1.15	0.029	1.37	0.035	0.032	0.032
3/4	1.63	0.041	1.55	0.039	0.040	0.040
1	2.11	0.054	1.59	0.040	0.047	0.048
1 1/4					0.056	0.056
2					0.080	0.080



PM/PM_{10} PTE

Plate Thickness A	Length of Cut (in/year) B = Link	Ratio Adjusted\ Maximum C = Link	Adjusted Length of Cut (in/year) D = B * C	PM/PM_{10} Emission Factors (gr/inch cut) E	PM/PM_{10} /$PM_{2.5}$ Emissions (gr/year) F = D * E	(lbs/year) G = F / 454	(lbs/hour) H = G / 8,760	(tons/year) I = G / 2000
Plasma Cutting (3-09-030-08 Machining Operations Plasma Torch)								
3/4	60,444,000	0.5717	34,553,991	0.040	1,395,500	3,073.8	0.351	1.537
1	44,676,000	0.5801	25,915,493	0.047	1,217,771	2,682.3	0.306	1.341
1 1/4	34,164,000	0.6068	20,732,394	0.056	1,158,941	2,552.7	0.291	1.276
2	15,768,000	0.8218	12,957,746	0.080	1,039,211	2,289.0	0.261	1.145
Maximum						**3,073.8**	**0.351**	**1.537**

Adjusted Potential Throughput (tons/hr)	Allowable Emission Rate [(1)] (lb/hr)	Potential Emission Rate (lb/hr)
E=Link	L=4.1*K^0.67	M
3.5	9.49	0.351
3.5	9.49	0.306
3.5	9.49	0.291
3.5	9.49	0.261
Maximum	**9.49**	**0.351**

[(1)] Nebraska State Code, Title 129, Chapter 20, Section 001 (Table 20-2 equation). For throughput rates less than 60,000 lb/hr, the particulate emission rate limit is calculated by the equation $E=4.10p^{0.67}$ where E = rate of emission (lb/hr); p = process weight rate (tons/hr)

Fact Sheet Attachment

Plasma Table HAPs
Supplement to Section 6.4 Uncontrolled Emission Point for EP-1B
Figure A37-1B: Potential Particulate Metal HAP Emissions from Joist Thermal Cutting - Plasma Table (EU-1B)

Per guidance provided by Ken Lee (legal counsel for American Institute of Steel Construction, Inc. (AISC) in March 1996), particulate matter and HAP emissions are estimated using methods recommended in the AISC General Bulletin #1890 (April 30, 1991).
Since particulate and HAP emission factors do not exist for plasma cutting, the average of the emission factors for oxyacetylene cutting and oxymethane cutting of carbon steel under normal operating conditions is used.

HAP Emission Factors
Hazardous air pollutant metal emissions were estimated using a formula from AISC and emission factors taken from an EPCRA 313 guidance document (Section 313 Reporting: Issue Paper, Clarification and Guidance for the Metal Fabrication Industry. Office of Toxic Substances [January 1990]).

Type of Cutting	Chromium	Cobalt	Manganese	Nickel
Emission factor units are in pounds of metal HAPs per million feet of 1" plate burned.				
Oxyacetylene	2.8	0.3	4.2	0.7
Oxymethane	2.0	0.2	2.9	0.5
Plasma (Average)	2.4	0.25	3.55	0.6

Estimate of Thickness of Plate Multiplied by the Length of Plate Cut

Cutting Operation A	Plate Thickness (inches) B	Length of Cut (inches/ year) C	Length of Cut (million feet/year) D = C / 12 / 1,000,000	Plate Thickness Length of Cut (million feet of 1" plate burned/year) E = B * D
Plasma Cutting (3-09-030-08 Machining Operations Plasma Torch)				
	3/4	34,553,991	2.8795	2.160
	1	25,915,493	2.1596	2.160
	1 1/4	20,732,394	1.7277	2.160
	2	12,957,746	1.0798	2.160
Maximum				**2.160**

Estimate of Particulate Metal HAP Emissions

Metal HAP	Plate Thickness Length of Cut (million feet of 1" plate burned/year)	Emission Factors (pounds/million feet of 1" plate burned)	Metal HAPs Released from Plasma Cutting (lbs/year)	Metal HAPs Released from Plasma Cutting (tons/year)
A	**B (Link)**	**D (Link)**	**F = (B*D)**	**G = F / 2000**
Chromium	2.16	2.40	5.183	0.0026
Cobalt	2.16	0.25	0.540	0.0003
Manganese	2.16	3.55	7.667	0.0038
Nickel	2.16	0.60	1.296	0.0006
TOTAL			**14.685**	**0.0073**

Fact Sheet Attachment

Beam Coper PM

Supplement to Section 6.4 Uncontrolled Emission Point for EP-1C

Figure A36-1C: Potential Particulate Emissions from Joist Thermal Cutting - Beam Coper (EU-1B)

ESTIMATION OF ANNUAL POTENTIAL THROUGHPUT AND PROCESS WEIGHT RATE

Material Thickness (inches)	Cut Speed (1) (in/min)	Length of Cut (in/hr)	Operating Time (hours/year)	Maximum Cut
A	B	C = B*60	D	E = C * D
Oxymethane Cutting (3-09-046-00 Machining Operations Oxyfuel Cutting)				
1/4	30	1,800	8,760	15,768,000
3/4	28	1,680	8,760	14,716,800
1	27	1,620	8,760	14,191,200
2	23	1,380	8,760	12,088,800
6	7	420	8,760	3,679,200

1. Manufacturer literature states cutting speed varies from 7 - 30 inches per minute based on the thickness of material with a maximum material thickness of 6 inches. Assumed that minimum material thickness cut = 1/4 inch at 30 inch per minute cutting rate.

Maximum Throughput Based on Cutting Speed

Plate Thickness	Cut Rate	Potential Throughput	Sheet Length	Sheet Width(2)	Sheet Area	Cuts/ Sheet(3)	Cut Length	Total Cut Length per Sheet	Estimated Time to Cut Sheet	Potential Throughput		Density of Mild Steel(4)	Potential Throughput	
	(in/min)	(in cut/yr)	(ft)	(ft)	(in^2/sheet)	(qty)	(feet)	(in/sheet)	(min/sheet)	(sheets/yr)	(in^3/yr)	(lb/in^3)	(lb/yr)	(tons/yr)
A	B=Link	C=Link	D	E	F=D*E*144	G	H	G=G*H*12	J=I/B	K=C/G	L=A*F*K	M	N=L*M	O=N/2000
1/4	30	15,768,000	12	4	6,912	12	4	576	19	27,375	47,304,000	0.284	13,434,336	6,717
3/4	28	14,716,800							21	25,550	132,451,200		37,616,141	18,808
1	27	14,191,200							21	24,638	170,294,400		48,363,610	24,182
2	23	12,088,800							25	20,988	290,131,200		82,397,261	41,199
6	7	3,679,200							82	6,388	264,902,400		75,232,282	37,616

Process Weight Rate Calculation

Plate Thickness	Maximum Potential Throughput	Operational Hours	Maximum Potential Throughput	Adjusted Potential Throughput(5)	Adjusted Potential Throughput	Ratio Adjusted/ Maximum
(inch))	(tons/yr)	(hr/yr)	(tons/hr)	(tons/hr)	(tons/yr)	
A	B = Link	C	D = B/C	E	F = C*E	G = F/B
1/4	6,717	8,760	0.77	3.5	30,660	1.0000
3/4	18,808	8,760	2.15	3.5	30,660	1.0000
1	24,182	8,760	2.76	3.5	30,660	1.0000
2	41,199	8,760	4.70	3.5	30,660	0.7442
6	37,616	8,760	4.29	3.5	30,660	0.8151

(2) Maximum sheet width for beam coper is 48 inches per machine specs. Assumed a sheet length of 12 feet.

(3) Based on a width of cut steel of 1 foot. This column assumes 12 4-foot cuts to yield 576 inches per sheet throughput. However, using 1 foot cut steel width, orienting the steel sheet 90º and cutting 4 12-foot. cuts yields the same figure of 576 inches per sheet.

(4) Based on MOC 66 information for Plasma Table Cutter (Phone message Nucor Steel 1/30/2012)

(5) Maximum cut speed does not account for operational delays which include programming, setup and positioning, product removal. Adjusted Potential Throughput is based on site experience which includes operational delays. Fab Shop Line Speed based on the plasma cutter

Fact Sheet Attachment

Beam Coper PM

Supplement to Section 6.4 Uncontrolled Emission Point for EP-1C

Figure A36-1C: Potential Particulate Emissions from Joist Thermal Cutting - Beam Coper (EU-1B)

(Continued)

PM_{10} EMISSIONS - PTE

The unit is a single torch CNC Universal Beam Coping Machine
The machine can utilize a variety of different fuel gases, but will be set up as an oxyacetylene torch

Per guidance provided by Ken Lee (legal counsel for American Institute of Steel Construction, Inc. (AISC) in March 1996), particulate matter and HAP emissions are estimated using methods recommended in the AISC General Bulletin #1890 (April 30, 1991).

PM_{10} Emission Factors (Amount Emitted in Grams per Length of Cut)

Particulate matter emissions generated by torch cutting are considered to have an aerodynamic diameter of < 10 microns.
Particulate matter emission factors for oxyacetylene and oxymethane cutting were obtained from Figures 5.1 and 5.2 in Fumes and Gases in the Welding Environment (1987).
(1 meter = 39.37 inches)

Plate Thickness (inches) A	Torch Cutting (Mass PM/PM_{10} per Length Cut) Oxyacetylene (grams/ meter cut) B	Oxyacetylene (grams/ inch cut) C = B / 39.37	Oxymethane (grams/ meter cut) D	Oxymethane (grams/ inch cut) E = D / 39.37	Average (grams/ inch cut) F = (C+E)/2	Extrapolation G = A * 0.032 + 0.0154
3/16	0.44	0.011	1.07	0.027	0.019	0.021
1/4	0.7	0.018	1.3	0.033	0.025	0.024
1/2	1.15	0.029	1.37	0.035	0.032	0.032
3/4	1.63	0.041	1.55	0.039	0.040	0.040
1	2.11	0.054	1.59	0.040	0.047	0.048
2					0.080	0.080
6					0.210	0.210

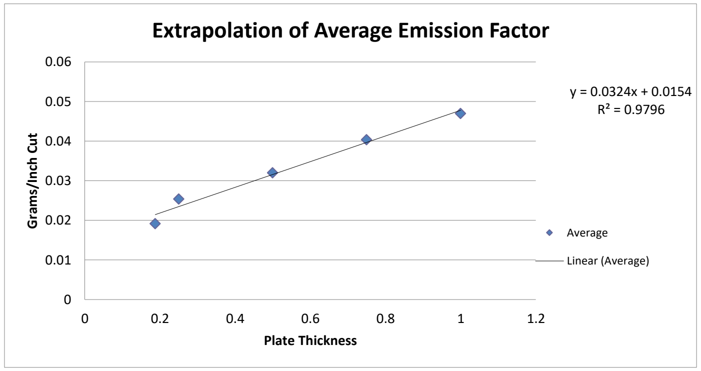


Plate Thickness A	Length of Cut (in/year) B = Link	Ratio Adjusted\ Maximum C = Link	Adjusted Length of Cut (in/year) D = B * C	PM/PM_{10} Emission Factors (gr/inch cut) E	PM/PM_{10} /$PM_{2.5}$ Emissions (gr/year) F = D * E	(lbs/year) G = F / 454	(lbs/hour) H = G / 8,760	(tons/year) I = G / 2000
)-08 Machining Operations Plasma Torch)								
1/4	15,768,000	1.0000	15,768,000	0.0254	400,508	882.2	0.101	0.441
3/4	14,716,800	1.0000	14,716,800	0.0404	594,354	1,309.1	0.149	0.655
1	14,191,200	1.0000	14,191,200	0.0470	666,846	1,468.8	0.168	0.734
2	12,088,800	0.7442	8,996,479	0.0802	721,518	1,589.2	0.181	0.795
6	3,679,200	0.8151	2,998,826	0.2098	629,154	1,385.8	0.158	0.693
Maximum						**1,589.2**	**0.181**	**0.795**

Adjusted Potential Throughput (tons/hr) K=Link	Allowable Emission Rate (1) (lbs/hr) L=4.1*K^0.67	Potential Emission Rate (lbs/hr) M
3.5	9.49	0.101
3.5	9.49	0.149
3.5	9.49	0.168
3.5	9.49	0.181
3.5	9.49	0.158
Maximum	**9.49**	**0.181**

Fact Sheet Attachment

Beam Coper HAP

Supplement to Section 6.4 Uncontrolled Emission Point for EP-1C

Figure A37-1C: Potential Particulate Metal HAP Emissions from Joist Thermal Cutting - Beam Coper (EU-1C)

Per guidance provided by Ken Lee (legal counsel for American Institute of Steel Construction, Inc. (AISC) in March 1996), particulate matter and HAP emissions are estimated using methods recommended in the AISC General Bulletin #1890 (April 30, 1991).

HAP Emission Factors

Hazardous air pollutant metal emissions were estimated using a formula from AISC and emission factors taken from an EPCRA 313 guidance document (Section 313 Reporting: Issue Paper, Clarification and Guidance for the Metal Fabrication Industry. Office of Toxic Substances [January 1990]).

Type of Cutting	Chromium	Cobalt	Manganese	Nickel
Emission factor units are in pounds of metal HAPs per million feet of 1" plate burned.				
Oxyacetylene	2.8	0.3	4.2	0.7
Oxymethane	2.0	0.2	2.9	0.5
Average	2.4	0.3	3.6	0.6

Estimate of Thickness of Plate Multiplied by the Length of Plate Cut

Cutting Operation	Web/Flange Thickness (inches)	Length of Cut (inches/ year)	Length of Cut (million feet/year) D = C / 12 / 1,000,000	Plate Thickness Length of Cut (million feet of plate burned/year)
A	B	C	D = C / 12 / 1,000,000	E = B * D
Oxymethane Cutting (3-09-046-00 Machining Operations Oxyfuel Cutting)				
	1/4	15,768,000	1.3140	0.3285
	3/4	14,716,800	1.2264	0.9198
	1	14,191,200	1.1826	1.1826
	2	8,996,479	0.7497	1.4994
	6	2,998,826	0.2499	1.4994
Maximum				**1.4994**

Estimate of Particulate Metal HAP Emissions

Metal HAP	Plate Thickness Length of Cut (million feet of plate burned/year)	Emission Factors (pounds/ million feet of plate burned)	Metal HAPs Released from Torch Cutting	
	Beam Coping	Beam Coping	(lbs/year)	(tons/year)
A	B (Link)	D (Link)	F = (B*D)	G = F / 2000
Chromium	1.499	2.40	3.599	0.0018
Cobalt	1.499	0.25	0.375	0.0002
Manganese	1.499	3.55	5.323	0.0027
Nickel	1.499	0.60	0.900	0.0004
TOTAL			**10.196**	**0.0051**

Fact Sheet Attachment

Joist Welding EU-2

Supplement to Section 6.5 Uncontrolled Emission Point for EP-2

Figure A38: PM/PM_{10} and Particulate Metal HAP Emissions from Joist Welding (EU-2)

Gas metal arc welding wire is used to weld joists (electrode types ER70S-3 and ER80S-D2).
Emissions from welding wire and electrodes used for maintenance (i.e. insignificant) activities are not included.
Particulate emissions from arc welding are considered to have an aerodynamic diameter of < 10 microns.
Emission factors from AP-42, Section 12.19 (January, 1995) for SCC 3-09-052-54 were used to estimate emissions from welding.

Potential Welding Wire Use

16.00	lbs welding wire/ton of Joist and Structural produced
222,732.90	tons/year Joist
11,331	tons/year Structural
3,745,017	lbs welding wire consumed/year
3,745.02	1,000 lbs welding wire consumed/year

(1) Includes potential steel fabrication tons/year based on RediCor assembly activities (11/2/2017) and Robotic Plasma Table Beam Line (4/8/2020) Notices of Change Without Permit Revision)

Welding Emissions

Pollutant	Emission Factors	Operating Hours	Electrode Usage	Emissions		
A	(lbs/1,000 lbs electrode) B	(hours/year) C	(1,000 lbs/year) D	(lbs/year) E = B * D	(lbs/hour) F = E / C	(tons/year) G = E / 2000
POTENTIAL EMISSIONS						
PM/PM_{10}/$PM_{2.5}$	5.200	8,760	3,745.017	19,474.087	2.223	9.737
Chromium	0.001	8,760	3,745.017	3.745	0.000	0.002
Cobalt **	0.001	8,760	3,745.017	3.745	0.000	0.002
Manganese	0.318	8,760	3,745.017	1,190.915	0.136	0.595
Nickel	0.001	8,760	3,745.017	3.745	0.000	0.002
TOTAL HAPs					**0.137**	**0.601**

Fact Sheet Attachment

Robo Plasma Table PM

Submitted in support of 4/8/2020 Notification of Change Without Permit Revision

Process: Robotic Plasma Beam Line

PM_{10} and $PM_{2.5}$ Emissions - PTE

The unit is a SteelPro 600 Smaller Robotic Beam line utilizing a single Hypertherm XPR300 Plasma Torch

Particulate matter emissions generated by plasma torch cutting are estimated using information from:
"Size Distribution and Rate of Production of Airborne Particulate Matter Generated During Metal Cutting", Ebadian, M. A. ,et.al,
Florida International University, Center for Engineering & Applied Sciences, January 2001
Prepared for U.S. Department of Energy, Office of Environmental Management, Office of Science and Technology.

Plate Thickness	Cutting Rate [1]	Cut Width (Kerf)	Operating Time	Volume Removal Rate	Density of Steel [2]	Mass Removal Rate	Respirable Percent Emitted [3]	PM_{10} Emissions	PM_{10} Emissions	$PM_{2.5}$ Emissions [4]
(inches)	(in/min)	(inches)	(hours)	(cu. in./min)	(lbs/cu. in.)	(lbs/min)		(lbs/hour)	(tons/year)	(tons/year)
A	B	C	D	E = A*B*C	F	G = D*E	H	I = F*G*60	J = I*D/2000	K = J*0.4243
Plasma Cutting (3-09-030-08 Machining Operations Plasma Torch)										
1/4	200	0.125	8,760	6.250	0.284	1.7728	1.53%	1.627	7.128	3.024
1/2	115	0.125	8,760	7.188	0.284	2.0387	1.53%	1.872	8.197	3.478
1	45	0.125	8,760	5.625	0.284	1.5955	1.53%	1.465	6.415	2.722
2 3/8	6	0.125	8,760	1.781	0.284	0.5052	1.53%	0.464	2.032	0.862
Maximum								**1.872**	**8.197**	**3.478**

[1] Based on manufacturer literature for "approximate" cutting speeds for thickness of material at 170 amp current.

[2] Based on a density of 7850 kg/m^3

[3] Per FIU report - Respirable particles are less than 10 microns in diameter, and per Table 6, are 1.53% of total mass of kerf

[4] Per FIU; Table 4 - the % cumulative mass of undersize 3.1 micron and smaller is 42.43%

Fact Sheet Attachment

Robo Plasma Table HAP
Submitted in support of 4/8/2020 Notification of Change Without Permit Revision
Process: Robotic Plasma Beam Line
Nitrogen Oxide and HAP Emissions - PTE

Nitrogen Oxide and HAP Emission Factors are from:
"Emisssion of Fumes, Nitrogen Oxides and Noise In Plasma Cutting of Stainless and Mild Steel"
by Bromsen, B. et.al., March 1994 as referenced in AP-42

Emission of Nitrogen Oxides
Emission Factor 4.4 - 5.5 l/min use average 4.95 l/min

Units for NO_x Calculation	
2,000	lbs/ton
60	min/hr
453.592	g/lb
22.4	L/mole at STP
46	g NO2/mole

Estimate of Nitrogen Oxides

	Emission Factor (L/min)	Operating Time (hours)	NO_x (tons/year)
Plasma Cutter	4.950	8,760	5.889

HAP Emission Factors
The component in fumes in mild steel were metal oxides with:

Chromium	N.D.		
Copper	0% - 1.4%	use average	0.7%
Manganese	2% - 10%	use average	6.0%
Molybdenum	N.D.		
Nickel	N.D.		

Estimate of HAP Emissions

HAP	Emission Factor	PM_{10} Emissions (tons/year)	Metal HAPs Released from Plasma Cutting (tons/year)	(lbs/year)
Chromium	0.0%	8.197	0.000	0.00
Copper	0.7%	8.197	0.057	114.76
Manganese	6.0%	8.197	0.492	983.68
Molybdenum	0.0%	8.197	0.000	0.00
Nickel	0.0%	8.197	0.000	0.00

Fact Sheet Attachment

Haul Road Distances
Supplement to Section 7.3 Haul Roads
Figure A39: Haul Road Distances

The farthest distance from production building (for product to storage) or the gate (for shipments) was selected for the worst case estimate.
The lengths in the following table are estimates based on CAD measurements of road segments.

Paved Haul Roads (EU-15-1)										Unpaved Haul Roads (EU-15-2)
Joist Finished Product			Structural Finished Product		Bridging Finished Product		Deck Finished Product			Joist Finished Product
From Building to Unpaved Roads (feet)	From Building to Storage (feet)	From Storage to Vulcraft Gate (feet)	From Building to Storage (feet)	From Storage to Vulcraft Gate (feet)	From Building to Storage (feet)	From Storage to Vulcraft Gate (feet)	From Building to Storage (feet)	From Storage to Vulcraft Gate (feet)	From Building to Vulcraft Gate (feet)	From Paved Road To Storage (feet)
550	550	100	2,460	3,770	550	113	550	1,900	47	110
530	550	155	2,500	2,870	530	53	530	2,400	126	200
290	120	70	1,900		350	60	290		97	40
660	320	100			250	65	330		23	550
240	200	570			380	104			224	300
	530	91				295			140	200
	100	229				121			122	170
	400									
	160									
	350									
	290									
	325									
	250									
	330									
	370									
	260									
	265									
	275									
	660									
	240									
	200									
	320									
	200									
	730									
	800									
	100									
	120									
	375									
	225									
2,270	9,615	1,315	6,860	6,640	2,060	811	1,700	4,300	779	1,570
1 mile = 5,280 feet										
0.430 miles	1.821 miles	0.249 miles	1.299 miles	1.258 miles	0.390 miles	0.154 miles	0.322 miles	0.814 miles	0.148 miles	0.297 miles

Fact Sheet Attachment
Haul Road VMT
Supplement to Section 7.3 Haul Roads
Figure A40: Haul Road - Vehicle Miles Traveled

SCC Numbers: 2-29-401-5000 Paved Roads Industrial
2-29-601-0000 Unpaved Roads Industrial

Haul Truck Information		
Average unloaded truck weight	15	tons
Average loaded truck weight	35	tons
Average weight of material per load	20	tons
Average weight of vehicles traveling road*	25	tons
Number of wheels	18	
Average truck speed	15	miles per hour (mph)

* Used average of loaded and unloaded truck weights.

Annual Vehicle Miles Traveled (VMT)

VMT/year = 2 x {length of haul road} x {annual amount hauled} / {average weight of material per load}

Haul Road Section	Multiplier in Equation	Length of Haul Road (miles)	Annual Amount Hauled (tons/year)	Average Weight of Vehicles on Roads (tons)	Vehicle Mile Traveled (VMT/year)
Potential VMT					
Length of haul roads - Joist $_{\text{paved roads to unpaved storage roads}}$ *	2	1.82	6,682	25	2,760
Length of haul roads - Joist $_{\text{paved storage roads}}$ *	4	0.43	216,051	25	16,649
Length of haul roads - Joist $_{\text{paved shipment roads}}$	2	0.25	216,051	25	5,058
Length of haul roads - Structural $_{\text{paved storage roads}}$ *	2	1.30	11,331	25	1,931
Length of haul roads - Structural $_{\text{paved shipment roads}}$	2	1.26	11,331	25	1,893
Length of haul roads - Bridging $_{\text{paved storage roads}}$	2	0.39	12,742	25	398
Length of haul roads - Bridging $_{\text{paved shipment roads}}$	2	0.15	12,742	25	157
Length of haul roads - Deck $_{\text{paved storage roads}}$	2	0.32	387,789	25	9,989
Length of haul roads - Deck $_{\text{paved shipment roads}}$	2	0.81	387,789	25	25,265
VMT for Paved Haul Roads (EU-15-1)					61,338
Length of haul roads - Joist $_{\text{unpaved storage}}$ *	2	0.30	6,682	25	1,277
VMT for Unpaved Haul Roads (EU-15-2)					1,277

* Updated paved/unpaved VMT to include 11/2/2017 and 4/8/2020 Notices of Change Without Permit Revision

Revised 10/2020 to include 11/2/2017 RediCor (Formally CorTek) Addition and 4/8/2020 Robotic Plasma Beam Line Addition

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Haul Road PM
Supplement to Section 7.3 Haul Roads
Figure A41: Haul Road - Potential Emissions (EU-15)

Description of Constants/Variables

E :	haul road emissions (lb/VMT)	
k, d :	dimensionless constants from AP-42	Chapter 13.IV (paved)
k, a, b, c, d :	dimensionless constants from AP-42	Tables 13.2.1-1 & 13.2.2-2 (unpaved)
sL :	silt loading (g/m^2) of paved road surface	
sC :	silt content (%) of unpaved road surface	
W :	average vehicle weight (tons)	
P :	days/yr with at least 0.01" of precipitation default = 90	
S :	mean vehicle speed on road (mph) default = 30, minimum =15	(Use 15 for Vulcraft)
CE :	unpaved road, dust control efficiency	
VMT:	vehicle miles traveled	

Emission Factor Equations

Unpaved Roads {AP-42 Chapter 13.2.2 (11/06)} per Nebraska DEQ Rev. 01/2011

Equation (1a):
(modified)

$$E = k \times \left(\frac{sC}{12}\right)^a \times \left(\frac{W}{3}\right)^b \times \left(\frac{365-P}{365}\right) \times \left(\frac{S}{30}\right)^d \times (1-CE)$$

	k	*a*	*b*	*d*
PM	4.9	0.7	0.45	0.3
PM_{10}	1.5	0.9	0.45	0.5
$PM_{2.5}$	0.15	0.9	0.45	0.5

Paved roads {AP-42 Chapter 13.2.1 (per Nebraska DEQ Rev. 01/2011

Equation (2):
(modified)

$$E = k \times (sL)^{0.91} \times (W)^{1.02} \times \left(1 - \frac{P}{4 \times 365}\right)$$

	k
PM	0.011
PM_{10}	0.0022
$PM_{2.5}$	0.00054

Variables

Haul Road Section	Days of rain with at least 0.01 inch per year [1]	Silt Content (%) [2]	Silt Loading (g/m^2) [3]	Ave. Wt. Vehicle on Roads (tons)	Mean Vehicle Speed (mph)	Control Efficiency [4] 50%
Paved	90		9.7	25		
Unpaved	90	6		25	15	50%

1. AP-42, Figure 13.2.1-2 (November 2006) and Figure 13.2.2-1 (November 2006). - default #
2. AP-42, Table 13.2.2-1, mean silt content for Iron and Steel Production (November 2006) and results of seven silt samples from Vulcraft / Nucor Cold Finish that were averaged (> 5% and < 6%, rounded to 6%).
3. AP-42, Table 13.2.1-4, mean silt loading for Iron and Steel Production (November 2006).
4. Control Efficiency will be factored in the Emissions Calculation Table = 50%

Emission Factors (E = lb PM_x / VMT) - Annual Average

Unpaved		Paved	
PM_{30}/TSP	**2.3963**	PM_{30}/TSP	**2.1758**
PM_{10}	**0.5559**	PM_{10}	**0.4352**
$PM_{2.5}$	**0.0556**	$PM_{2.5}$	**0.1068**

Emission Factors (E = lb PM_x / VMT) - Maximum Hourly
(Formulas are same as the Annual Average minus the Precipation Component)

Unpaved		Paved	
PM_{30}/TSP	**3.1806**	PM_{30}/TSP	**2.3187**
PM_{10}	**0.7379**	PM_{10}	**0.4637**
$PM_{2.5}$	**0.0738**	$PM_{2.5}$	**0.1138**

Emissions Calculation Table

		Potential Emissions Haul Roads								
		Paved			Unpaved			Total		
		PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
Annual Vehicle Miles Traveled (VMT/year)	A	61,338	61,338	61,338	1,277	1,277	1,277			
Emission Factor (Annual Average) (lbs PM_x / VMT)	B	2.1758	0.4352	0.1068	2.3963	0.5559	0.0556			
Emission Factor (Maximum Hourly) (lbs PM or PM_{10}/VMT)	C	2.3187	0.4637	0.1138	3.1806	0.7379	0.0738			
Uncontrolled Emissions (lbs PM or PM_{10}/year)	D = A * B	133,460	26,692	6,552	3,060	710	71	136,520	27,402	6,623
Uncontrolled Emissions (tons PM or PM_{10}/year)	E = D / 2000	66.730	13.346	3.276	1.530	0.355	0.035	68.260	13.701	3.311
Uncontrolled Emissions (lbs PM or PM_{10}/hour)	F = D*(C/B)/annual hours	16.236	3.247	0.797	0.464	0.108	0.011	16.700	3.355	0.808
Control Efficiency (%)	G	0%	0%	0%	50%	50%	50%			
Controlled Emissions (lbs PM or PM_{10}/year)	H = D * (1-G)	133,460	26,692	6,552	1,530	355	35	134,990	27,047	6,587
Controlled Emissions (tons PM or PM_{10}/year)	I = H / 2000	66.730	13.346	3.276	0.765	0.177	0.018	67.495	13.523	3.294
Controlled Emissions (lbs PM or PM_{10}/hour)	J = H*(C/B)/annual hours	16.236	3.247	0.797	0.232	0.054	0.005	16.468	3.301	0.802

Cooling Towers
Supplement to Section 8.3 Insignificant Activities Located at a Class I Source
Figure A42: Additional Information for Insignificant Cooling Towers

SCC Number: 3-85-001-01

Two identical cooling towers are used to cool the coolant which cools the compressors for the breathable air system.
One cooling tower is idle while the other runs - 24 hours per day and 365 days per year.

Circulating Flow Volume for One Tower				
(gal/min) A	(gal/hour) B = A * 60	(kgal/hour) C = B / 1000	(gal/year) D = B * 8,760	(kgal/year) E = D / 1000
65	3,900	3.90	34,164,000	34,164

Potential Drift Loss for One Tower

Circulated Water Volume	Drift Factor [1]	Drift Mass	Drift Volume [2]	Total Dissolved Solids (TDS)			
				Concentration		Mass	
(kgal/year) A	(lbs drift/kgal) B	(lbs drift/year) C = A * B	(gal drift/year) D = C / 8.34	(ppmv) [3] D	(lb TDS/gal drift) E = D / 1,000,000	(lbs TDS/year) F = C * E	(tons TDS/year) G = F / 2000
34,164	1.7	58,079	6,964	2,500	0.0025	17.4	0.009

1. AP-42 Chapter 13.4 Wet Cooling Towers (January 1995). Used emission factor for induced draft to be conservative.
2. Drift mass was multiplied by the weight of water or 8.34 pounds per gallon.
3. 2,500 ppmv total dissolved solids was used for a conservative estimate. The total dissolved solids contents of the cooling water has not been tested.
   The system is set up to dump the city water used for cooling whenever the outside temperature reaches 45° F.

gal = gallon, min = minute, kgal = 1,000 gallons, lbs = pounds, ppmv = parts per million by volume,

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Space Heaters

Supplement to Section 8.3 Insignificant Activities Located at a Class I Source

Figure A43: Additional Information for Insignificant External Combustion Units (Natural Gas Fired Space Heaters)

SCC Number:	1-05-002-06 Space Heaters, Commercial, Natural Gas
Fuels Fired:	Primary Fuel Natural Gas, Secondary Fuel Propane
Average Hours or Days of Service:	Space heaters run approximately 24 hours per day for 6 months per year

Location A	Equipment B	Manufacturer C	Type D	Number of Units E	Heat Input Rating: Each (Btu/hour) F	Heat Input Rating: Total (Btu/hour) G = E * F	Heat Input Rating: Total (MMBtu/hour) H = G / 1,000,000	Date of Installation: Before 2/26/1974 Yes or No	Date of Installation: If After 2/26/1974 Month/Year
Joist Office Roof Unit #17	Space Heater	York	Forced Air	1	56,000	56,000	**0.056**	No	Jun-01
Joist Office 360	Space Heater	Amana	Forced Air	1	70,000	70,000	**0.070**	No	Oct-88
Joist Office Roof Unit #6	Space Heater	York	Forced Air	1	70,000	70,000	**0.070**	No	Oct-06
Joist Office Roof Unit #7	Space Heater	York	Forced Air	1	70,000	70,000	**0.070**	No	Nov-06
Joist Office 124	Space Heater	York	Forced Air	2	75,000	150,000	**0.150**	No	Sep-97
Joist Office 137	Space Heater	York	Forced Air	2	75,000	150,000	**0.150**	No	Sep-97
Joist Office Roof Unit #18	Space Heater	York	Forced Air	1	79,000	79,000	**0.079**	No	Mar-12
Joist Office Roof Unit #23	Space Heater	York	Forced Air	1	79,000	79,000	**0.079**	No	Dec-97
Joist Maintenance North Wall	Space Heater	Carrier	Forced Air	1	80,000	80,000	**0.080**	No	Jul-96
Joist Office 369	Space Heater	York	Forced Air	1	80,000	80,000	**0.080**	No	Jan-00
Joist Office Roof Unit #8	Space Heater	York	Forced Air	1	82,000	82,000	**0.082**	No	Jul-94
Joist Office 367	Space Heater	Carrier	Forced Air	1	88,000	88,000	**0.088**	No	Dec-98
Joist North Locker Room by Showers	Space Heater	Amana	Forced Air	1	90,000	90,000	**0.090**	No	Apr-79
Joist Office Roof Unit #10	Space Heater	York	Forced Air	1	99,000	99,000	**0.099**	No	Feb-07
Joist North Locker Room Roof	Space Heater	Reznor	Forced Air	1	100,000	100,000	**0.100**	No	Aug-99
Joist South Locker Room Roof	Space Heater	Reznor	Forced Air	1	100,000	100,000	**0.100**	No	May-95
Joist Office 201	Space Heater	York	Forced Air	1	100,000	100,000	**0.100**	No	Sep-06
Joist Office 328	Space Heater	York	Forced Air	1	100,000	100,000	**0.100**	No	Sep-06
Joist Office Roof Unit #15	Space Heater	York	Forced Air	1	100,000	100,000	**0.100**	No	Sep-07
Joist Office 211	Space Heater	York	Forced Air	2	100,000	200,000	**0.200**	No	May-99
Joist Maintenance Building	Space Heater	Gas-Fired Products, Inc.	Radiant	7	100,000	700,000	**0.700**	No	Nov-91
Joist Building	Space Heater	Gas-Fired Products, Inc.	Radiant	169	100,000	16,900,000	**16.900**	No	---
Joist South Locker Room S. Utility Rm	Space Heater	Amana	Forced Air	1	115,000	115,000	**0.115**	No	Jan-94
Joist Office 328	Space Heater	Amana	Forced Air	1	115,000	115,000	**0.115**	No	Sep-88
Joist SE Corner Lunch Room	Space Heater	York	Forced Air	1	120,000	120,000	**0.120**	No	Jul-06
Joist SE Corner Lunch Room	Space Heater	York	Forced Air	1	120,000	120,000	**0.120**	No	Jun-06
Joist Office Roof Unit #14	Space Heater	York	Forced Air	1	70,000	70,000	**0.070**	No	Jun-04
Joist Office Roof Unit #21	Space Heater	York	Forced Air	1	108,000	108,000	**0.108**	No	Jul-10
Joist Office Roof Unit #22	Space Heater	York	Forced Air	1	108,000	108,000	**0.108**	No	Jul-10
Joist Maintenance SE Corner	Space Heater	Dayton	Forced Air	1	400,000	400,000	**0.400**	No	Jan-96
Joist Maintenance NW Corner	Space Heater	Dayton	Forced Air	1	400,000	400,000	**0.400**	No	1995
Joist Plant - Raw Material Storage	Space Heater	Gas-Fired Products, Inc.	Radiant	2	100,000	200,000	**0.200**	No	Dec-2021
Joist Plant - Replaced old unit in So Compressor Room	Space Heater	Gas-Fired Products, Inc.	Radiant	1	100,000	400,000	**0.400**	No	Dec-2021
Joist Plant - Office Rooftop	Space Heater	Gas-Fired Products, Inc.	Radiant	1	100,000	100,000	**0.100**	No	Dec 2022
Joist Plant - Space Heaters	Space Heater	Gas-Fired Products, Inc.	Radiant	4	100,000	400,000	**0.400**	No	Oct 2023
Structural NW Corner	Space Heater	Modine	Forced Air	1	300,000	300,000	**0.300**	No	Mar-10
Structural Plasma Room	Space Heater	Reznor	Forced Air	1	175,000	175,000	**0.175**	No	Sep-13
Structural Drill Line	Space Heater	Calcan	Radiant	2	175,000	350,000	**0.350**	No	Nov-12
Structural South Wall	Space Heater	Gas -Fired Products Inc	Radiant	3	100,000	300,000	**0.300**	No	Nov-20
Bridging Building	Space Heater	Gas-Fired Products, Inc.	Radiant	18	100,000	1,800,000	**1.800**	No	---
Deck Building	Space Heater	Gas-Fired Products, Inc.	Radiant	84	100,000	8,400,000	**8.400**	No	---
Deck Building	Space Heater	Johnson Controls	Forced Air	2	144,000	288,000	**0.288**	No	Dec-20
Deck Plant	Space Heater	Gas-Fired Products, Inc.	Radiant	1	100,000	100,000	**0.100**	No	Dec 2021
Truck Shop	Space Heater	Reznor	Forced Air	1	60,000	60,000	**0.060**	No	Aug-79
Truck Shop	Space Heater	Reznor	Forced Air	1	105,000	105,000	**0.105**	No	Aug-79
Truck Shop	Space Heater	Reznor	Forced Air	1	165,000	165,000	**0.165**	No	Mar-00
Truck Shop	Space Heater	Reznor	Forced Air	1	250,000	250,000	**0.250**	No	Feb-12
Truck Shop	Space Heater	Reznor	Forced Air	1	105,000	105,000	**0.105**	No	Jan-14
Truck Shop	Space Heater	Modine	Forced Air	1	150,000	150,000	**0.150**	No	Sep-85
RediCor	Make Up Unit	Rupp Air	Forced Air	1	710,139	710,139	**0.710**	No	Dec-20
RediCor	Space Heater	Gas-Fired Products Inc.	Radiant	6	100,000	600,000	**0.600**	No	Nov-18
TOTAL				**334**	**6,688,139**	**36,057,139**	**36.057139**		

MMBtu = million Btu, Btu = British Thermal Unit

Fact Sheet Attachment

Other Heaters

Supplement to Section 8.3 Insignificant Activities Located at a Class I Source

Figure A44: Additional Information for Insignificant External Combustion Units (Other Units)

Location A	Equipment B	Model C	Number of Units D	Heat Input Rating: Each (Btu/hour) E	Heat Input Rating: Total (Btu/hour) F = D * E	Heat Input Rating: Total (MMBtu/hour) G = F / 1,000,000	Fuels Fired H	Average Hours or Days of Service I	Date of Installation: before 2/26/74 Yes or No	Date of Installation: if after 2/26/74 Month/Year
Truck Shop	Space Heater *	Reznor	1	350,000	350,000	0.35	Used Oil	Space heaters run approximately 24 hours per day for 6 months per year	No	Jul-97
Joist Plant	Locker Room Water Heater	AO Smith	1	420,000	420,000	0.42	Natural Gas	Approximately 25 hours per week	No	Jan-95
Truck Shop	Power Washer	Hotsy	2	657,000	1,314,000	1.314	Natural Gas	30 hours per month (15 hours per month for each unit)	No	1998

* SCC Number 1-05-002-13, Space Heaters, Commercial, Waste Oil, Air Atomized Burner

MMBtu = million Btu, Btu = British Thermal Unit

Fact Sheet Attachment

Nonroad Engines

Supplement to Section 6.2.2 Nonroad Internal Combustion Unit Information

Figure A45: Additional Information for Nonroad Internal Combustion Engines

A nonroad engine is an internal combustion engine that meets any of the following criteria:

> It is (or will be) used in or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function.
> It is (or will be) used in or on a piece of equipment that is intended to be propelled while performing its function.
> It 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.

Engine ID		Fuel Type	Maximum Capacity		Description of Use
T01	**X**	Diesel		MMBtu/hr	Shag Truck used to move empty and loaded trailers around in the yard
		Gasoline	**400**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T02	**X**	Diesel		MMBtu/hr	Shag Truck used to move empty and loaded trailers around in the yard
		Gasoline	**220**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T06		Diesel		MMBtu/hr	Yard Pickup used to transport teammates around onsite
	X	Gasoline	**195**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T10		Diesel		MMBtu/hr	Yard Pickup used to transport teammates around onsite
	X	Gasoline	**195**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T12	**X**	Diesel		MMBtu/hr	Shipping forklift used to load trailers
		Gasoline	**165**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T14		Diesel		MMBtu/hr	Yard Pickup used to transport teammates around onsite
	X	Gasoline	**195**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T15	**X**	Diesel		MMBtu/hr	Shipping forklift used to load trailers
		Gasoline	**165**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T16	**X**	Diesel		MMBtu/hr	ATV used to transport teammates onsite, trash pick up, and snow removal.
		Gasoline	**22**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T17	**X**	Diesel		MMBtu/hr	Shipping forklift used to load trailers
		Gasoline	**165**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T18	**X**	Diesel		MMBtu/hr	Shipping forklift used to load trailers
		Gasoline	**165**	HP	
		Natural Gas		kW	
		Other			

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Nonroad Engines

Supplement to Section 6.2.2 Nonroad Internal Combustion Unit Information

Figure A45: Additional Information for Nonroad Internal Combustion Engines

Engine ID		Fuel Type	Maximum Capacity		Description of Use
T19	**X**	Diesel		MMBtu/hr	Shipping forklift used to load trailers
		Gasoline	**165**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T24	**X**	Diesel		MMBtu/hr	Motor grader used for landscaping and snow removal
		Gasoline	**195**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T27		Diesel		MMBtu/hr	Yard Pickup used to transport teammates around onsite
	X	Gasoline	**190**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T28		Diesel		MMBtu/hr	Yard Pickup used to transport teammates around onsite
	X	Gasoline	**195**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T30		Diesel		MMBtu/hr	Forklift used in the Joist Plant for various duties
	X	Gasoline	**45**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T33	**X**	Diesel		MMBtu/hr	Payloader used for landscaping and snow removal
		Gasoline	**180**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T34		Diesel		MMBtu/hr	Yard Pickup used to transport teammates around onsite
	X	Gasoline	**140**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T38		Diesel		MMBtu/hr	Yard Pickup used to transport teammates around onsite
	X	Gasoline	**195**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T45		Diesel		MMBtu/hr	Yard Pickup used to transport teammates around onsite
	X	Gasoline	**195**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T48		Diesel		MMBtu/hr	Yard Pickup used to transport teammates around onsite
	X	Gasoline	**195**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T49	**X**	Diesel		MMBtu/hr	Sweeper used to clean the outside haul roads
		Gasoline	**60**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
T50	**X**	Diesel		MMBtu/hr	Water truck used to wet down the haul roads - dust control
		Gasoline	**400**	HP	
		Natural Gas		kW	
		Other			

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Nonroad Engines

Supplement to Section 6.2.2 Nonroad Internal Combustion Unit Information

Figure A45: Additional Information for Nonroad Internal Combustion Engines

Engine ID		Fuel Type	Maximum Capacity		Description of Use
T36(SM)		Diesel		MMBtu/hr	Starting motor used for jump starting plant equipment
	X	Gasoline	**16**	HP	
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
VJ01		Diesel		MMBtu/hr	
	X	Gasoline	**63**	HP	Grove Arial Work Platform - West end of Joist Plant
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description of Use
3		Diesel		MMBtu/hr	
	X	Gasoline	**8**	HP	Tennant Floor Sweeper
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
1		Diesel		MMBtu/hr	
	X	Gasoline	**8**	HP	Tennant Floor Sweeper
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
6		Diesel		MMBtu/hr	
	X	Gasoline	**8**	HP	Tennant Floor Sweeper
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
4		Diesel		MMBtu/hr	
	X	Gasoline	**8**	HP	Tennant Floor Sweeper
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
7		Diesel		MMBtu/hr	
	X	Gasoline	**8**	HP	Tennant Floor Sweeper
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
#3	**X**	Diesel		MMBtu/hr	
		Gasoline	**205**	HP	Capacity Shag Truck # 3
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
#8	**X**	Diesel		MMBtu/hr	
		Gasoline	**205**	HP	Capacity Shag Truck # 8
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
853	**X**	Diesel		MMBtu/hr	
		Gasoline	**62**	HP	Bobcat Skidsteer Loader
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
43		Diesel		MMBtu/hr	
	X	Gasoline	**45**	HP	Hyster 30 Forklift #43
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
42		Diesel		MMBtu/hr	
	X	Gasoline	**45**	HP	Hyster Fork Lift #42
		Natural Gas		kW	
		Other			

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Nonroad Engines

Supplement to Section 6.2.2 Nonroad Internal Combustion Unit Information

Figure A45: Additional Information for Nonroad Internal Combustion Engines

Engine ID		Fuel Type	Maximum Capacity		Description Of Use
21	**X**	Diesel		MMBtu/hr	
		Gasoline	**75**	HP	Yale Fork Lift # 21
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
VD07		Diesel		MMBtu/hr	
	X	Gasoline	**5**	HP	Honda Paint Sprayer behind Heat Treat oven in Maintenance Shop
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
VD08		Diesel		MMBtu/hr	
	X	Gasoline	**5**	HP	Cpleman Power Washer behind Heat Treat oven in Maintenance Shop
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
VD11		Diesel		MMBtu/hr	
	X	Gasoline	**20**	HP	Miller Trailblazer Welder #1 - Joist Maintenance
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
VD		Diesel		MMBtu/hr	
	X	Gasoline	**20**	HP	Miller Trailblazer Welder #2 - Joist Maintenance
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
VD09		Diesel		MMBtu/hr	
	X	Gasoline	**14**	HP	Clipper Concrete Saw - Makita DPC 7301 - Maintenance Shop
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
VD10		Diesel		MMBtu/hr	
	X	Gasoline		HP	Wen Generator - Deck Maintenance
		Natural Gas	**3.5**	kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
VD14		Diesel		MMBtu/hr	
	X	Gasoline	**5**	HP	Pacer Water Pump Briggs in Paint Shed
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
VD04		Diesel		MMBtu/hr	
	X	Gasoline	**4.8**	HP	Pacer Water Pump Honda 160 in Paint Shed
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
VD02		Diesel		MMBtu/hr	
	X	Gasoline	**3.5**	HP	Honda 120 Water Pump in Paint Shed
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
VD 06		Diesel		MMBtu/hr	
	X	Gasoline	**3.5**	HP	Honda 120 Water Pump in Paint Shed
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
VD05		Diesel		MMBtu/hr	
	X	Gasoline	**3.5**	HP	Honda 120 Water Pump in Paint Shed
		Natural Gas		kW	
		Other			

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Nonroad Engines

Supplement to Section 6.2.2 Nonroad Internal Combustion Unit Information

Figure A45: Additional Information for Nonroad Internal Combustion Engines

Engine ID		Fuel Type	Maximum Capacity		Description Of Use
VD15		Diesel		MMBtu/hr	
	X	Gasoline	**4.8**	HP	Honda Gx 160 Water Pump in Paint Shed
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
VD01		Diesel		MMBtu/hr	
	X	Gasoline	**5.5**	HP	Red Lion Water Pump in Paint Shed
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
VD04		Diesel		MMBtu/hr	
	X	Gasoline	**5.5**	HP	Red Lion Water Pump in Paint Shed
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
5		Diesel		MMBtu/hr	
	X	Gasoline	**8**	HP	Tennant Floor Sweeper
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
D3		Diesel		MMBtu/hr	
	X	Gasoline	**20**	HP	Miller Trail Blazer Welder - Deck Maintenance
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
8		Diesel		MMBtu/hr	
	X	Gasoline	**8**	HP	Tennant Floor Sweeper
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
51		Diesel		MMBtu/hr	
	X	Gasoline	**65**	HP	Cat Fork Lift 51
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
47		Diesel		MMBtu/hr	
	X	Gasoline	**60**	HP	Hyster Fork Lift 47
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
39		Diesel		MMBtu/hr	
	X	Gasoline	**45**	HP	Hyster Fork Lift 39
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
20		Diesel		MMBtu/hr	
	X	Gasoline	**45**	HP	Hyster Folk Lift 20
		Natural Gas		kW	
		Other			
Engine ID		Fuel Type	Maximum Capacity		Description Of Use
9	**X**	Diesel		MMBtu/hr	
		Gasoline	**220**	HP	Capacity Shag Truck
		Natural Gas		kW	
		Other			

Fact Sheet Attachment

Storage Tank

Supplement to Section 6.7.1 Tank Emissions - Tank Summary

Figure A46: Additional Information for Working and Breathing Losses from Gasoline Fuel Storage Tanks

Working and Breathing Losses of VOCs and Volatile HAPs from Gasoline Fuel Storage Tanks

EPA TANKS Version 4.0.9d was used to calculate the estimates of VOC emissions for working and breathing losses from the gasoline tanks.

The calculations from the TANKS program are attached: Gasoline (RVP) 10 was used for the 2 storage tanks.

The emission factor for Working Loss of VOCs from Web*FIRE* (December 2020) SCC 4-04-002-06 is

5.70E+00 lbs/1,000 gal stored (Link 1)

The emission factor for Breathing Loss of VOCs from Web*FIRE* (December 2020) SCC 4-04-002-01 is

3.05E+01 lbs/1,000 gal stored (Link 2)

The emission factor for Filling Loss of VOCs from Web*FIRE* (December 2020) SCC 4-04-002-12 is

7.70E+00 lbs/1,000 gal stored (Link 3)

Throughput and VOC & HAPS Emissions

Tank A	Tank Capacity (gal) B	Throughput (gal) C	Potential VOC and HAPs Losses from: Working (lbs/year) D = Link 1 * C / 1,000	Breathing (lbs/year) E = Link 2 * C / 1,000	Filling (lbs/year) F = Link 3 * C / 1,000	Total (lbs/year) G = D + E + F	Total (lbs/hour) H = G / 8,760	Total (tons/year) I = G / 2000
#13	550	4,422	75.62	404.61	102.15	582.38	0.066	0.291
#15	300	4,808	82.22	439.93	111.06	633.21	0.072	0.317
TOTAL		**9,230**	**157.83**	**844.55**	**213.21**	**1,215.59**	**0.139**	**0.608**

HAPs in Gasoline and in VOC Emissions

wt % in vapor(2)	Benezene	Toluene	Ethylbenzene
	0.0077%	0.0066%	0.0004%

Potential Emissions

Tank	Benezene (lbs/year)	Toluene (lbs/year)	Ethylbenzene (lbs/year)	VOC - HAPs (lbs/year)	VOC - HAPs (lbs./hour)	Benezene (tons/year)	Toluene (tons/year)	Ethylbenzene (tons/year)	VOC - HAPs (tons/year)
13	0.0448	0.0384	0.0023	582.29	0.066	0.00002	0.00002	0.00000	0.29115
15	0.0488	0.0418	0.0025	633.12	0.072	0.00002	0.00002	0.00000	0.31656
TOTAL	**0.0936**	**0.0802**	**0.0049**	**1,215.41**	**0.1387**	**0.00005**	**0.00004**	**0.00000**	**0.608**

1. Actual throughput is assumed to be one 8-hour shift per day, 365 days per year. Multiply by 3 to adjust for 24 hour period
2. AP-42

Fact Sheet Attachment

Process Weight Rate

Comparison of Process Weight Rates in Title 129, Chapter 15, Table 15-2*; Title 129, Chapter 15, Table 15-2 and Particulate Emission Rates

Process and Related Emission Units	Potential Process Rates		Potential PM Emission Rates		Allowable PM Emission Rates
	Tons/Year	Tons/Hour	Tons/Year	Lbs/Hour	Lbs/Hour *
Torch Cutting					
Joist Manufacture	222733	25.43			38.51
EU-1 Joist Thermal Cutting			1.946	0.44	
Welding					
Joist Manufacture	222733	25.43			
Bridging Manufacture	12742	1.45			
Total	235,475	26.88			39.00
EU-2 Joist and Bridging Welding			9.737	2.22	
Spray Painting					
Joist Manufacture	12444	1.42			5.19
Bridging Manufacture	12742	1.45			5.27
Deck Manufacture	333061	38.02			42.07
Cell Deck Manufacture	48066	5.49			12.83
Deck Accessories Manufacture	6661	0.76			3.41
Total	412975	47.14			44.03
EU-20 Joist Touch Up or Color Code (Aerosol Can)			0.375	0.09	
EU-25 Joist Portable Spray Gun (Center Section)			32.428	7.40	
EU-5 Bridging Vac-U-Coater			0.880	0.20	
EU-21 Bridging Touch Up or Color-Code (Aerosol Can)			0.000	0.00	
EU-22 Deck Touch Up or Color-Code (Aerosol Can)			0.036	0.01	
EU-24 Deck Portable Spray Gun (Edge Coating, Cell Deck Painting, Repainting)			44.565	10.17	
Total			78.284	17.87	

* Using Process Weight Rate Equations ($E = 4.10 * p^{0.67}$ or $E = 55 * p^{0.11} - 40$) in Title 129, Chapter 15, Table 15-2*; Title 129, Chapter 15, Table 15-2 where E equals the rate of emissions in pounds per hour and p equals the process weight rate in tons per hour. The second equation listed in parentheses is used to interpolate data for process weight rates in excess of 60,000 pounds per hour (30 tons per hour).