SYNTHETIC MINOR INSTALLATION PERMIT APPLICATION

ALLIED METAL COMPANY

CHATTANOOGA, TN

MARCH 2023

SUBMITTED BY:

ALLIED METAL COMPANY

Allied Metal Company
Chattanooga Facility
3440 Lightfoot Mill Road
Chattanooga, TN 37406

SUBMITTED TO:

Chattanooga-Hamilton County
Air Pollution Control Bureau
6125 Preservation Drive #140
Chattanooga, TN 37416-3740

ALL4 APPROVED Quality Council

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1. INTRODUCTION

Allied Metal Company (Allied Metal) owns and operates the Chattanooga zinc alloy manufacturing facility (Chattanooga facility or Facility) in Chattanooga, Hamilton County, Tennessee. The Chattanooga facility is an existing synthetic minor stationary source of air emissions and operates under Certificate of Operation No. 4400-30400803-02C for Three Sweating Furnaces and No. 4400-30400803-03C for Four Melting Furnaces issued by the Chattanooga-Hamilton County Air Pollution Control Bureau (APCB) with each effective through October 30, 2023.

The APCB requires an installation permit be obtained prior to construction, installation, or beginning any modification, alteration or reconstruction of any fuel-burning, refuse-burning, process or air pollution control equipment unless exempt under the Chattanooga, Tennessee Code of Ordinances, Chapter 4, Air Pollution, Section 4-56(c)(11), 4-56(c)(12). Per Section 4-8, Allied Metal is submitting a complete Installation Permit application to add a secondary aluminum manufacturing line to the existing Facility. The proposed new emissions sources will include one new reverberatory furnace, one new rotary furnace, and one new diesel-fired emergency generator as well as associated fugitive emissions from roads and dross handling.

1.1 APPLICATION ORGANIZATION

This application is organized in a report format and includes the following sections and appendices:

- **Section 1 – Introduction and Application Organization:** provides general information regarding the Facility and an overview of the application.
- **Section 2 – Facility and Project Description:** provides details about the Facility and the proposed project description.
- **Section 3 – Project Emissions Inventory:** provides an emissions inventory of the proposed project and the emissions calculation methodologies and assumptions used to determine Title V and PSD applicability.

- **Section 4 – Applicable Requirements:** summarizes Federal and APCB air quality rules potentially applicable to the Facility due to the proposed project. It includes a discussion of the applicability or non-applicability of each rule identified.

- **Appendix A – Process Flow Diagram:** contains a process flow diagram of the Facility's operations.

- **Appendix B – Application Forms:** contains the APCB forms.

- **Appendix C – Facility-wide Potential Emissions:** contains supporting documentation tables for the calculation of the Facility's post project potential to emit (PTE).

2. FACILITY AND PROJECT DESCRIPTION

This section of the application provides a brief overview of the Facility's current configuration and operations. A detailed description of the proposed project is also included.

2.1 FACILITY LOCATION

The Facility is located in Chattanooga (Hamilton County), Tennessee. A U.S. Geological Survey (USGS) 1:24,000 scale topographical map is shown in Figure 2-1, with the Facility location highlighted. The geographic coordinates for the Facility are:

- Universal Transverse Mercator (UTM) Easting: 662,235 meters (m)
- UTM Northing: 3,882,086 m
- UTM Zone: 16
- North American Datum (NAD): 1983
- Longitude (degrees, minutes, seconds): 85° 13' 14.63" W
- Latitude (degrees, minutes, seconds): 35° 04' 6.55" N

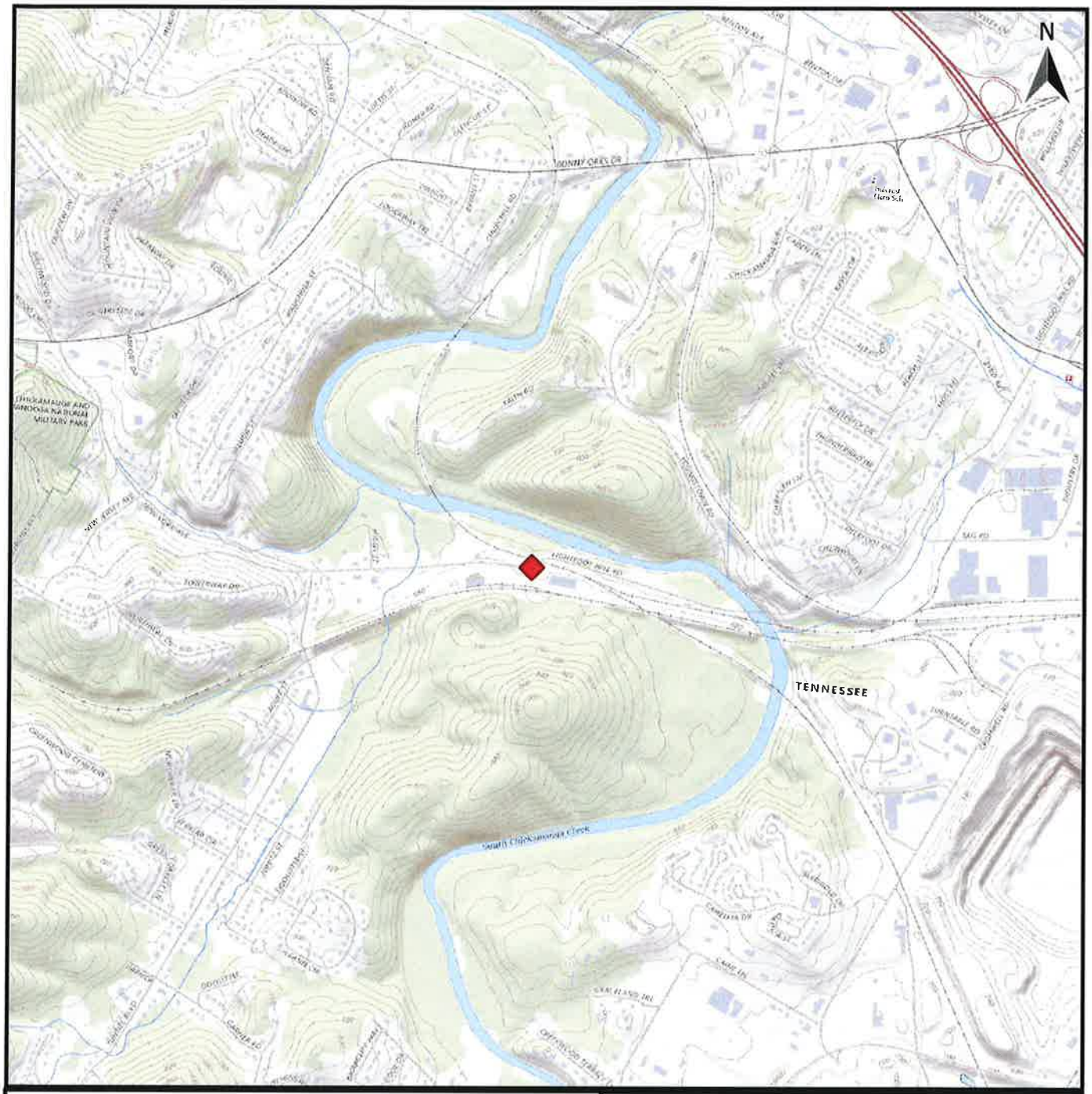
The Facility is located in the Chattanooga Interstate Air Quality Control Region (AQCR) (40 CFR §81.42). Within this AQCR, Hamilton County is in attainment or unclassifiable/attainment for all criteria pollutants except for TSP in the portion of Hamilton County within approximately the city limits of Chattanooga, 40 CFR §81.343. The Allied Metal Facility is located within the Chattanooga City limits.

2.2 REGULATORY JURISDICTION

The Facility is under the jurisdiction of the following State and Federal agencies:

Chattanooga-Hamilton County
Air Pollution Control Bureau
6125 Preservation Drive
#140
Chattanooga, TN 37416

U.S. Environmental Protection Agency
(U.S. EPA)
Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303



Legend

Facility Location

0 0.25 0.5 0.75 1 mi

Figure 2-1
Facility Location Map

Allied Metal Company
Chattanooga, TN

DRAWN BY: A.B.	CHECKED BY: J.B.
DATE: June 2022	PROJ NO.: 01283-0018.00

Topographical map obtained from USGSTopo Web Service

2.3 FACILITY PROCESS DESCRIPTION

The Chattanooga Facility is located at 3440 Lightfoot Mill Road, Chattanooga, Hamilton County, Tennessee. The Facility currently manufactures zinc alloy and is categorized under the Standard Industrial Classification (SIC) code 3341 and North American Industry Classification System (NAICS) code 331492 for Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum).

Allied Metal produces zinc alloys from both primary and secondary metals. The zinc can be alloyed with up to 12% aluminum by weight and with lesser amounts of nickel, copper, and/or magnesium. Any secondary metal that is used is new scrap such as rejected die castings and casting trim material. This scrap metal is generally clean, although it may possess a coating of some type. No flux is used in the current alloying process. The zinc alloys are shipped out in the form of either ingots or large blocks that are referred to as sows.

With this application, Allied Metal proposes to construct a secondary aluminum manufacturing line. Secondary Smelting and Alloying of Aluminum is classified under NAICS code 331314 and SIC code 3341. Allied Metal intends to remove two of the three existing zinc sweating furnaces.

2.4 PROJECT DESCRIPTION

reverberatory & rotary furnaces combined

The proposed new equipment will recycle aluminum shred, bales, and chips to produce aluminum sows and ingots. The proposed production line will have the potential capacity to produce 49,750 tons per year (tpy), or 12,563 pounds per hour (lb/hr), A process flow diagram is included in Appendix A.

at 7,920 hr/yr (330 days/yr)

Previous: 50,500 tons/yr → 12,753 lb/hr @ 7,920 hr/yr (330 days/yr)

Aluminum scrap will be received in shred, bales, and chips. There will be no pretreatment, drying, or sizing/crushing operations prior to the smelting and refining process units. The scrap will be processed as received and may be clean or dirty charge containing paint, coatings, and/or lubricants.

The smelting and refining process will take place in the natural gas-fired Reverberatory Furnace (Proposed Emissions Unit No. 001) and in the natural gas-fired Rotary Furnace (Proposed Emissions Unit No. 002). Aluminum scrap will be charged into the sidewell of the Reverberatory

furnace. Salt fluxes and alloying elements will be added to the sidewell by a front-end loader to remove impurities and to adjust metallurgical content. The sidewell will exhaust to a baghouse (Proposed Control Device ID FF2). Lime will be injected at the inlet of the baghouse to control HAP emissions. The hearth (combustion zone) of the furnace will exhaust directly to atmosphere and will be separated from the sidewell by a partition. The Reverberatory Furnace will be heated on the hearth side by a 28 million British thermal unit per hour (MMBtu/hr) natural gas-fired burner. The Facility will use solid fluxing and a chlorine gas demagging process to reduce the magnesium content of the molten charge to the product specification.

Aluminum dross (solid floating impurities) will be removed from the molten aluminum by a skimming process. The dross will be transferred to iron containers to solidify and then be stored in a pile prior to transfer by front-end loader to a semi-truck for shipment offsite.

The proposed natural gas-fired Rotary Furnace (Proposed Emission Unit No. 002) will be used to reclaim low-grade aluminum scrap into aluminum. The Rotary Furnace will operate by rotating the charge through the furnace to come in direct contact with a gas burner or with a refractory wall that will be directly heated by the burner. The Rotary Furnace will exhaust to a new baghouse which will also utilize lime injection to reduce HAP emissions. The Rotary Furnace will be heated by a 12 MMBtu/hr natural gas-fired burner. There will be no chlorine gas demagging in the Rotary Furnace. A salt flux may be charged to improve metal recovery and reduce aluminum oxidation, also referred to as cover flux.

Ancillary operations will include a diesel-fired emergency engine and fugitive particulate emissions from roadways. The diesel-fired emergency engine will be 250 kilowatt (kw) [330 horsepower (HP)]. ~ 2.5 MMBtu/hr < 5.0 MMBtu/hr

3. PROJECT EMISSIONS INVENTORY

The following sections discuss the approach for quantifying potential emissions from the proposed project.

3.1 REVERBERATORY AND ROTARY FURNACES

Emissions from the Reverberatory Furnace and Rotary Furnace result from natural gas combustion and the refining and smelting process. Combustion by-product emissions are based on the U.S. EPA's AP-42, Section 1.4 for Natural Gas Combustion. The Reverberatory Furnace burner is rated at a maximum capacity of 28 MMBtu/hr. The Rotary Furnace burner is rated at a maximum capacity of 12 MMBtu/hr.

Process emissions of filterable particulate matter (PM), filterable particulate matter less than 10 microns and condensable PM (Total PM_{10}), and filterable particulate matter less than 2.5 microns and condensable PM (Total $PM_{2.5}$), dioxin and furan (D/F), hydrogen chloride (HCl), chlorine, and hydrogen fluoride (HF) are expected from the refining/smelting process. PM, Total PM_{10} (filterable), and Total $PM_{2.5}$ (filterable) emissions are based on the U.S. EPA's AP-42, Section 12.8 for Secondary Aluminum Operations. Condensable particulate emissions can vary and there is no established condensable PM emissions factor for secondary aluminum operations. To be conservative, Allied has assumed a condensable PM emissions factor of 50% of the uncontrolled filterable particulate. Each furnace is exhausted to a baghouse with lime injection to control filterable particulate matter emissions. D/F emissions are calculated using the applicable emissions limit in 40 CFR §63.1505(i)(4). HF and HCl emissions are also calculated based on 40 CFR §63.1505(i)(4) limits as conservative engineering estimates; HF and HCl emissions will not be regulated under 40 CFR §63.1505. Chorine emissions are also based on an engineering estimate.

Combustion-related emissions include carbon monoxide (CO), nitrogen oxides (NO_X), $PM/PM_{10}/PM_{2.5}$, sulfur dioxide (SO_2), volatile organic compounds (VOC), lead, and greenhouse gases (GHG). Emissions factors for natural gas combustion are from U.S. EPA's AP-42, Section 1.4.

Process and combustion emissions from the reverberatory and rotary furnaces are found in Attachment C, Table C-2, Table C-3, and Table C-4 of this application.

3.2 FUGITIVE EMISSIONS

Fugitive $PM/PM_{10}/PM_{2.5}$ emissions will be generated from both dross handling and truck traffic on Facility roadways. All Facility roadways are paved. Emissions are calculated using U.S. EPA's AP-42, Section 13.2 and are shown in Attachment C, Table C-5 and C-6 of this application.

3.3 EMERGENCY ENGINE

Allied Metal proposes to install a 250 kw (330 HP) diesel-fired (compression ignition) generator set to provide emergency power during power outages. Potential emissions are calculated using U.S. EPA's AP-42, Section 3.3 and are shown in Attachment C, Table C-7 of this application.

3.4 FACILITY-WIDE POTENTIAL EMISSIONS

Attachment C, Table C-1 of this application summarizes post-project Facility-wide potential emissions, accounting for existing sources (with the removal of two of the three existing sweat furnaces), the new reverberatory furnace, rotary furnace, emergency engine, and fugitive emissions. The PTE calculations confirm that the Chattanooga facility remains a synthetic minor source of all criteria pollutants (relative to the 100 tpy major source threshold for each) and an area source for total hazardous air pollutants (HAP) and any individual HAP below the applicable major source thresholds of 25 tpy and 10 tpy, respectively.

4. REGULATORY ANALYSIS

This section summarizes Allied Metal's review of Federal and Chattanooga-Hamilton County air quality regulations potentially applicable as a result of the proposed project.

4.1 FEDERAL REGULATIONS

Potentially applicable Federal regulations include New Source Review (NSR), Standards of Performance for New Stationary Sources (NSPS) in 40 Code of Federal Regulations (CFR) Part 60, and National Emission Standards for Hazardous Air Pollutants (NESHAP) in 40 CFR Parts 61 and 63. These requirements are codified in the Chattanooga-Hamilton County air quality regulations in Code of Ordinances, Chapter 4, Section 41, Rules 15, 16, and 18.

4.1.1 New Source Review

The NSR program includes both the Nonattainment NSR (NNSR) regulations and Prevention of Significant Deterioration (PSD) regulations. Hamilton County, Tennessee is classified as attainment/unclassifiable for all criteria pollutants. Therefore, the PSD permitting program applies.

The PSD regulations apply to major stationary sources and major modifications at major stationary sources, which are those sources belonging to any one of the 28 source categories listed in the regulations that have the potential to emit more than 100 tpy of any NSR-regulated pollutant, or any other stationary source which has the potential to emit more than 250 tpy of any NSR-regulated pollutant. Secondary metal production facilities are one of the 28 listed source categories defined in 40 CFR §52.21(b). Therefore, the PSD major source threshold is 100 tpy for this facility.

Emissions of NSR-regulated pollutants at the Allied Metal facility are less than 100 tpy. The Facility proposes a federally enforceable limit of less than 100 tpy for PM, PM_{10}, and $PM_{2.5}$ to limit the Facility's PTE to less than the major source threshold with respect to the NSR permitting program. Therefore, PSD and NNSR permitting regulations do not apply.

4.1.2 Title V Permitting Program

The Title V Operating Permit (TVOP) program is codified at 40 CFR Parts 70 and 71. A major source for the TVOP program is:

- Any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit, in the aggregate, 10 tpy or more of any hazardous air pollutant or 25 tpy or more of any combination of such hazardous air pollutants.
- A stationary source of air pollutants that directly emits, or has the potential to emit, 100 tpy or more of any air pollutant subject to regulation.

As discussed in Section 4.1.1, Allied Metal requests a federally enforceable limit of < 100 tpy for PM, PM_{10}, and $PM_{2.5}$. In addition, as shown in Attachment C, Table C-1, the post project HAP emissions are less than 10 tpy of a single HAP and less than 25 tpy of total HAP. Therefore, the Facility is an area source of HAP and is not subject to Title V permitting.

4.1.3 Standards of Performance for New Stationary Sources at 40 CFR Part 60

NSPS require new, modified, or reconstructed sources in regulated source categories to control emissions to the level achievable by the best-demonstrated technology as specified in the applicable provisions. NSPS are incorporated by reference in the Code of Ordinances, Chapter 4-41, Rule 15. Any source subject to an NSPS is also subject to the general provisions of NSPS Subpart A, unless specifically excluded. The applicability of a particular NSPS can be readily ascertained based on the industrial source category covered. There are no NSPS that apply to the Aluminum Reverberatory Furnace, Rotary Furnace, material handling, or roadways. A review of potentially applicable NSPS is included in the following subsections.

4.1.3.1 40 CFR Part 60, Subpart A

All regulated sources are subject to the general provisions of Part 60 NSPS Subpart A, unless specifically excluded. Subpart A requires initial notification and performance testing, recordkeeping, monitoring, provides reference methods, and mandates general control device requirements for all other subparts as applicable.

4.1.3.2 40 CFR Part 60, Subpart Kb

NSPS Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels, regulates storage vessels with a capacity greater than 75 cubic meters (m^3) (19,813 gallons) that are used to store volatile organic liquids for which construction, reconstruction, or modification is commenced after July 23, 1984.

Allied Metal proposes to operate chlorine storage associated with chlorine demagging in the reverberatory furnace and a diesel storage tank associated with the emergency diesel engine. Chlorine is not a volatile organic liquid. The diesel storage tank is exempt per 40 CFR §60.110b(d)(4). Therefore, this NSPS is not applicable to the storage tanks proposed by the Facility.

4.1.3.3 40 CFR Part 60, Subpart IIII

NSPS Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, regulates stationary compression ignition engines (including emergency engines) that commence construction after July 11, 2005.

The proposed project includes one, 250 kW diesel emergency engine. Allied Metal will operate the engine according to manufacturer's written emissions-related instructions. The engine will be subject to the following requirements summarized in Table 4-1. Allied Metal will comply with the requirements of NSPS Subpart IIII by purchasing an engine certified by the manufacturer to meet the emissions standards, installing a non-resettable hour meter on the engine, purchasing fuel that meets the sulfur specifications, and operating and maintaining the engine according to the manufacturer's recommendations.

Table 4-1
40 CFR Part 60, Subpart IIII Requirements

250 kW Certified Emergency Engine	Citation	Applicable Requirements
Emissions Standards	40 CFR §60.4205(b) 40 CFR §60.4202	Emissions standards: NO_X + non-methane hydrocarbons (NMHC) = 4.0 grams per kW-hour (g/kW-hr) CO = 3.5 g/kW-hr PM = 0.2 g/kW-hr Smoke standards: 20% during the acceleration mode. 15% during the lugging mode. 50% during the peaks in either the acceleration or lugging modes.
Fuel Requirements	40 CFR §60.4207(a), (b), (e)	15 parts per million (ppm) sulfur content, and minimum cetane index of 40, or maximum aromatic content of 35 volume percent.
Monitoring	40 CFR §60.4209(a)	Install/operate non-resettable hour meter.
General Compliance	40 CFR §60.4206 40 CFR §60.4211(a), (c), (f), (g)	Operate and maintain engine to comply with emissions standards over life of engine. Operate and maintain engine according to manufacturer emissions-related written instructions. Operate a maximum of 100 hours per year for maintenance and readiness checks. 50 hours of non-emergency operation is allowed and

Table 4-1
40 CFR Part 60, Subpart IIII Requirements

250 kW Certified Emergency Engine	Citation	Applicable Requirements
		counts towards the total 100 hours per year.
Notifications/Reports/Records	40 CFR §60.4214(b)	Initial notification is not required.
General Conditions	Table 8	Except §60.8, §60.11, §60.13, and §60.18.

4.1.4 National Emission Standards for Hazardous Air Pollutants at 40 CFR Part 61 and 63

NESHAP are emissions standards that apply to major sources of HAP (facilities that meet or exceed the major source thresholds of 10 tpy of a single HAP and/or 25 tpy of any combination of HAP) or specifically designated non-major or area sources. NESHAP are incorporated by reference in the Code of Ordinances, Chapter 4-41, Rule 16. The Facility is considered an area source because the PTE of individual and total HAPs are less than the applicable major source thresholds. The following subsections contain a review of NESHAP potentially applicable to the proposed new emissions sources.

4.1.4.1 40 CFR Part 63, Subpart RRR – NESHAP for Secondary Aluminum Production

40 CFR Part 63, Subpart RRR (Subpart RRR) applies to the owner or operator of each secondary aluminum production facility. The Facility meets the definition of a Secondary Aluminum Production Facility in 40 CFR §63.1503. The Chattanooga facility is an area source of HAP under Part 63 because the Facility's potential HAP emissions are less than 10 tpy of any individual HAP and less than 25 tpy of combined HAP. Specifically, D/F emissions and associated operating, monitoring, reporting, and recordkeeping requirements apply to each of the following new and existing sources located at an area source of HAP, as listed in 40 CFR §63.1500(c)(1)-(4):

- Thermal chip dryer;

- Scrap dryer/delaquering kiln/decoating kiln;
- Sweat furnace; and,
- Secondary aluminum processing unit containing one or more group 1 furnace emission units processing other than clean charge.

40 CFR §63.1503 contains the following definitions that apply to this Subpart:

> *Thermal chip dryer means a device that uses heat to evaporate oil or oil/water mixtures from unpainted/uncoated aluminum chips. Pre-heating boxes or other dryers which are used solely to remove water from aluminum scrap are not considered to be thermal chip dryers for purposes of this subpart.*
>
> *Scrap dryer/delacquering kiln/decoating kiln means a unit used primarily to remove various organic contaminants such as oil, paint, lacquer, ink, plastic, and/or rubber from aluminum scrap (including used beverage containers) prior to melting, or that separates aluminum foil from paper and plastic in scrap.*
>
> *Sweat furnace means a furnace used exclusively to reclaim aluminum from scrap that contains substantial quantities of iron by using heat to separate the low-melting point aluminum from the scrap while the higher melting-point iron remains in solid form.*
>
> *Group 1 furnace means a furnace of any design that melts, holds, or processes aluminum that contains paint, lubricants, coatings, or other foreign materials with or without reactive fluxing, or processes clean charge with reactive fluxing.*

The Reverberatory Furnace (Proposed Emission Unit No. 001) and the Rotary Furnace (Proposed Emission Unit No. 002) will each meet the definition of a Group 1 Furnace and may process clean charge or other scrap aluminum containing paint, lubricants, coatings or other foreign materials with reactive fluxing. Therefore, the Reverberatory Furnace and Rotary Furnace meet the affected source description in 40 CFR §63.1500(c)(4) at a secondary aluminum production facility that is an area source of HAP. The furnaces will be subject to the D/F emissions standards and associated

operating, monitoring, reporting, and recordkeeping requirements, which are the only standards in the NESHAP applicable to area sources.[1] Note that per 40 CFR §63.1505(k)(5), Allied Metal may demonstrate compliance with the emissions limitations associated with a Secondary Aluminum Processing Unit (SAPU) at 40 CFR §63.1505(k)(3) by complying with the emissions limitations under 40 CFR §63.1505(i)(3). Table 4-2 outlines the requirements of this Subpart applicable to the Reverberatory Furnace and Rotary Furnace.

Table 4-2
Applicable Requirements for the Reverberatory Furnace and Rotary Furnace

	Citation	Applicable Requirements
Emissions Standards	40 CFR §63.1505(i)(3)	2.1×10^{-4} gr of D/F TEQ per ton of aluminum processed.
Operating Requirements	40 CFR §63.1506(a), (b), (c), (d), (m) and (p).	Post labels at the Group 1 furnace per paragraph (b). Design/Install/Operate capture/collection system according to American Conference of Governmental Industrial Hygienists (ACGIH) Guidelines and operational, maintenance and monitoring (OM&M) plan per paragraph (c). Measure feed/charge weight or production rate per paragraph (d). Operate a bag leak detection system per paragraphs (m)(1), (3)-(7). Initiate corrective actions to operating parameter deviations per paragraph (p).

[1] "While the emissions standards that apply to area sources are evident in the current rule, the applicable operating, monitoring, and recordkeeping and reporting requirements are less clear. *In general, the intent of the rule is to subject area sources to standards for D/ F with corresponding monitoring, testing, reporting, and recordkeeping.* We are proposing amendments that would clarify which of the operating, monitoring and other requirements apply to area sources." Environmental Protection Agency; 40 CFR Part 63, Subpart RRR; Preamble to Proposed Rule; 77 Federal Register 8605, February 14, 2012.

Table 4-2
Applicable Requirements for the Reverberatory Furnace and Rotary Furnace

	Citation	Applicable Requirements
Monitoring Requirements	40 CFR §63.1510(a), (b)-(f), (h)-(j), (n), and (s)-(u).	OM&M plan per paragraph (b). Labeling requirements per paragraph (c). Requirements for capture and collection described in paragraph (d). The feed/charge weight monitoring requirements described in paragraph (e). The bag leak detection system requirements described in paragraph (f). Fabric filter inlet temperature monitoring described in paragraph (h). Total reactive flux injection monitoring described in paragraph (j). Monitor molten metal level per paragraph (n). OM&M plan contents per paragraph (s). Calculate rolling average emissions of D/F per paragraph (t) or conduct D/F performance testing per paragraph (u).
Performance Tests/Compliance Demonstration Requirements	40 CFR §63.1511(b) 40 CFR §63.1512(d), (j), (k), (n)-(s)	Prepare a site-specific test plan and complete the performance tests pertaining to D/F.
Notifications/Reporting Requirements	40 CFR §63.1515(a), (b) 40 CFR §63.1516(b)	Submit initial notifications including intent to conduct performance testing at least 60 days prior testing. Submit notification of compliance status (NOCS) within 90 days after conducting performance testing. Submit semiannual compliance reports.

Table 4-2
Applicable Requirements for the Reverberatory Furnace and Rotary Furnace

	Citation	Applicable Requirements
Recordkeeping Requirements	40 CFR §63.1517	Maintain records for Group 1 furnaces with bag leak detection system per this section.

4.1.4.2 40 CFR Part 63, Subpart ZZZZ – NESHAP for Stationary Reciprocating Internal Combustion Engines

40 CFR Part 63, Subpart ZZZZ, NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE), regulates HAP emissions from RICE located at major and area sources of HAP. One, new 330 HP emergency diesel-fired engine is proposed with this application. The Facility will remain an area source of HAP following the proposed project. As such, the engine will comply with this subpart by complying with 40 CFR Part 60, Subpart IIII per 40 CFR §63.6590(c)(1).

4.2 40 CFR PART 68 CHEMICAL ACCIDENT PREVENTION

Table 1 of 40 CFR §68.130 lists threshold quantities for accidental release prevention. The Facility will maintain chlorine storage onsite of more than the listed threshold quantity of 2,500 pounds. As such, the provisions of Part 68 apply. Allied Metal will develop and submit a Risk Management Plan prior to the date on which chlorine is present above the threshold quantity.

4.3 CHATTANOOGA-HAMILTON COUNTY REGULATIONS

For the purpose of this Installation permit application, potentially applicable Chattanooga-Hamilton County Air Pollution Control Regulations listed in Article II, Section 4-41 include the following:

- Rule 2 – Nitrogen Oxides
- Rule 3 – Visible Emissions
- Rule 9 – Internal Combustion Engine Visible Emissions
- Rule 10 – Process Emissions
- Rule 12 – Odors
- Rule 13 – Sulfur Oxides
- Rule 15 – NSPS
- Rule 16 – NESHAPS and MACT
- Rule 18 – PSD

- Rule 19 – Lead
- Rule 25 – VOC (New: LAER or BACT)
- Rule 26 – Particulate Matter RACT (Hamilton County Only)
- Rule 27 – Particulate Matter BACT

A discussion of each potentially applicable air quality regulation is provided in the following subsections.

4.3.1 Rule 2 – Nitrogen Oxides

Rule 2.1 establishes nitrogen oxide emissions limits for fuel-burning equipment with a design capacity of greater than 250 MMBtu/hr built or installed on or after January 1, 1973. Fuel-burning equipment is defined as follows:

> *Fuel burning equipment: Any equipment, device or contrivance used for the burning of any fuel, except refuse) and all appurtenances thereto, including ducts, breechings, fly ash collecting equipment, fuel feeding equipment, ash removal equipment, combustion controls, stacks, chimneys, etc., used for indirect heating in which the material being heated is not contacted by and adds no substance to the products of combustion. Such equipment includes, but is not limited to, that used for heating water to boiling; raising steam or superheating steam; heating air as in warm air furnaces; furnishing process heat that is conducted through process vessel walls; and furnishing process heat indirectly through its transfer by fluids.*

The Reverberatory Furnace and Rotary Furnace will not meet the definition of fuel burning equipment because the furnaces operate direct-fired burners. Furthermore, the design capacity of each burner is well below 250 MMBtu/hr. Therefore, the requirements of Rule 2.1 do not apply.

Rule 2.4 establishes nitrogen oxides emissions limits for emissions sources not elsewhere specified in Rule 2. Emissions of NO_X from the Reverberatory and Rotary Furnaces may not exceed 300 ppm.

Rule 2.7 establishes requirements for emergency generators. For the purposes of this rule, "emergency generator" is defined as a generator used when loss of primary electrical power occurs

for reasons beyond the control of the source. One emergency generator is proposed with this application. The emergency engine will not emit NO_X in excess of 1,500 ppm, or be operated for a period of time longer than five consecutive days or more than a total of 20 days in any calendar year, except for unforeseeable events beyond Allied Metal's control.

The Facility will maintain a written record of each loss of primary electrical power, including a record of the cause and a record of the duration of the loss. Records will be retained for a period of two years and made available to the director upon request. Start-up of an emergency generator for testing proper functioning is not subject to the recordkeeping requirements.

4.3.2 Rule 3 – Visible Emissions

Rule 3.1 establishes a visible emissions limit of 20% opacity for an aggregate of more than five minutes in any one hour or more than 20 minutes in any 24-hour period from any air emissions source. The Facility will comply with the opacity limit for each emissions source.

4.3.3 Rule 9 – Visible Emissions from Internal Combustion Engines

Rule 9 establishes visible emissions limits from internal combustion engines. Rule 9.2 specifies a limit for air contaminants from a diesel type engine for a period of more than 60 consecutive seconds to no more than 20% opacity. The proposed diesel-fired emergency engine will be subject to this Rule.

4.3.4 Rule 10 – Process Emissions Regulations

Rule 10 establishes PM emissions limits for process equipment. Emissions limits are established in Table 2 based on input process weights. The proposed Reverberatory Furnace has a potential input process weight of 4.10 tons per hour (tph). In accordance with Schedule 2 of Table 2, the maximum allowable PM emissions rate for the Reverberatory Furnace is 8.49 lb/hr.

$32{,}500 \frac{tons}{yr} \cdot \frac{1\ yr}{7{,}920\ hr} = 4.10354 \frac{tons}{hr} \cdot 2{,}000 \frac{lb}{ton} = 8{,}207.1\ lb/hr$

The proposed Rotary Furnace has a potential input process weight of 2.27 tph. In accordance with Schedule 2 of Table 2, the maximum allowable PM emissions rate for the Rotary Furnace is 5.97 lb/hr.

$18{,}000 \frac{tons}{yr} \cdot \frac{1\ yr}{7{,}920\ hr} = 2.27273 \frac{tons}{hr} \cdot 2{,}000 \frac{lb}{ton} = 4{,}545.5\ lb/hr$

4.3.5 Rule 26 – Reasonably Available Control Technology

Rule 26 establishes reasonably available control technology standards for sources of particulate matter emissions located within the particulate matter nonattainment area or located outside the nonattainment area, but significantly impacting the nonattainment area. This rule applies only to those sources and plants that were in existence on January 1, 1978. As such, Rule 26 is not applicable to the proposed emissions sources because they will be constructed after 1978.

4.3.6 Rule 27 – Particulate Matter Controls for New Sources and New Modifications After August 29, 1995

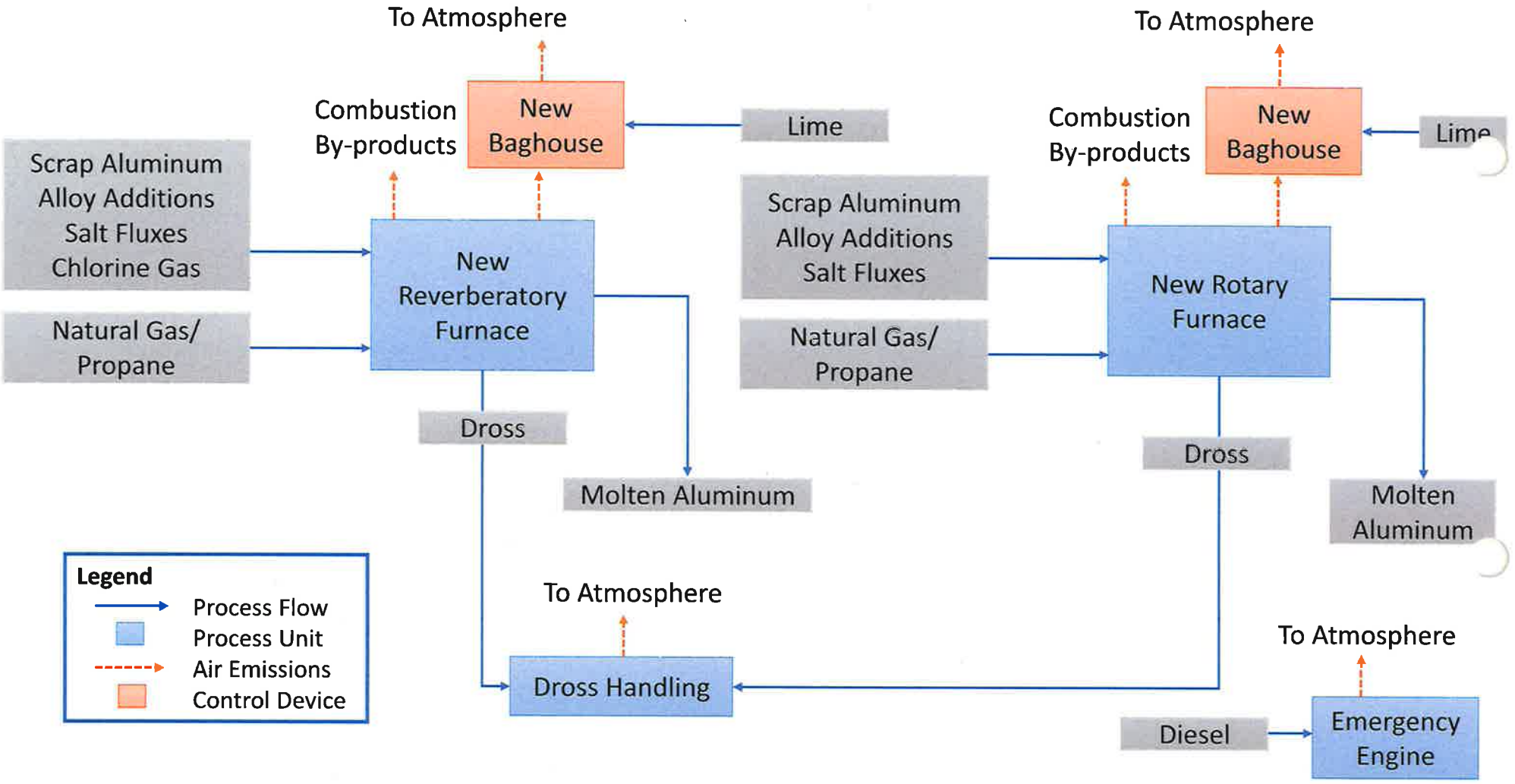
Rule 27 requires that any new source or modification, alteration or reconstruction of a source which commences after August 29, 1995 that emits or has the potential to emit 15 tpy or more of PM_{10}, or that emits or has the potential to emit 25 tons per year or more of PM utilize "particulate matter best available control technology" (particulate BACT), as defined in Rule 27.2. If the PTE is less than 15 tpy PM_{10} or 25 tpy of PM, the sources shall achieve "reasonable and proper emission limitations" as defined in Rule 27.4.

Filterable particulate emissions from the proposed reverberatory and rotary furnaces will be controlled by high efficiency baghouses with a filterable particulate grain loading of at least 0.01 grains per standard cubic foot (gr/scf). The use of high efficiency baghouses to control filterable particulate emissions from the Reverberatory and Rotary Furnaces constitutes BACT.

4.3.7 Air Quality Modeling

Allied Metal understands that the Chattanooga-Hamilton County APCB may require air quality modeling for specific pollutants associated with the project that have an established ambient air quality standard in TAC 1200-3-3-.03. Upon request of the Chattanooga-Hamilton County APCB, Allied Metal will develop and submit an air modeling protocol, conduct modeling, and submit modeling results to the APCB in accordance with the Tennessee Division of Air Pollution Control Dispersion Modeling Guidance.

Allied Metal Company – Chattanooga Facility 02/09/2023



APPLICATION FOR EQUIPMENT / FEDERALLY ENFORCEABLE CERTIFICATE OF OPERATION FOR SYNTHETIC MINOR SOURCES

FORM F001
03/2011

1. Name of Company: Allied Metal Company
   (If corporation or LLC, name on file with Tennessee Secretary of State Corporate Records Division)

2. NAICS Code: 331492 / 331314

3. Company Official to Contact: Rickey Harvey

4. Phone No. (423) 624-5051

5. Mailing Address: 3440 Lightfoot Mill Road | Chattanooga | TN | 37406
   Street or P.O. Box | City | State | Zip Code

6. Physical Location
   (If different from line 5) N/A
   Street | City | State | Zip Code

7. Application for:
   ☒ Initial Certificate of Operation ☐ Renewal Certificate of Operation

   Previous Installation Permit or Certificate of Operation No.: ~~4400-30400803-03C / 4400-30400818-02C~~

8. Type of equipment for which application is made:

☒ Process Equipment (Form E010 or Form E010A)	☐ Previously Submitted	☒ Attached
☐ Fuel Burning Equipment (Form E011)	☐ Previously Submitted	☐ Attached
☐ Incineration Equipment (Form E012)	☐ Previously Submitted	☐ Attached
☐ Minor Pollution Source (Form E014)	☐ Previously Submitted	☐ Attached

(Less than 1000 lbs/yr and less than 10 lbs/day total uncontrolled contaminant emissions)

The following forms are filed with this application:
Process Equipment (E010), Process Pollution Estimation (E106), Baghouse (E102)

9. Equipment Name:
Reverberatory Melting Furnace

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MAR 13 2023
AIR POLLUTION CONTROL BUREAU

10. Are there any changes since the previous application in the equipment or operation which might:

A. Increase, decrease, or alter process materials, fuel, refuse type, etc.? ☒ Yes ☐ No

B. Increase, decrease, or alter emissions or emission points? ☒ Yes ☐ No

11. Process Weight, lb/hr, (Item 6 on Form E010), Incineration Rate, lb/hr, (Item 3C on Form E012), or Fuel Burning Rate, 1,000 Btu/hr, (Item 7C on Form E011): 7,248.858 lb/hr (3.6244 tons/hr)
[should be 8,200 lb/hr (4.10 tons/hr)?]

This is to certify that I am familiar with operations concerning this equipment and the information provided on this application is true and complete to the best of my knowledge:

Mail completed form to:
CHATTANOOGA-HAMILTON COUNTY
AIR POLLUTION CONTROL BUREAU
6125 Preservation Drive, Suite 140
Chattanooga, TN 37416-3638

This form must be completely filled out before it will be processed

Gilbert Escudero — *Name*

Plant Manager — *Title*

2/24/2023 — *Date*

PROCESS EQUIPMENT APPLICATION

FORM E010
07/2000

1. ***Name of Company*** (as shown on Line 1, Form E001): Allied Metal Company

2. ***Equipment Name*** (as shown on Line 10, Form E001): Reverberatory Melting Furnace

3. ***Installation Date***: 2023

4. ***Type of Process***: Secondary Aluminum Processing

5. ***Major Raw Materials Used***: Scrap Aluminum

6. ***Process Weight***: 7,248.858 Pounds per hour
   This is the total weight of all materials introduced into the process.

7. ***Control Equipment***

- ☐ Emissions Uncontrolled
- ☑ Baghouse (File Form E102)
- ☐ Wet Collecting Device (File Form E103)
- ☐ Inertial Separators (File Form E105)
- ☐ Electrostatic Precipitator (File Form E104)
- ☐ Other – Specify: _____

8. ***Control Efficiency***

Enter the control efficiency for each pollutant emitted by this equipment (for appropriate Forms E102, E103, E104, E105, E107, or enter zeros if the emissions are uncontrolled as noted in Item 7.

Pollutant	% Efficiency
Particulates	99.9
SO_x	0
NO_x	0
CO	0
Hydrocarbons	0
Other:	

9. ***Emissions Summary***

Enter the amount of each pollutant listed in pounds per hour.

Pollutant	Uncontrolled Emissions (File Form E106)	Actual Emissions (Stack Test Report)		Estimated Emissions (See Formula A)
Total Suspended Particulate	N/A	N/A		9.97
PM10	N/A	N/A		13.60
Sulfur Oxides	N/A	N/A		0.016
Nitrogen Oxides (as NO_2)	N/A	N/A	OR	2.75
Other (specify)	N/A	N/A		N/A
Dioxin/Furan	N/A	N/A		1.09E-7
HF	N/A	N/A		1.45
HCl	N/A	N/A		1.45

Formula A: $\text{Estimated Emissions} = \frac{(100\% - \text{Control Efficiency (\%)})}{100\%} \times \text{Uncontrolled Emissions}$

10. ***Environmental Impact***

Those emissions indicated in Item 9 may at times under normal operating conditions cause (check all that apply):

☐ Odors ☐ Eye Irritations ☐ Property Damage ☐ Health Effects

☐ Other nuisances outside of plant property ☑ No environmental damage

11. ***Emission Point Data***

Stack Height (emission point) above ground: TBD Ft.
Ground Elevation above sea level at stack base: TBD Ft.
Stack Diameter: TBD Ft.
Volume of gas discharged into atmosphere: TBD cfm
Gas exit temperature: TBD °F

12. ***Ave. Operating Time***

Daily: 8,760 hours Weekly: 7 Days Yearly: 52 Weeks

This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and complete to the best of my knowledge.

Gilbert Escudero Gilbert Escudero
Company Official

Plant Manager
Title

February 24, 2023
Date

CHATTANOOGA-HAMILTON COUNTY
AIR POLLUTION CONTROL BUREAU
6125 Preservation Drive, Suite 140
Chattanooga, TN 37416-3740

AIR POLLUTION CONTROL EQUIPMENT DATA - BAGHOUSE

FORM E102
01/2001

1. **Name of Company:** Allied Metal Company
   As shown on Line 1 of Form E001

2. **Name of Equipment:** Reverberatory Melting Furnace
   As shown on Line 9 of Form E001

3. **Equipment Data:**
   Manufacturer of Baghouse: Wheelabratory-Frye Inc.

   Model Number: TBD Cost of Baghouse: TBD

   Date of Manufacture: TBD Date of Installation: TBD

   Pre-cleaning Equipment ☒ No ☐ Yes _____
   If yes, what type (File appropriate form for control equipment)

   Volume of gas discharged from baghouse at dry standard conditions: 80,000 dscfm

   Total cloth area of baghouse: 50,684 ft^2

   Air to cloth ratio: 1.57 Ft/Min *(Divide volume of gas discharged by total cloth area)*

4. **Pressure Drop Across Baghouse:**
   Stated by manufacturer: 2-6 Inches of H_2O

   Measured (actual): 1.77 Inches of H_2O

   Calculated: 3.8 *(K Factor)* X 1.57 *Air to cloth ratio in ft/min* = 5.9 Inches of H_2O

   The recommended pressure drop range in inches of H_2O is 1.5 (minimum) to 8.0 (maximum).

   If the measured or calculated pressure drop falls outside the recommended range, contact the Chattanooga-Hamilton County Air Pollution Control Bureau.

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5. **Filter Data:**
   Type of fabric filters used in baghouse: 12 OZ PE

   Operating temperature: 180 °F *Manufacturer's Recommended* 88.5 °F *Normal* 240 °F *Maximum*

   If the maximum operating temperature exceeds the recommended operating temperature, contact the Chattanooga-Hamilton County Air Pollution Control Bureau.

6. **Baghouse Components:**
   Check all that apply.

   ☐ Flow rate instrumentation ☒ Inlet gas temperature instrumentation ☐ Evaporative Cooler

   ☐ Dew point indicator ☒ Differential pressure instrumentation ☐ Other (Describe) _____

   ☐ Heat Exchanger ☒ Transmissometer

7. **Baghouse Operation:**
   ☒ Continuous ☐ Intermittent

8. **Baghouse Description:**

Baghouse Inlet (dirty gas): ■ Bottom Feed ☐ Top Feed

☐ Exterior Filtration ☐ Tangential

☐ Other (Describe): _____

Does the baghouse have a wear-resistant plate? ■ yes ☐ no

Baghouse shape: ■ Rectangular ☐ Cubical ☐ Cylindrical

☐ Other (Describe): _____

Baghouse volume: 2,768 Ft^3

Baghouse dimensions: 12 Ft *Length* 12 Ft *Width* 30 Ft *height*

Baghouse shell material: TBD

8. **Bag Cleaning:** *(check one)*

Fabric Flexing	Reverse Air Cleaning
■ Mechanical Shaking & Rapping	☐ Reverse Jet
☐ Sonic Cleaning	☐ Reverse Flow
☐ Collapse Cleaning	☐ Manual Cleaning
☐ Pulse (pressure) – Jet Cleaning	

9. **Filter Configuration:**

☐ Panels ☐ Multiple Tube Bag

■ Circular Cross-Section Tube ☐ Other (Describe): _____

Filter Fabric: ☐ Felted ■ Woven Number of Compartments: TBD

Filter Area: TBD Ft^2 Number of Filters per Compartment: TBD

10. **Particle Size Distribution in Microns (μ):**

Particle Type(s): TBD Moisture in gas stream: TBD %

Size	0-5μ	5-10μ	10-20μ	20-44μ	Greater than 44μ
% by weight	5	20	25	38	12

11. **Dust Disposal:**

■ Automatic (screw conveyor, etc.) ☐ Manual (Describe): _____

How often are hoppers emptied? Every TBD hours

Name of commercial disposal company (if applicable): N/A

Is disposed material wetted for transport? ☐ Yes ■ No

Disposal Site: N/A

12. **Control Efficiency:**

Manufacturer's Stated Efficiency: 99.9 %

Required Efficiency: TBD %

Operational Efficiency (performance testing): TBD %

Size	0-5μ	5-10μ	10-20μ	20-44μ	Greater than 44μ
% by weight	N/A				

13. **Fan Data:**

Fan Location: ■ Clean air side (pull through) ☐ Dirty air side (push through)

Fan Design *(check one – A, B, or C)*:

Fan Type:	Blade Type:			
A. ■ Centrifugal (radial flow)	☐ Forward Curve	■ Backward Curve	☐ Straight	
B. ☐ Axial-flow (propeller)	☐ Propeller	☐ Tube Axial	☐ Vane Axial	

Fan Properties:

Diameter:	44	Inches	Braking Horsepower:	182	BHP
Speed:	1,760	RPM	Inlet Area:	13	Ft^2
Volume:	40,000	Cfm @ STP	Outlet Area:	11	Ft^2
Static Pressure:	20	Inches WC	Motor Horsepower:	200	HP

☐ Standard ■ Heavy Duty Submitted copy of Manufacturer's Multirating Tables ■ Yes ☐ No

Special Construction Materials:

☐ Bronze Alloys ☐ Aluminum ☐ Stainless Steel ☐ Bisonite

☐ Zinc Chromate Primer ☐ Rubber, Phenolics, Vinyls, or Epoxy Covering

C. ☐ Compressor	☐ Positive Displacement	☐ Dynamic	☐ Reciprocating

This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and complete to the best of my knowledge. ***This form must be completely filled out before it will be processed.***

Company Official: Gilbert Escudero
Signature

Title: Plant Manager

Date: 2/24/2023

Mail to:
CHATTANOOGA-HAMILTON
COUNTY AIR POLLUTION
CONTROL BUREAU
6125 Preservation Drive
Chattanooga, TN 37416

Do not write below this line.

_____ Engineer Approval Permit Number: _____

Special Notations: _____

POLLUTION ESTIMATION FORM

FORM E106
01/2001

1. Name of Company: Allied Metal Company
   As shown on Line 1 of Form E001
2. Equipment Name: Reverberatory Melting Furnace
   As shown on Line 9 of Form E001
3. Type of pollutant for which estimate is made: Various - See attached emissions calculations

4. Pollution Emission Factor (PEF): Various - See attached emissions calculations
   (Give value & units in lbs/ton, lbs/lb, lbs/gal, gr/ft³, etc.)

   Source of Emission Factor: Various - See attached emissions calculations

5. Uncontrolled Pollution Emission Rate:

   _____ (*PEF from Item 4*) X Various - See attached emissions calculations (*Give operating rate for this equipment and the appropriate units in either lbs/hr, tons/hr, gal/hr, or cfm*) = _____ (Give value & units)

6. Uncontrolled Emission Rate: Various - See attached emissions calculations Pounds emitted per hour

This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and correct to the best of my knowledge. ***This form must be completely filled out before it is processed.***

Mail to:
CHATTANOOGA-HAMILTON COUNTY
AIR POLLUTION CONTROL BUREAU
6125 Preservation Drive
Chattanooga, TN 37416

Company Official: Gilbert Escudero Gilbert Escudero

Title: Plant Manager

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Date: 2-24-2023

MAR 13 2023

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DO NOT WRITE BELOW THIS LINE

_____ Engineer Approval

This form corresponds to permit number: _____

Special Notations: _____

APPLICATION FOR EQUIPMENT / FEDERALLY ENFORCEABLE CERTIFICATE OF OPERATION FOR SYNTHETIC MINOR SOURCES

FORM F001
03/2011

1. Name of Company: Allied Metal Company
(If corporation or LLC, name on file with Tennessee Secretary of State Corporate Records Division)

2. NAICS Code: 331492 / 331314

3. Company Official to Contact: Rickey Harvey

4. Phone No. (423) 624-5051

5. Mailing Address: 3440 Lightfoot Mill Road (*Street or P.O. Box*) Chattanooga (*City*) TN (*State*) 37406 (*Zip Code*)

6. Physical Location
(If different from line 5) N/A (*Street*) (*City*) (*State*) (*Zip Code*)

7. Application for:
☒ Initial Certificate of Operation ☐ Renewal Certificate of Operation

Previous Installation Permit or Certificate of Operation No.: ~~4400-30400803-03C / 4400-30400818-02C~~

8. Type of equipment for which application is made:

☒ Process Equipment (Form E010 or Form E010A)	☐ Previously Submitted	☒ Attached
☐ Fuel Burning Equipment (Form E011)	☐ Previously Submitted	☐ Attached
☐ Incineration Equipment (Form E012)	☐ Previously Submitted	☐ Attached
☐ Minor Pollution Source (Form E014)	☐ Previously Submitted	☐ Attached

(Less than 1000 lbs/yr and less than 10 lbs/day total uncontrolled contaminant emissions)

The following forms are filed with this application:
Process Equipment (E010), Process Pollution Estimation (E106), Baghouse (E102)

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9. Equipment Name:
Rotary Melting Furnace

MAR 13 2023

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CONTROL BUREAU

10. Are there any changes since the previous application in the equipment or operation which might:

A. Increase, decrease, or alter process materials, fuel, refuse type, etc.? ☒ Yes ☐ No

B. Increase, decrease, or alter emissions or emission points? ☒ Yes ☐ No

11. Process Weight, lb/hr, (Item 6 on Form E010), Incineration Rate, lb/hr, (Item 3C on Form E012), or Fuel Burning Rate, 1,000 Btu/hr, (Item 7C on Form E011): 4,109.589 lb/hr (2.0548 tons/hr)
[should be 4,540 lb/hr (2.27 tons/hr) ?]

This is to certify that I am familiar with operations concerning this equipment and the information provided on this application is true and complete to the best of my knowledge:

Mail completed form to:
CHATTANOOGA-HAMILTON COUNTY
AIR POLLUTION CONTROL BUREAU
6125 Preservation Drive, Suite 140
Chattanooga, TN 37416-3638

This form must be completely filled out before it will be processed

Gilbert Escudero Gilbert Escudero
Name

Plant Manager
Title

2/24/2023
Date

PROCESS EQUIPMENT APPLICATION

FORM E010
07/2000

1. ***Name of Company*** (as shown on Line 1, Form E001): Allied Metal Company

2. ***Equipment Name*** (as shown on Line 10, Form E001): Rotary Melting Furnace

3. ***Installation Date:*** 2023 4. ***Type of Process:*** Secondary Aluminum Processing

5. ***Major Raw Materials Used:*** Scrap Aluminum

6. ***Process Weight:*** 4,109.589 Pounds per hour
This is the total weight of all materials introduced into the process.

7. ***Control Equipment***

- ☐ Emissions Uncontrolled
- ☑ Baghouse (File Form E102)
- ☐ Wet Collecting Device (File Form E103)
- ☐ Inertial Separators (File Form E105)
- ☐ Electrostatic Precipitator (File Form E104)
- ☐ Other – Specify: _____

8. ***Control Efficiency***

Enter the control efficiency for each pollutant emitted by this equipment (for appropriate Forms E102, E103, E104, E105, E107, or enter zeros if the emissions are uncontrolled as noted in Item 7.

Pollutant	% Efficiency
Particulates	TBD
SO_x	0
NO_x	0
CO	0
Hydrocarbons	0
Other: TBD	TBD

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AIR POLLUTION
CONTROL BUREAU

9. ***Emissions Summary***

Enter the amount of each pollutant listed in pounds per hour.

Pollutant	Uncontrolled Emissions (File Form E106)	Actual Emissions (Stack Test Report)		Estimated Emissions (See Formula A)
Total Suspended Particulate	N/A	N/A		2.69
PM10	N/A	N/A		6.11
Sulfur Oxides	N/A	N/A		0.007
Nitrogen Oxides (as NO_2)	N/A	N/A	OR	1.18
Other (specify)	N/A	N/A		N/A
Dioxin/Furan	N/A	N/A		6.16E-8
HF	N/A	N/A		0.82
HCl	N/A	N/A		0.82

Formula A: $\text{Estimated Emissions} = \frac{(100\% - \text{Control Efficiency (\%)})}{100\%} \times \text{Uncontrolled Emissions}$

10. ***Environmental Impact***

Those emissions indicated in Item 9 may at times under normal operating conditions cause (check all that apply):

☐ Odors ☐ Eye Irritations ☐ Property Damage ☐ Health Effects

☐ Other nuisances outside of plant property ☑ No environmental damage

11. ***Emission Point Data***

Stack Height (emission point) above ground:	TBD	Ft.	Volume of gas discharged into atmosphere:	TBD	cfm
Ground Elevation above sea level at stack base:	TBD	Ft.	Gas exit temperature:	TBD	°F
Stack Diameter:	TBD	Ft.			

12. ***Ave. Operating Time***

Daily: 8,760 hours Weekly: 7 Days Yearly: 52 Weeks

This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and complete to the best of my knowledge.

Gilbert Escudero Gilbert Escudero
Company Official

Plant Manager
Title

February 24, 2023
Date

CHATTANOOGA-HAMILTON COUNTY
AIR POLLUTION CONTROL BUREAU
6125 Preservation Drive, Suite 140
Chattanooga, TN 37416-3740

AIR POLLUTION CONTROL EQUIPMENT DATA - BAGHOUSE

FORM E102
01/2001

1. **Name of Company:** Allied Metal Company
As shown on Line 1 of Form E001

2. **Name of Equipment:** Rotary Melting Furnace
As shown on Line 9 of Form E001

3. **Equipment Data:**

Manufacturer of Baghouse: BACT Process Systems, Inc.

Model Number: BP225-12 Cost of Baghouse: $2,200,000

Date of Manufacture: September 2023 Date of Installation: October 2023

Pre-cleaning Equipment ☐ No ■ Yes Spark Arrestor
If yes, what type (File appropriate form for control equipment)

Volume of gas discharged from baghouse at dry standard conditions: 70,147 (for 6 modules) dscfm

Total cloth area of baghouse: 25,434 ft^2

Air to cloth ratio: 3.53 Ft/Min *(Divide volume of gas discharged by total cloth area)*

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4. **Pressure Drop Across Baghouse:**

Stated by manufacturer: 2.6 Inches of H_2O

MAR 13 2023
AIR POLLUTION CONTROL BUREAU

Measured (actual): 1.8 Inches of H_2O

Calculated: 1.8 *(K Factor)* X 3.53 *Air to cloth ratio in ft/min* = 6.35 Inches of H_2O

The recommended pressure drop range in inches of H_2O is 1.5 (minimum) to 8.0 (maximum).

If the measured or calculated pressure drop falls outside the recommended range, contact the Chattanooga-Hamilton County Air Pollution Control Bureau.

5. **Filter Data:**

Type of fabric filters used in baghouse: 16 oz. Acrylic with Fluorocarbon Treatment

Operating temperature: 180 °F *Manufacturer's Recommended* 180 °F *Normal* 260 °F *Maximum*

If the maximum operating temperature exceeds the recommended operating temperature, contact the Chattanooga-Hamilton County Air Pollution Control Bureau.

6. **Baghouse Components:**
Check all that apply.

☐ Flow rate instrumentation ■ Inlet gas temperature instrumentation ☐ Evaporative Cooler
☐ Dew point indicator ■ Differential pressure instrumentation ■ Other (Describe) Broken Bag Detector
☐ Heat Exchanger ☐ Transmissometer

7. **Baghouse Operation:**

■ Continuous ☐ Intermittent

8. **Baghouse Description:**

Baghouse Inlet (dirty gas): ☐ Bottom Feed ☐ Top Feed

☐ Exterior Filtration ☐ Tangential

■ Other (Describe): Hopper

Does the baghouse have a wear-resistant plate? ■ yes ☐ no

Baghouse shape: ■ Rectangular ☐ Cubical ☐ Cylindrical

☐ Other (Describe): _____

Baghouse volume: TBD Ft^3

Baghouse dimensions: TBD *Length* Ft TBD *Width* Ft TBD *height* Ft

Baghouse shell material: 3/16" Carbon Steel

8. **Bag Cleaning:** *(check one)*

Fabric Flexing	Reverse Air Cleaning
☐ Mechanical Shaking & Rapping	☐ Reverse Jet
☐ Sonic Cleaning	☐ Reverse Flow
☐ Collapse Cleaning	☐ Manual Cleaning
■ Pulse (pressure) – Jet Cleaning	

9. **Filter Configuration:**

☐ Panels ☐ Multiple Tube Bag

☐ Circular Cross-Section Tube ☐ Other (Describe): _____

Filter Fabric: ☐ Felted ■ Woven Number of Compartments: 6

Filter Area: 25,434 Ft^2 Number of Filters per Compartment: 225

10. **Particle Size Distribution in Microns (μ):**

Particle Type(s): TBD Moisture in gas stream: 5 %

Size	0-5μ	5-10μ	10-20μ	20-44μ	Greater than 44μ
% by weight	TBD	TBD	TBD	TBD	TBD

11. **Dust Disposal:**

■ Automatic (screw conveyor, etc.) ☐ Manual (Describe): _____

How often are hoppers emptied? Every _____ hours Continuous

Name of commercial disposal company (if applicable): N/A

Is disposed material wetted for transport? ☐ Yes ■ No

Disposal Site: N/A

12. **Control Efficiency:**

Manufacturer's Stated Efficiency: 99.8 %

Required Efficiency: TBD %

Operational Efficiency (performance testing): TBD %

Size	0-5μ	5-10μ	10-20μ	20-44μ	Greater than 44μ
% by weight	N/A				

13. **Fan Data:**

Fan Location: ■ Clean air side (pull through) ☐ Dirty air side (push through)

Fan Design *(check one – A, B, or C)*:

Fan Type:	Blade Type:			
A. ■ Centrifugal (radial flow)	☐ Forward Curve	■ Backward Curve	☐ Straight	
B. ☐ Axial-flow (propeller)	☐ Propeller	☐ Tube Axial	☐ Vane Axial	

Fan Properties:

Diameter:	44	Inches	Braking Horsepower:	146	BHP
Speed:	1,800	RPM	Inlet Area:	17.22	Ft^2
Volume:	40,000	Cfm @ STP	Outlet Area:	11	Ft^2
Static Pressure:	TBD	Inches WC	Motor Horsepower:	200	HP

☐ Standard ■ Heavy Duty Submitted copy of Manufacturer's Multirating Tables ■ Yes ☐ No

Special Construction Materials: Note: 2 fans in system

☐ Bronze Alloys ☐ Aluminum ☐ Stainless Steel ☐ Bisonite

☐ Zinc Chromate Primer ☐ Rubber, Phenolics, Vinyls, or Epoxy Covering

C. ☐ Compressor	☐ Positive Displacement	☐ Dynamic	☐ Reciprocating	

This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and complete to the best of my knowledge. ***This form must be completely filled out before it will be processed.***

Company Official: Gilbert Escudero
Signature

Title: Plant Manager

Date: 2/24/2023

Mail to:
CHATTANOOGA-HAMILTON
COUNTY AIR POLLUTION
CONTROL BUREAU
6125 Preservation Drive
Chattanooga, TN 37416

Do not write below this line.

_____ Engineer Approval Permit Number: _____

Special Notations: _____

POLLUTION ESTIMATION FORM

FORM E106
01/2001

1. Name of Company: Allied Metal Company
   As shown on Line 1 of Form E001
2. Equipment Name: Rotary Melting Furnace
   As shown on Line 9 of Form E001
3. Type of pollutant for which estimate is made: Various - See attached emissions calculations

4. Pollution Emission Factor (PEF): Various - See attached emissions calculations
   (Give value & units in lbs/ton, lbs/lb, lbs/gal, gr/ft³, etc.)

   Source of Emission Factor: Various - See attached emissions calculations

5. Uncontrolled Pollution Emission Rate:

   _____ (*PEF from Item 4*) X _____ (*Give operating rate for this equipment and the appropriate units in either lbs/hr, tons/hr, gal/hr, or cfm*) = Various - See attached emissions calculations (Give value & units)

6. Uncontrolled Emission Rate: Various - See attached emissions calculations Pounds emitted per hour

This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and correct to the best of my knowledge. ***This form must be completely filled out before it is processed.***

Mail to:
CHATTANOOGA-HAMILTON COUNTY
AIR POLLUTION CONTROL BUREAU
6125 Preservation Drive
Chattanooga, TN 37416

Company Official: Gilbert Escudero Gilbert Escudero

Title: Plant Manager

Date: 2-24-2023

DO NOT WRITE BELOW THIS LINE

RECEIVED
CHATT / HAMILTON CO.
MAR 13 2023
AIR POLLUTION
CONTROL BUREAU

_____ Engineer Approval

This form corresponds to permit number: _____

Special Notations: _____

Table C-1
Facility-Wide Emissions
Allied Metal Company - Chattanooga Facility

Pollutant	Existing Emissions Sources						Proposed Emissions Sources								PTE (Post Control)		Major Source
	Sweating Furnace #1		Four Melting Furnaces		Insignificant Activities: Propane Vaporizer and Portable Pot Furnace		Reverberatory Furnace		Rotary Furnaces		Fugitive Emissions Sources: Roads Dross Handling		Diesel Emergency Engine 500 hr/yr				
	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	Yes/No
CO	0.11	0.46	0.91	3.99	0.077	0.339	2.31	10.10	0.99	4.33	--	--	1.93	0.48	6.32	19.70	No
NO_X	0.18	0.79	1.57	6.88	0.134	0.585	2.75	12.02	1.18	5.15	--	--	2.20	0.55	8.01	25.98	No
Filterable PM	0.85	3.71	0.77	3.38	0.002	0.008	9.97	43.68	2.69	11.80	3.83	5.61	0.11	0.03	18.22	68.21	No
PM_{10}	0.45	1.97	0.07	0.31	0.007	0.031	13.60	59.56	6.11	26.76	0.77	1.13	0.11	0.03	21.11	89.79	No
$PM_{2.5}$	0.45	1.97	0.07	0.31	0.007	0.031	11.39	49.88	5.84	25.59	0.19	0.28	0.11	0.03	18.06	78.08	No
SO_2	0.0008	0.0033	0.007	0.028	0.0006	0.0024	0.02	0.07	0.01	0.03	--	--	0.67	0.17	0.70	0.30	No
VOC	0.007	0.030	0.06	0.26	0.005	0.022	0.15	0.66	0.06	0.28	--	--	2.20	0.55	2.49	1.81	No
Pb	6.25E-07	2.74E-06	5.42E-06	2.37E-05	4.61E-07	2.02E-06	1.37E-05	6.01E-05	5.88E-06	2.58E-05	--	--	--	--	2.61E-05	1.14E-04	No
CO_2	177	774	1,531	6,706	130	571	3,880	16,994	1,663	7,283	--	--	377	94	7,757.34	32,421.59	No
CH_4	0.003	0.012	0.024	0.107	0.002	0.009	0.06	0.27	0.03	0.12	--	--	1.53E-02	3.82E-03	0.13	0.52	No
N_2O	0.0003	0.0012	0.002	0.011	0.000	0.001	0.01	0.03	0.00	0.01	--	--	3.06E-03	7.64E-04	0.01	0.05	No
Total GHG	177	774	1,531	6,707	130	571	3,880	16,994	1,663	7,283	--	--	377	94	7,757.49	32,422.16	No
CO_2e	177	774	1,532	6,712	130	571	3,883	17,008	1,664	7,289	--	--	378	94	7,765.07	32,450.09	No
Total HAP	2.36E-03	1.03E-02	2.05E-02	8.96E-02	1.74E-03	7.62E-03	3.11	13.63	1.67	7.30	--	--	9.14E-03	2.29E-03	4.81	21.03	No
~~HF~~	--	--	--	--	--	--	~~1.45~~	~~6.35~~	~~0.82~~	~~3.60~~	--	--	--	--	~~2.27~~	~~9.95~~	No
HCl	--	--	--	--	--	--	1.45	6.35	0.82	3.60	--	--	--	--	2.27	9.95	No
Chlorine	--	--	--	--	--	--	0.16	0.70	--	--	--	--	--	--	0.16	0.70	No
D/F	--	--	--	--	--	--	1.09E-07	4.76E-07	6.16E-08	2.70E-07	--	--	--	--	1.70E-07	7.46E-07	No

Table C-2
Reverberatory Melting Furnace (Proposed Emissions Unit No. 001, with Baghouse Control)
Allied Metal Company - Chattanooga Facility

28 MMBtu/hr

Pollutant	Emissions Factors (Uncontrolled)	Units	Reference	Emissions Factors (Controlled)	Units	Reference	PTE[(a)] (Uncontrolled)		PTE[(a)] (Controlled)	
							lb/hr	ton/year	lb/hr	ton/year
Natural Gas Combustion										
CO	84.00	lb/MMSCF	AP-42, Table 1.4-1 (Uncontrolled)	--	--	--	2.31	10.10	--	--
NO_X	100.00	lb/MMSCF	AP-42, Table 1.4-1 (Uncontrolled)	--	--	--	2.75	12.02	--	--
Filterable PM	1.90	lb/MMSCF	AP-42 Table 1.4-2	--	--	--	5.22E-02	0.23	--	--
PM_{10}	7.60	lb/MMSCF	AP-42 Table 1.4-2	--	--	--	0.21	0.91	--	--
$PM_{2.5}$	7.60	lb/MMSCF	AP-42 Table 1.4-2	--	--	--	0.21	0.91	--	--
SO_2	0.60	lb/MMSCF	AP-42 Table 1.4-2	--	--	--	1.65E-02	0.072	--	--
VOC	5.50	lb/MMSCF	AP-42 Table 1.4-2	--	--	--	0.15	0.66	--	--
Pb	5.00E-04	lb/MMSCF	AP-42 Table 1.4-2	--	--	--	1.37E-05	6.01E-05	--	--
CO_2	138.57	lb/MMBtu	40 CFR Part 98, Table C-1 (propane)	--	--	--	3,880	16,994	--	--
CH_4	2.20E-03	lb/MMBtu	40 CFR Part 98, Table C-2	--	--	--	6.17E-02	0.27	--	--
N_2O	2.20E-04	lb/MMBtu	40 CFR Part 98, Table C-2	--	--	--	6.17E-03	0.03	--	--
Total GHG	--	--	--	--	--	--	3,880	16,994	--	--
CO_2e	--	--	(b)	--	--	--	3,883	17,008	--	--

Table C-2
Reverberatory Melting Furnace (Proposed Emissions Unit No. 001, with Baghouse Control)
Allied Metal Company - Chattanooga Facility

Use 32,500 tons/yr

Pollutant	Emissions Factors (Uncontrolled)	Units	Reference	Emissions Factors (Controlled)	Units	Reference	PTE[a] (Uncontrolled)		PTE[a] (Controlled)	
							lb/hr	ton/year	lb/hr	ton/year
Refining/Chlorine Demagging										
Total PM	6.45 1.5 - 4.3	lb/ton	AP-42 Table 12.8-2 (Uncontrolled): Refining plus 25% attributed to condensable PM based on engineering judgement.	3.45 1.3 + 0.5 - 4.3	lb/ton	AP-42 Table 12.8-2 (Baghouse): Refining plus 25% attributed to condensable PM based on engineering judgement.	7,248.9 lb/h 23.38	31,750 t/y 102.39 (8,760 h/y)	12.50	54.77
Filterable PM	4.30	lb/ton	AP-42 Table 12.8-2 (Uncontrolled): Refining	1.30 70% control	lb/ton	AP-42 Table 12.8-2 (Baghouse): Refining	15.59	68.26	4.71	20.64
PM_{10}	4.75	lb/ton	AP-42 Table 12.8-4 (Uncontrolled): Refining plus condensable PM based on engineering judgement	2.93	lb/ton	AP-42 Table 12.8-4: Refining Particle Size Distribution applied to PM factor plus condensable PM based on engineering judgement	17.22	75.41	10.62	46.51
$PM_{2.5}$	4.31	lb/ton	AP-42 Table 12.8-4 (Uncontrolled): Refining plus condensable PM based on engineering judgement	2.80	lb/ton	AP-42 Table 12.8-4: Refining Particle Size Distribution applied to PM factor plus condensable PM based on engineering judgement	15.62	68.42	10.15	44.45
Filterable PM	1,000.00	lb/ton chlorine	AP-42 Table 12.8-2 (Uncontrolled): Chlorine Demagging	50.00 95% control	lb/ton chlorine	AP-42 Table 12.8-2 (Baghouse): Chlorine Demagging	208.33 lb/h 104.17	912.5 t/y 456.25 (8,760 h/y)	5.21	22.81
PM_{10}	532.00	lb/ton chlorine	AP-42 Table 12.8-4 (Uncontrolled): Chlorine Demagging	26.60	lb/ton chlorine	AP-42 Table 12.8-4: Chlorine Demagging Particle Size Distribution applied to PM factor	55.42	242.73	2.77	12.14
$PM_{2.5}$	199.00	lb/ton chlorine	AP-42 Table 12.8-4 (Uncontrolled): Chlorine Demagging	9.90	lb/ton chlorine	AP-42 Table 12.8-4: Chlorine Demagging Particle Size Distribution applied to PM factor	20.73	90.79	1.03	4.52
D/F	3.00E-08	lb/ton	MACT Allowable standard from 40 CFR §63.1505(i)(3) [c]	--	--	--	1.09E-07	4.76E-07	--	--
~~D/F~~	~~0.40~~	~~lb/ton~~	~~MACT Allowable standard from 40 CFR §63.1505(i)(4) [c] (Uncontrolled)~~	--	--	--	~~1.45~~	~~6.35~~	--	--
HCl	0.40	lb/ton	MACT Allowable standard from 40 CFR §63.1505(i)(4) [c] (Uncontrolled)	--	--	--	1.45	6.35	--	--
Chlorine	0.11	lb/lb	Engineering estimate based on lb per lb of HCl emitted.	--	--	--	0.16	0.70	--	--

Use 0.80 lb total PM/ton from 40 CFR 63.1505(i)(2)

Table C-2
Reverberatory Melting Furnace (Proposed Emissions Unit No. 001, with Baghouse Control)
Allied Metal Company - Chattanooga Facility

Pollutant	Emissions Factors (Uncontrolled)	Units	Reference	Emissions Factors (Controlled)	Units	Reference	PTE[a] (Uncontrolled)		PTE[a] (Controlled)	
							lb/hr	ton/year	lb/hr	ton/year
Total										
CO	--	--	--	--	--	--	2.31	10.10	--	--
NO_X	--	--	--	--	--	--	2.75	12.02	--	--
Filterable PM	--	--	--	--	--	--	119.80	524.74	9.92	43.45 + 0.23
PM_{10}	--	--	--	--	--	--	72.84	319.05	13.39	58.65
$PM_{2.5}$	--	--	--	--	--	--	36.56	160.13	11.18	48.97
D/F	--	--	--	--	--	--	1.09E-07	4.76E-07	--	--
~~HF~~	--	--	--	--	--	--	~~1.45~~	~~6.35~~	--	--
HCl	--	--	--	--	--	--	1.45	6.35	--	--
Chlorine	--	--	--	--	--	--	0.16	0.70	--	--
SO_2	--	--	--	--	--	--	0.016	0.072	--	--
VOC	--	--	--	--	--	--	0.15	0.66	--	--
Pb	--	--	--	--	--	--	1.37E-05	6.01E-05	--	--
CO_2	--	--	--	--	--	--	3,880	16,994	--	--
CH_4	--	--	--	--	--	--	0.062	0.27	--	--
N_2O	--	--	--	--	--	--	0.0062	0.027	--	--
Total GHG	--	--	--	--	--	--	3,880	16,994	--	--
CO_2e	--	--	--	--	--	--	3,883	17,008	--	--

[a] Potential emissions were calculated assuming the following rated capacities:

Fuel/Throughput	Rated Capacity	Units
Natural Gas	28.00	MMBtu/hr
Annual Aluminum Processed	31,750	Ton/year
Chlorine	9182.5	Ton/year

← Use 32,500 tons/yr

[b] Carbon dioxide equivalent (CO_2e) was calculated using the methodologies outlined in Table A-1 to Subpart A of 40 CFR Part 98 and the following global warming potentials (GWP):

	GWP
CO_2	1
CH_4	25
N_2O	298

[c] HF and HCl MACT standards are used as a conservative estimate. The sources are not subject to these MACT emissions limits (only D/F).

Table C-3
Rotary Melting Furnace (Proposed Emissions Unit No. 002, with Baghouse Control)
Allied Metal Company - Chattanooga Facility

12 MMBtu/hr

Pollutant	Emissions Factors (Uncontrolled)	Units	Reference	Emissions Factors (Controlled)	Units	Reference	PTE[a] (Uncontrolled)		PTE[a] (Controlled)	
							lb/hr	ton/year	lb/hr	ton/year
Natural Gas/Propane Combustion										
CO	84.00	lb/MMSCF	AP-42, Table 1.4-1 (Uncontrolled)	--	--	--	0.99	4.33	--	--
NO_X	100.00	lb/MMSCF	AP-42, Table 1.4-1 (Uncontrolled)	--	--	--	1.18	5.15	--	--
Filterable PM	1.90	lb/MMSCF	AP-42 Table 1.4-2	--	--	--	2.24E-02	0.10	--	--
PM_{10}	7.60	lb/MMSCF	AP-42 Table 1.4-2	--	--	--	0.09	0.39	--	--
$PM_{2.5}$	7.60	lb/MMSCF	AP-42 Table 1.4-2	--	--	--	0.09	0.39	--	--
SO_2	0.60	lb/MMSCF	AP-42 Table 1.4-2	--	--	--	7.06E-03	3.09E-02	--	--
VOC	5.50	lb/MMSCF	AP-42 Table 1.4-2	--	--	--	0.06	0.28	--	--
Pb	5.00E-04	lb/MMSCF	AP-42 Table 1.4-2	--	--	--	5.88E-06	2.58E-05	--	--
CO_2	138.57	lb/MMBtu	40 CFR Part 98, Table C-1 (propane)	--	--	--	1,663	7,283	--	--
CH_4	2.20E-03	lb/MMBtu	40 CFR Part 98, Table C-2	--	--	--	2.64E-02	0.12	--	--
N_2O	2.20E-04	lb/MMBtu	40 CFR Part 98, Table C-2	--	--	--	2.64E-03	0.01	--	--
Total GHG	--	--	--	--	--	--	1,663	7,283	--	--
CO_2e	--	--	(b)	--	--	--	1,664	7,289	--	--
Refining										
Total PM	6.45	lb/ton	AP-42 Table 12.8-2 (Uncontrolled): Refining plus 25% attributed to condensable PM based on engineering judgement.	3.45	lb/ton	AP-42 Table 12.8-2 (Baghouse): Refining plus 25% attributed to condensable PM based on engineering judgement.	13.25	58.05	7.09	31.05
Filterable PM	4.30	lb/ton	AP-42 Table 12.8-2 (Uncontrolled): Refining	1.30	lb/ton	AP-42 Table 12.8-2 (Baghouse): Refining	8.84	38.70	2.67	11.70
PM_{10}	4.75	lb/ton	AP-42 Table 12.8-4 (Uncontrolled): Refining plus condensable PM based on engineering judgement	2.93	lb/ton	AP-42 Table 12.8-4: Refining Particle Size Distribution applied to PM factor plus condensable PM based on engineering judgement	9.76	42.75	6.02	26.37
$PM_{2.5}$	4.31	lb/ton	AP-42 Table 12.8-4 (Uncontrolled): Refining plus condensable PM based on engineering judgement	2.80	lb/ton	AP-42 Table 12.8-4: Refining Particle Size Distribution applied to PM factor plus condensable PM based on engineering judgement	8.86	38.79	5.75	25.20
D/F	3.00E-08	lb/ton	MACT Allowable standard from 40 CFR §63.1505(i)(3) [c]	--	--	--	6.16E-08	2.70E-07	--	--
~~HF~~	~~0.40~~	~~lb/ton~~	~~MACT Allowable standard from 40 CFR §63.1505(i)(4) [c] (Uncontrolled)~~	--	--	--	~~0.82~~	~~3.60~~	--	--
~~HCl~~	~~0.40~~	~~lb/ton~~	~~MACT Allowable standard from 40 CFR §63.1505(i)(4) [c] (Uncontrolled)~~	--	--	--	~~0.82~~	~~3.60~~	--	--

Use 0.80 lb total PM/ton from 40 CFR 63.1505 (i)(2)

Table C-3
Rotary Melting Furnace (Proposed Emissions Unit No. 002, with Baghouse Control)
Allied Metal Company - Chattanooga Facility

Pollutant	Emissions Factors (Uncontrolled)	Units	Reference	Emissions Factors (Controlled)	Units	Reference	PTE[a] (Uncontrolled)		PTE[a] (Controlled)	
							lb/hr	ton/year	lb/hr	ton/year
Total										
CO	--	--	--	--	--	--	0.99	4.33	--	--
NO_X	--	--	--	--	--	--	1.18	5.15	--	--
Filterable PM	--	--	--	--	--	--	8.86	38.80	2.67	11.70
PM_{10}	--	--	--	--	--	--	9.85	43.14	6.02	26.37
$PM_{2.5}$	--	--	--	--	--	--	8.95	39.18	5.75	25.20
D/F	--	--	--	--	--	--	6.16E-08	2.70E-07	--	--
~~HF~~	--	--	--	--	--	--	~~0.82~~	~~3.60~~	--	--
~~HCl~~	--	--	--	--	--	--	~~0.82~~	~~3.60~~	--	--
SO_2	--	--	--	--	--	--	7.06E-03	3.09E-02	--	--
VOC	--	--	--	--	--	--	0.06	0.28	--	--
Pb	--	--	--	--	--	--	5.88E-06	2.58E-05	--	--
CO_2	--	--	--	--	--	--	1,663	7,283	--	--
CH_4	--	--	--	--	--	--	2.64E-02	0.12	--	--
N_2O	--	--	--	--	--	--	2.64E-03	1.16E-02	--	--
Total GHG	--	--	--	--	--	--	1,663	7,283	--	--
CO_2e	--	--	--	--	--	--	1,664	7,289	--	--

[a] Potential emissions were calculated assuming the following rated capacities:

Fuel/Throughput	Rated Capacity	Units
Natural Gas	12.00	MMBtu/hr
Annual Aluminum Processed	18,000	Ton/year

[b] Carbon dioxide equivalent (CO_2e) was calculated using the methodologies outlined in Table A-1 to Subpart A of 40 CFR Part 98 and the following global warming potentials (GWP):

GWP	
CO_2	1
CH_4	25
N_2O	298

[c] HF and HCl MACT standards are used as a conservative estimate. The sources are not subject to these MACT emissions limits (only D/F).

Table C-4
Natural Gas Combustion - Reverberatory and Rotary Furnace Hazardous Air Pollutant (HAP) Emissions
Allied Metal Company - Chattanooga Facility

Pollutant	Emissions Factor		Reference	PTE[c]	
				lb/hr	ton/yr
Benzene	2.10E-03	lb/MMSCF	(a)	8.24E-05	3.61E-04
Dichlorobenzene	1.20E-03	lb/MMSCF	(a)	4.71E-05	2.06E-04
Formaldehyde	7.50E-02	lb/MMSCF	(a)	2.94E-03	0.01
Fluoranthene	3.00E-06	lb/MMSCF	(a)	1.18E-07	5.15E-07
Fluorene	2.80E-06	lb/MMSCF	(a)	1.10E-07	4.81E-07
Hexane	1.80E+00	lb/MMSCF	(a)	0.07	0.31
Naphthalene	0.00	lb/MMSCF	(a)	2.39E-05	1.05E-04
2-Methylnaphthalene	2.40E-05	lb/MMSCF	(a)	9.41E-07	4.12E-06
Phenanthrene	0.000017	lb/MMSCF	(a)	6.67E-07	2.92E-06
Pyrene	5.00E-06	lb/MMSCF	(a)	1.96E-07	8.59E-07
Toluene	3.40E-03	lb/MMSCF	(a)	1.33E-04	5.84E-04
Arsenic	2.00E-04	lb/MMSCF	(b)	7.84E-06	3.44E-05
Cadmium	1.10E-03	lb/MMSCF	(b)	4.31E-05	1.89E-04
Chromium III	1.40E-03	lb/MMSCF	(b)	5.49E-05	2.40E-04
Cobalt	8.40E-05	lb/MMSCF	(b)	3.29E-06	1.44E-05
Manganese	3.80E-04	lb/MMSCF	(b)	1.49E-05	6.53E-05
Mercury	2.60E-04	lb/MMSCF	(b)	1.02E-05	4.47E-05
Nickel	2.10E-03	lb/MMSCF	(b)	8.24E-05	3.61E-04
Total HAP	-	-	-	**7.40E-02**	**0.32**

[a] Emissions factor from U.S. EPA's AP-42, Table 1.4-3. Pollutant emissions factors based on method detection limits were not included.
[b] Emissions factor from U.S. EPA's AP-42, Table 1.4-4. Pollutant emissions factors based on method detection limits were not included.
[c] Emissions were calculated using the rated capacity of the reverberatory and rotary furnaces combined.

40 MMBtu/hr
8,760 hr/yr
1,020 MMBtu/MMCF

Table C-5
Fugitive Sources
Allied Metal Company - Chattanooga Facility

Pollutant	Emissions Factors	Units	Reference	PTE[(a)]	
				lb/hr	ton/year
Dross Drop Emissions					
Filterable PM	7.55E-03	lb/ton	AP-42 Table 13.2.4, Equation 1 using a moisture content of 0.25% and wind speed of 1.3 mph. Assumed PM = PM_{30}.	6.44E-03	0.028
PM_{10}	3.57E-03	lb/ton	AP-42 Table 13.2.4, Equation 1 using a moisture content of 0.25% and wind speed of 1.3 mph.	3.04E-03	0.013
$PM_{2.5}$	5.41E-04	lb/ton	AP-42 Table 13.2.4, Equation 1 using a moisture content of 0.25% and wind speed of 1.3 mph.	4.61E-04	0.0020

[(a)] Potential emissions were calculated assuming 15% loss during processing.

Material	Throughput	Units
Dross	7,463	Ton/year

Table C-6
Roads
Allied Metal Company - Chattanooga Facility

Pollutant	Emissions Factors [a]	Units	PTE[a]	
			lb/hr	ton/year
Filterable PM	1.91	lb/VMT	3.82	5.58
PM_{10}	0.382	lb/VMT	0.76	1.12
$PM_{2.5}$	0.094	lb/VMT	0.19	0.27

Vehicle Miles Traveled		Units
Annual	5,840	VMT/yr
Hourly	2	VMT/hr

[a] U.S. EPA, AP-42 Compilation of Air Emission Factors (5th Ed.), Section 13.2.1 Paved Roads (January 2011), Equation (2).

$$E_{ext} = [\, k\,(sL)^{0.91} \times (W)^{1.02} \,]\,(1 - P/4N)$$

Parameters	Description	TSP	PM_{10}	$PM_{2.5}$	Units
k	Particle size multiplier	0.011	0.0022	0.00054	lb/VMT
P	Number of wet days	120			
sL	Road surface silt loading	9.7			
W	Average vehicle weight	22.5			

Table C-7
Emergency Diesel Engine
Allied Metal Company - Chattanooga Facility

Pollutant	Emissions Factors (b)(c)	Units	PTE[a]	
			lb/hr	ton/year
CO	3.50	g/kW-hour	1.93	0.48
NOx	4.00	g/kW-hour	2.20	0.55
Filterable PM	0.20	g/kW-hour	0.11	0.03
PM_{10}	0.20	g/kW-hour	0.11	0.03
$PM_{2.5}$	0.20	g/kW-hour	0.11	0.03
SO_2	0.29	lb/MMBtu	0.67	0.17
VOC	4.00	g/kW-hour	2.20	0.55
CO_2	163.05	lb/MMBtu	376.65	94.16
CH_4	6.61E-03	lb/MMBtu	1.53E-02	3.82E-03
N_2O	1.32E-03	lb/MMBtu	3.06E-03	7.64E-04
Total GHG	--	--	377	94.17
CO_2e	--	--	378	94.49
Acetaldehyde	7.67E-04	lb/MMBtu	1.77E-03	4.43E-04
Acrolein	9.25E-05	lb/MMBtu	2.14E-04	5.34E-05
Benzene	9.33E-04	lb/MMBtu	2.16E-03	5.39E-04
1,3-Butadiene	3.91E-05	lb/MMBtu	9.03E-05	2.26E-05
Formaldehyde	1.18E-03	lb/MMBtu	2.73E-03	6.81E-04
Naphthalene	8.48E-05	lb/MMBtu	1.96E-04	4.90E-05
POM	1.68E-04	lb/MMBtu	3.88E-04	9.70E-05
Toluene	4.09E-04	lb/MMBtu	9.45E-04	2.36E-04
Xylenes (mixed isomers)	2.85E-04	lb/MMBtu	6.58E-04	1.65E-04
Total HAP			9.14E-03	2.29E-03

[a] Potential emissions were calculated assuming the following rated capacities:

Engine Data	Rated Capacity	Units
Engine Rating	330	hp
Engine Rating	250	kW
Maximum Operating Hours	500	hour/yr
Engine Heat Input	2.31	MMBtu/hr

[b] Carbon dioxide equivalent (CO_2e) was calculated using the methodologies outlined in Table A-1 to Subpart A of 40 CFR Part 98 and the following global warming potentials (GWP):

GWP	
CO_2	1
CH_4	25
N_2O	298

[c] Emissions factors from AP-42 Section 3.3, Tables 3.3-1 and 3.3-2. Total PAH emission factor was used for POM emissions.

[d] NO_X, VOC, PM, and CO emissions factors based on NSPS IIII emissions limits. NO_X and VOC conservatively estimated to be equal to the NO_X + non-methane hydrocarbons emissions limit.

Table C-8
Sweating Furnace No. 1 and Associated Holding Pot #1
Allied Metal Company - Chattanooga Facility

Pollutant	Emissions Factors	Units	Reference	PTE[a]	
				lb/hr	ton/year
CO	84.00	lb/MMSCF	AP-42, Table 1.4-1 (Uncontrolled)	0.11	0.46
NO_X	13.00	lb/Mgal	AP-42, Table 1.5-1 LPG Combustion	0.18	0.79
Total PM	--	--	PTE based on Source Testing	0.847	3.710
Filterable PM	--	--	PTE based on Source Testing	0.847	3.710
PM_{10}	--	--	PTE based on Source Testing	0.45	1.972
$PM_{2.5}$	--	--	PTE based on Source Testing	0.45	1.972
SO_2	0.60	lb/MMSCF	AP-42 Table 1.4-2	7.50E-04	3.29E-03
VOC	5.50	lb/MMSCF	AP-42 Table 1.4-2	0.01	0.03
Pb	5.00E-04	lb/MMSCF	AP-42 Table 1.4-2	6.25E-07	2.74E-06
CO_2	138.57	lb/MMBtu	40 CFR Part 98, Table C-1 (Propane).	176.67	773.82
CH_4	2.20E-03	lb/MMBtu	40 CFR Part 98, Table C-2	2.81E-03	0.0123
N_2O	2.20E-04	lb/MMBtu	40 CFR Part 98, Table C-2	2.81E-04	0.0012
Total GHG	--	--	--	176.67	773.83
CO_2e	--	--	(b)	176.82	774.49

[a] Potential emissions were calculated assuming the following rated capacities:

Fuel/Throughput	Rated Capacity	Units
Natural Gas/Propane	10.95	MMcf/yr
Heat Input Rating	1.28	MMBtu/hr
Zinc Processed	2,000	lb/hr

Emissions are based on worst case fuel on a pollutant by pollutant basis. Emissions from propane combustion are worst-case for NO_X and CO_2.

[b] Carbon dioxide equivalent (CO_2e) was calculated using the methodologies outlined in Table A-1 to Subpart A of 40 CFR Part 98 and the following global warming potentials (GWP):

GWP	
CO_2	1
CH_4	25
N_2O	298

Table C-9
Four Melting Furnaces #1 - #4
Allied Metal Company - Chattanooga Facility

Pollutant	Emissions Factors (Uncontrolled)	Units	Reference	PTE[a]	
				lb/hr	ton/year
Natural Gas Combustion/Process					
CO	84.00	lb/MMSCF	AP-42, Table 1.4-1 (Uncontrolled)	0.91	3.99
NO_X	13.00	lb/Mgal	AP-42, Table 1.5-1 LPG Combustion	1.57	6.88
Total PM	Potential Emissions from the Immersion Furnace are 0.321 lb/hr and potential emissions from each of the three kettles are 0.150 lb/hr. From 2021 Inspection Report.			0.77	3.38
Filterable PM				0.77	3.38
PM_{10}				0.07	0.31
$PM_{2.5}$				0.07	0.31
SO_2	0.60	lb/MMSCF	AP-42 Table 1.4-2	6.50E-03	2.85E-02
VOC	5.50	lb/MMSCF	AP-42 Table 1.4-2	0.06	0.26
Pb	5.00E-04	lb/MMSCF	AP-42 Table 1.4-2	5.42E-06	2.37E-05
CO_2	138.57	lb/MMBtu	40 CFR Part 98, Table C-1 (Propane)	1,531	6,706
CH_4	2.20E-03	lb/MMBtu	40 CFR Part 98, Table C-2	2.44E-02	1.07E-01
N_2O	2.20E-04	lb/MMBtu	40 CFR Part 98, Table C-2	2.44E-03	1.07E-02
Total GHG	--	--	--	1,531	6,707
CO_2e	--	--	(b)	1,532	6,712

[a] Potential emissions were calculated assuming the following rated capacities:

Fuel/Throughput	Rated Capacity	Units
Natural Gas	94.90	MMcf/yr
Immersion Furnace	250,000	Per Batch (24-hour batch)
Each Kettle	32,000	Per Batch (12-hour batch)

[b] Carbon dioxide equivalent (CO_2e) was calculated using the methodologies outlined in Table A-1 to Subpart A of 40 CFR Part 98 and the following global warming potentials (GWP):

GWP	
CO_2	1
CH_4	25
N_2O	298

Table C-10

Natural Gas Combustion - Sweating and Melting Furnaces Hazardous Air Pollutant (HAP) Emissions

Allied Metal Company - Chattanooga Facility

Pollutant	Emissions Factor		Reference	PTE Rate[(c)]	
				lb/hr	ton/yr
Benzene	2.10E-03	lb/MMSCF	(a)	2.54E-05	1.11E-04
Dichlorobenzene	1.20E-03	lb/MMSCF	(a)	1.45E-05	6.35E-05
Formaldehyde	7.50E-02	lb/MMSCF	(a)	9.06E-04	3.97E-03
Fluoranthene	3.00E-06	lb/MMSCF	(a)	3.63E-08	1.59E-07
Fluorene	2.80E-06	lb/MMSCF	(a)	3.38E-08	1.48E-07
Hexane	1.80E+00	lb/MMSCF	(a)	0.02	0.10
Naphthalene	0.00	lb/MMSCF	(a)	7.37E-06	3.23E-05
2-Methylnaphthalene	2.40E-05	lb/MMSCF	(a)	2.90E-07	1.27E-06
Phenanthrene	0.000017	lb/MMSCF	(a)	2.05E-07	9.00E-07
Pyrene	5.00E-06	lb/MMSCF	(a)	6.04E-08	2.65E-07
Toluene	3.40E-03	lb/MMSCF	(a)	4.11E-05	1.80E-04
Arsenic	2.00E-04	lb/MMSCF	(b)	2.42E-06	1.06E-05
Cadmium	1.10E-03	lb/MMSCF	(b)	1.33E-05	5.82E-05
Chromium III	1.40E-03	lb/MMSCF	(b)	1.69E-05	7.41E-05
Cobalt	8.40E-05	lb/MMSCF	(b)	1.02E-06	4.45E-06
Manganese	3.80E-04	lb/MMSCF	(b)	4.59E-06	2.01E-05
Mercury	2.60E-04	lb/MMSCF	(b)	3.14E-06	1.38E-05
Nickel	2.10E-03	lb/MMSCF	(b)	2.54E-05	1.11E-04
Total HAP	-	-	-	**2.28E-02**	**9.99E-02**

[(a)] Emissions factor from U.S. EPA's AP-42, Table 1.4-3. Pollutant emissions factors based on method detection limits were not included

[(b)] Emissions factor from U.S. EPA's AP-42, Table 1.4-4. Pollutant emissions factors based on method detection limits were not included

[(c)] Emissions were calculated using the rated capacity of the reverberatory and rotary furnaces combined

105.85 MMScf/yr
8,760 hr/yr
1,020 MMBtu/MMCF

Table C-11
Insignificant Activity Combustion Sources
Allied Metal Company - Chattanooga Facility

Pollutant	Emissions Factors (Uncontrolled)	Units	Reference	PTE[a]	
				lb/hr	ton/year
Natural Gas/Propane Combustion					
CO	84.00	lb/MMSCF	AP-42, Table 1.4-1 (Uncontrolled)	0.077	0.339
NO_X	13.00	lb/Mgal	AP-42, Table 1.5-1 LPG Combustion	0.134	0.585
Filterable PM	1.90	lb/MMSCF	AP-42 Table 1.4-2	0.002	0.008
PM_{10}	7.60	lb/MMSCF	AP-42 Table 1.4-2	0.007	0.031
$PM_{2.5}$	7.60	lb/MMSCF	AP-42 Table 1.4-2	0.007	0.031
SO_2	0.60	lb/MMSCF	AP-42 Table 1.4-2	0.001	0.002
VOC	5.50	lb/MMSCF	AP-42 Table 1.4-2	0.005	0.022
Pb	5.00E-04	lb/MMSCF	AP-42 Table 1.4-2	4.61E-07	2.02E-06
CO_2	138.57	lb/MMBtu	40 CFR Part 98, Table C-1 (Propane)	130.252	570.502
CH_4	2.20E-03	lb/MMBtu	40 CFR Part 98, Table C-2	2.07E-03	9.07E-03
N_2O	2.20E-04	lb/MMBtu	40 CFR Part 98, Table C-2	2.07E-04	9.07E-04
Total GHG	--	--	--	130.25	570.51
CO_2e	--	--	(b)	130.37	571.00
Benzene	2.10E-03	lb/MMSCF	(c)	1.94E-06	8.48E-06
Dichlorobenzene	1.20E-03	lb/MMSCF	(c)	1.11E-06	4.84E-06
Formaldehyde	7.50E-02	lb/MMSCF	(c)	6.91E-05	3.03E-04
Fluoranthene	3.00E-06	lb/MMSCF	(c)	2.76E-09	1.21E-08
Fluorene	2.80E-06	lb/MMSCF	(c)	2.58E-09	1.13E-08
Hexane	1.80E+00	lb/MMSCF	(c)	1.66E-03	7.27E-03
Naphthalene	6.10E-04	lb/MMSCF	(c)	5.62E-07	2.46E-06
2-Methylnaphthalene	2.40E-05	lb/MMSCF	(c)	2.21E-08	9.69E-08
Phenanthrene	0.000017	lb/MMSCF	(c)	1.57E-08	6.86E-08
Pyrene	5.00E-06	lb/MMSCF	(c)	4.61E-09	2.02E-08
Toluene	3.40E-03	lb/MMSCF	(c)	3.13E-06	1.37E-05
Arsenic	2.00E-04	lb/MMSCF	(d)	1.84E-07	8.07E-07
Cadmium	1.10E-03	lb/MMSCF	(d)	1.01E-06	4.44E-06
Chromium III	1.40E-03	lb/MMSCF	(d)	1.29E-06	5.65E-06
Cobalt	8.40E-05	lb/MMSCF	(d)	7.74E-08	3.39E-07
Manganese	3.80E-04	lb/MMSCF	(d)	3.50E-07	1.53E-06
Mercury	2.60E-04	lb/MMSCF	(d)	2.40E-07	1.05E-06
Nickel	2.10E-03	lb/MMSCF	(d)	1.94E-06	8.48E-06
Total HAP	-	-	-	**1.74E-03**	**7.62E-03**

[a] Potential emissions were calculated assuming the following rated capacities:

Fuel/Throughput	Rated Capacity	Units
Total Combined	0.94	MMBtu/hr
Propane Vaporizer	0.54	MMBtu/hr
Portable Pot Furnace	0.40	MMBtu/hr

[b] Carbon dioxide equivalent (CO_2e) was calculated using the methodologies outlined in Table A-1 to Subpart A of 40 CFR Part 98 and the following global warming potentials (GWP):

GWP	
CO_2	1
CH_4	25
N_2O	298