May 9, 2024

Ms. Michelle McCloskey
Permit Support Section Manager
Kentucky Division for Air Quality
300 Sower Blvd, 2nd Floor
Frankfort, KY 40601

RE: Title V Permit Renewal Application
Century Aluminum Sebree, LLC
(Source ID 21-101-00029; Agency Interest #1788; Permit V-19-010 R2)

Dear Ms. McCloskey:

Century Aluminum Sebree, LLC (Century) owns and operates a primary aluminum production facility in Robards, Kentucky near the town of Sebree (Sebree Plant). The facility is a major source under the Title V operating permit program and currently operates in accordance with Title V operating permit V-19-010 R2, which was originally issued on November 11, 2019 and last revised on April 24, 2020 by the Kentucky Division for Air Quality (Division). As the existing permit expires on November 11, 2024, a renewal application for the permit must be submitted at least six months prior to the permit expiration date, or by May 11, 2024. This application letter and attachments constitute the renewal application for Century's Sebree Plant as required under Condition G(2)(a) of the existing permit.

1. SEBREE PLANT SUMMARY

Facility Location



The Sebree Plant is located on State Highway Junction 2096/2097, 3.0 miles (4.9 km) northeast of the city center of Sebree, Kentucky in Henderson County near the borders of McLean and Webster Counties. The Sebree Plant is surrounded by a large tract of controlled property in all directions. It is bounded on the east by the Green River and open farmland, on the west by the Edward T. Breathitt Pennyrile Parkway (I-69), light industry, and farmland/wooded areas, on the south by Big Rivers Electric Corporation, and on the north by wooded areas.

Figure 1 in Attachment 1 shows the facility property and the surrounding area on a topographical map relative to predominant geographical features such as nearby highways, railroads, streams, and rivers. The coordinates of the center of the property, represented in the Universal Transverse Mercator (UTM) coordinate system, are approximately 456.2 km East, 4,168.9 km

North in Zone 16 (NAD83). Process operations, which are located on the southern portion of the property, are centered at coordinates 455.8 km East, 4,168.0 km North.

Figure 2 in Attachment 1 provides an aerial view of the main site operations with the key emission units and emission points denoted.

Environmental Contacts

The primary contacts at the facility are (1) Mr. Chris Goddard, Environmental Manager, and (2) Mr. Levi Chaffin, Plant Manager. A Certificate of Authority for the plant is currently on file with KDAQ.

Facility Operations Overview

At the Sebree Plant, Century produces primary aluminum through the electrolytic reduction of raw alumina (Al_2O_3) in vessels termed reduction cells or "pots". Century operates three nearly identical potlines at the Sebree Plant. As shown in Figure 2 in Attachment 1 and Figure 8 in Attachment 2, each potline is composed of two potrooms that each contain 64 reductions cells for a total of 128 cells per potline.

Each pot in the potrooms is constructed as a complete electrolytic circuit with anode, cathode, and electrolyte. The exterior of the pots consists of a rectangular steel shell lined with refractory thermal insulation. Raw material inputs to the pots include alumina, bath, carbon anodes, and various other additives to the aluminum production process such as aluminum fluoride. Within the pot is an inner lining of carbon (the cathode). Carbon anode blocks are placed just below the surface of a fluoride electrolyte (cryolite) to complete the reaction circuit. A current is applied to metal rods attached to the anode blocks, which passes thorough the molten bath (molten aluminum, cryolite, and alumina) and the carbon cathode lining, and then to the current collector bars. The molten aluminum formed in the reduction cells (as it is liberated from alumina with oxygen) settles between the anode and cathode where it accumulates. The oxygen liberated reacts with the carbon anode blocks forming carbon dioxide. The accumulated molten metal is siphoned from the pots into crucibles each day. The anode blocks, which are gradually consumed by the reaction in the pots, last a few weeks before they must be replaced with new anodes.

The emissions from the reduction cells in each potline are captured through hooding systems and are sent to two Alcoa A-398 alumina fluidized bed dry scrubbers, each of which has five reactors. Thus, for three potlines, there are a total of six alumina fluidized bed dry scrubbers with each one serving half of the pots on a potline. Any fugitive emissions not caught by the hooding system are vented through the roof of each potline.

To provide baked carbon anodes to the reduction cells, Century operates an anode paste mixing and forming operation and an anode bake furnace, in which the "green anodes" are baked. The green anodes are formed from petroleum coke, recycled spent anode material, and coal tar pitch, which serves as a binder. The formed anodes are compressed and placed within the bake furnace, where they are baked to remove volatiles, leaving a solid carbon block. The emissions from the paste mixing and anode forming units are vented to a common control device, a Procedair dry coke scrubber. The emissions from the anode bake furnace are sent to an Alcoa A-446 alumina fluidized bed scrubber.

The molten aluminum produced by the reduction cells from all three potlines is sent to the casthouse to be formed into billets and T-bars, along with other products. The casthouse utilizes natural gas-fired holding furnaces to condition molten aluminum and homogenizing furnaces to condition the aluminum billets.

Most of the major equipment and emission units at the Sebree Plant were constructed in 1972 and operations began in 1973. The original emission units included Potlines 1 and 2, an Anode Bake Furnace and other support operations. Potline 3 and a second Anode Bake Furnace (now out of service) began operation in 1979. In 2010, following the implementation of an amperage increase project, the production capacity of the plant was increased. The plant currently has a permitted capacity of 253,531 tons per year of aluminum from the potlines.

Century's primary SIC Code is 3334 (Primary Production of Aluminum). The corresponding primary NAICS Code is 331313 (Alumina Refining and Primary Aluminum Production).

Emission Unit Grouping and Nomenclature

Production activities and emission units at the Sebree Plant are organized into the following plant area groupings as depicted on the process flow diagrams in Attachment 2.

- Raw Materials
- Green Carbon Dry
- Green Carbon Wet
- Anode Bake Furnace
- Anode Butts Processing
- Bath Salvage
- Anode Rods
- Potlines
- Spent Potliner Processing
- Casthouse Operations
- Plant Roads
- Stationary Engines
- Boilers

The emission units within each area are further organized and numbered based on the stage of the process they encompass and/or whether they have common control devices and emission points.

With the exception of the 29.5 HP 001 IT Back-up Generator discussed in Section 4 of this renewal, all individual emission units at the Sebree Plant have already been assigned Equipment IDs, Source IDs, and Process IDs within the Kentucky Emission Inventory System (KyEIS). Both the Equipment IDs and Source IDs are unique for each individual emission unit. In the Title V permit, a two-part Emission Unit ID is used. The first part of the Title V permit ID generally matches the corresponding KyEIS Source ID and the second part (in parenthesis) generally refers to a legacy Stack ID used by the plant.

The process flow diagrams provided in Attachment 2 correspond to each plant area emission unit grouping. Emission units on the process flow diagrams include labels that include the KyEIS Source IDs and Process IDs, as well as the Century Control Device IDs and Stack IDs.

A description of the production processes and characteristics of emissions from activities in each of these emission groups was provided in the prior Title V permit application and those descriptions remain generally accurate. A few minor updates and corrections have been made to the process flow diagrams.

Emissions Profile and Source Classification

The majority of emissions from the Sebree Plant emanate from the A-398 dry scrubber system stacks on each potline, and from the A-446 dry scrubber stacks of the Anode Bake Furnace. There are also multiple baghouses and storage tank vent filter systems at the plant that minimize PM emissions from material handling operations, but emissions from these processes are relatively small in comparison. The specific methodologies utilized for calculating emissions at the Sebree Plant were presented in the last Title V permit renewal application submitted on March 31, 2017.

Title V Source Classification

The Sebree Plant is a major source under the Title V operating permit program (401 KAR 52:020) since potential emissions of at least one regulated pollutant (e.g., SO_2) exceeds 100 tpy.

HAP Source Classification

The Sebree Plant is a major source of hazardous air pollutants (HAPs) because site-wide potential emissions of at least one individual HAP (e.g., HF) are greater than 10 tpy. The potential emissions of all HAPs combined are also greater than 25 tpy.

NSR Source Classification

The Sebree Plant is located in Henderson County, Kentucky, which has been designated by U.S. EPA as unclassified/attainment for all criteria pollutants except SO_2.[1] For SO_2, the area surrounding the plant in Henderson and Webster Counties was designated nonattainment for the SO_2 NAAQS on April 30, 2021. Therefore, with respect to the federal New Source Review (NSR) permitting program, the nonattainment SIP permitting program requirements are potentially relevant for future projects for SO_2, and the Prevention of Significant Deterioration (PSD) program requirements are relevant for all other regulated NSR pollutants.

Kentucky has incorporated the requirements of the PSD permitting program into its State Implementation Plan (SIP) at 401 KAR 51:017.[2] These PSD regulations specifically define 28 industrial source categories for which the major source threshold is 100 tpy of any regulated pollutant.[3] The major source threshold for facilities not on this "List of 28" is 250 tpy. Since the facility industrial classification (production of primary aluminum) is included on the "List of 28" source categories, the major source threshold under the PSD program for the facility is 100 tpy of a regulated NSR pollutant.

Since the potential emissions of at least one regulated NSR pollutant currently exceeds 100 tpy, the Sebree Plant is classified as an existing major stationary source under the PSD program. It is also a major source under the nonattainment NSR program for SO_2 since potential emissions of SO_2 exceed 100 tpy. The plant has undergone at three PSD permit actions in its lifespan, including the installation of Potline 3 in 1979, the refurbishment of the Anode Bake Furnace in 2008 (V-05-088 R1) and the amperage increase project in 2010 that raised the production capacity of Potlines 1-3 (V-05-088 R2). There have been no PSD triggering permit actions since the amperage increase project.

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[1] 401 KAR 51:010, Section 2.

[2] 40 CFR 51.166(a)(1)

[3] 401 KAR 51:001, Section 1 (118)(a)(2)(a)

2. AIR PERMIT ACTIONS AND OTHER CHANGES IN THE CURRENT PERMIT TERM

The current Title V permit for the Sebree Plant was issued on November 11, 2019 (V-19-010). The permit has been revised twice during the permit term. The permit was first revised on February 24, 2020 (V-19-010 R1) through a significant revision to cover a change in the classification for the Remelt Furnace (A6) to "Group 2" under the National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production (40 CFR 63, Subpart RRR, aka "SMACT"). Subsequently, due to a change in business plans, the Remelt Furnace classification under SMACT was changed again to "Group 1 Uncontrolled" status via a minor revision action on April 24, 2020 (V-19-010 R2).

In addition to the two permit revision actions, there were four Section 502(b)(10) changes over the permit term summarized here:

- **Section 502(b)(10) Notification – Green Mill Boiler**
  This notification submitted on **June 16, 2021** covered the installation of a 12.6 MMBtu/hr capacity natural gas fired unit, the Green Mill Boiler, designated as Emission Unit S7. The new Green Mill Boiler, which was brought onsite as a rental in October 2020 and installed as a permanent unit in June 2021, replaced the existing Electrode Boiler (S5), originally installed in 1972, which had reached the end of its useful life and was removed. Similar to the boiler it replaced, the new Green Mill boiler provides process steam to heat the pitch that is conveyed from Pitch Tanks to Mixers in the Green Mill.

  The new Green Mill Boiler is subject to applicable requirements under 40 CFR 60 Subpart Dc, 40 CFR 63 Subpart DDDDD, and 401 KAR 59:015. Several of these applicable requirements were the same as had applied to Emission Unit S5. Necessary edits and changes to permit conditions to cover the new Green Mill Boiler are noted on the permit markups in Attachment 4. Although it was not required at the time for a Section 502(b)(10) notification, to facilitate review and the eventual inclusion into the Title V permit at renewal, a set of DEP7007A, N, and V forms covering the Green Mill Boiler were submitted with the notification and these are hereby cross-referenced for the purpose of this renewal application.

- **Section 502(b)(10) Notification – Temporary Bath Crusher**
  This notification submitted on **August 5, 2021** covered the temporary installation of a bath material crushing operation while the permanent crusher (Emission Unit K1) was taken offline for repair and maintenance. Bath material is recovered from spent anodes removed from the pots and is crushed so it can be recycled back to the potlines as cover material. Because of the past temporary nature of the operation, no changes to the Title V permit as part of the renewal are necessary to cover this activity.

- **Section 502(b)(10) Notification – Permanent Bath Screener**
  This notification submitted on **August 24, 2022** covered the installation of a bath material screening unit (Emission Unit K10-A) and its associated 110-horsepower diesel-fired engine (Emission Unit K10-B). The screener unit, when onsite, is used to pre-screen accumulated routine spillage material from the potline basements to be recycled back into the process. The Screener is designed to be portable and because the engine provides both the power used for locomotion and for operating the screens and conveyors, the engine would normally be classified as a non-road engine whose emissions would not be regulated in the Title V permit. However, because Century has plans to continue to operate the screener in a designated location at the facility, the engine is treated as a stationary engine for Title V permitting purposes.

  The bath screener unit operations are subject to 401 KAR 63:010 and the engine associated with the unit is subject to 40 CFR 60 Subpart IIII and 40 CFR 63 Subpart ZZZZ. Although it was not required at

the time for a Section 502(b)(10) notification, to facilitate review and the eventual inclusion into the Title V permit at renewal, a set of DEP7007B, N, V, DD, and EE forms covering the bath screener unit were submitted with the notification and these are hereby cross-referenced for the purpose of this renewal application.

- **Section 502(b)(10) Notification – Butts Material Backup Crusher**
  This notification submitted on **August 29, 2022** covered the planned periodic use of a portable crusher as a backup to the permanent crushers used for processing anode, bath, and similar process materials. The crusher is a track-mounted portable unit that receives material to be processed from front-end loaders. Material that has been crushed to the desired size passes through a screen onto a belt conveyor that transfers the material onto a storage pile.

  Because of the occasional but recurring need for backup crushing capabilities at the plant, either for anode butts, bath, or other materials, Century sought to add the portable backup crusher as a defined permanent emission unit. When needed, the specific brand and model rental crusher described in the August 29, 2022 notification or an alternative brand and model crusher with similar design and operating characteristics, not exceeding the maximum rates described, is brought on-site and operated. When present on-site, the portable crusher operation qualifies to be designated as an insignificant activity based on potential emissions and therefore Century presumes that it will be added to Section C of the Title V permit as part of this renewal permit action.

  Although it was not required at the time for a Section 502(b)(10) notification, to facilitate review and the eventual inclusion into the Title V permit at renewal, a DEP7007DD form listing the Backup Crusher unit was submitted with the notification and this form is hereby cross-referenced for the purpose of this renewal application.

3. SCOPE AND CONTENTS OF RENEWAL APPLICATION

Pursuant to 401 KAR 52:020, Section 4(2)(c), applications for permit renewals only need to provide the information that is new or different from the most recent source-wide permit application and certification by a responsible official. The most recent source-wide permit application was submitted on March 31, 2017 for the last permit renewal. Except as covered herein, the information presented in that application package, including the application forms, is still complete and accurate. Additionally, with only a few exceptions, the applicable requirements contained in the existing permit (V-19-010 R2) are also current and complete. Therefore, Century is only submitting this letter and attachments as detailed below for this renewal permit action.

- **Facility Location** – A topographical map of the facility location, property boundary, and the surrounding area in addition to an aerial view of the main site operations are provided in Attachment 1.

- **Process Flow Diagrams** – A current version of the process flow diagrams for the Sebree Plant, depicting all the defined emission units and their relationships, is provided in Attachment 2.

- **Application Forms** – A signed DEP7007AI Administrative Information Form required for all applications is included in Attachment 3. Additionally, DEP7007N Source Emissions Profile and DEP7007EE Internal Combustion Engines are included for the addition of the 001 IT Back-up Generator unit.

- **Markups to Existing Title V Permit** – A mark-up of the existing Title V Permit (V-19-010 R2) showing the changes being requested to the permit to reflect regulatory changes and other changes being

requested by Century is provided in Attachment 4. The rationale for the changes sought is detailed later in this letter.

- **Engine Emission Calculations, Specifications Sheet, Statement of Exhaust Emissions and Certificate of Conformity** – Documentation of the emissions represented on the 7007N and 7007EE forms for the 001 IT Back-up Generator unit along with the specifications sheet, statement of exhaust emissions, and EPA certificate of conformity for the generator's engine are included in Attachment 5.

4. EMISSION UNIT INVENTORY AND KYEIS UPDATES

Century is seeking and/or expecting some minor changes to the Title V permit as part of the renewal action as part of Division's review. The applicable changes for the Title V permit and KyEIS infrastructure anticipated are as follows.

- **Remove Decommissioned E8 (EM) Building 138 Vacuum System from KyEIS and Permit**
  - The Building 138 Vacuum System (E8) is no longer operable and should be removed from the permit and KyEIS system. Aluminum processed in this area falls under the scrap metal exemption and spent potliner is no longer processed; therefore, the area is no longer designated for hazardous waste. All spent potliner transloading and sand blasting is managed under EU E6 (EL) Transloading Spent Potliner and Sandblasting Operations. Only manual cleaning operations occur after sandblasting.

- **Remove Decommissioned Boilers from KyEIS and Permit**
  - As noted above in Section 2, the Electrode Boiler (S5) was replaced with the Green Mill Boiler (S7) in 2021. Two other small boilers listed below were also removed from service during the permit term, having reached the end of their useful life. All three boilers can thus be removed from the permit.
    - S5 - Indirect Heat Exchanger (Electrode Boiler)
    - A7 - Building 004 Water Heater
    - A9 - Building 004 Picking Unit Boiler

- **Addition of 001 IT Back-up Generator**
  - As part of due diligence reviews conducted in conjunction with preparing the Title V renewal application, Century's Environmental Department became aware that the IT Operations Department had installed a small new emergency generator for IT server room at the facility in 2021. The generator is a natural gas fired 32 BHP Generac model RG022 generator (proposed Title V ID EU Z9). Century is requesting that this generator be added to Section B, Emission Group XII of the Title V permit as a new emission unit as shown in the revised permit in Attachment 4. The required DEP7007N and 7007EE forms covering the generator are provided in Attachment 3. A summary of emissions from the engine and the engine's specification sheet is included in Attachment 5.

    As appropriate, Century will be noting the deviation of requirements in Section A of the permit for the 2021 installation of the backup generator in the next semiannual monitoring report and annual compliance certification report. As will be noted then, the new emergency generator has been operated in accordance with engine regulation requirements since its installation and there have been no excess emissions from the engine during its time on site.

5. UPDATES TO TITLE V PERMIT THROUGH RENEWAL

Changes to Applicable Requirements

Changes to applicable requirements during the current permit term due to regulation updates by the Division and EPA are covered in this section. All other applicable requirements remain the same and are encompassed by the conditions in the Permit V-19-010 R2. This includes provisions applicable under 40 CFR 64, Compliance Assurance Monitoring.

Kentucky Administrative Regulations – 401 KAR 63:010 Fugitive Emissions

At the state-level, the Division promulgated a revised version of 401 KAR 63:010 on June 30, 2020 that changed some of the applicable requirements for fugitive emission sources at the plant. As noted in the permit markups included in Attachment 4, the Item 2 Emission Limit condition in Section B for Fugitive Sources should be revised to reflect the current language in 401 KAR 63:010 Section 3(2) which allows visible fugitive dust emissions beyond the property line for no more than 5 minutes during any hour and no more than 20 minutes during any day.

There were no other substantive changes to KAR during the permit term relevant to the operations at the Sebree Plant that necessitate other revisions to the Title V permit.

Primary Aluminum MACT – 40 CFR 63 Subpart LL

There were no substantive changes to the Primary Aluminum MACT during the permit term relevant to the operations at the Sebree Plant that necessitate revisions to the Title V permit. Revisions made by the Agency on March 20, 2023 to 40 CFR 63.849(a)(13)-(14) for the test methods of Polychlorinated Biphenyl (PCBs) emissions do not apply to the Sebree Plant as Potlines 1-3 are classified as Center-worked Prebaked 1 (CWPB1) units and therefore are not subject to PCB emissions limits or applicable testing.

Secondary Aluminum MACT – 40 CFR 63 Subpart RRR

There were no substantive changes to the Secondary Aluminum MACT during the permit term relevant to the operations at the Sebree Plant that necessitate revisions to the Title V permit.

Stationary Spark Ignition Internal Combustion Engines – 40 CFR 63 Subpart JJJJ

EPA promulgated several revisions of 40 CFR 63 Subpart JJJJ over the course of the permit term. On June 29, 2021, the definition of engine rebuilding was added to the rule and the reference to 40 CFR 94.11(a) was removed from the CFR. On August 10, 2022, the permitted use of an emergency stationary reciprocating internal combustion engine for emergency demand response was removed. These changes have been incorporated into the revised permit in Attachment 4 as reference. Other changes made to Subpart JJJJ are not significant to Century's operation.

RICE MACT – 40 CFR 63 Subpart ZZZZ

EPA promulgated a revised version of 40 CFR 63 Subpart ZZZZ (RICE MACT) on August 10, 2022, which primarily removed the permitted use of an emergency stationary reciprocating internal combustion engine for emergency demand response. These changes have been incorporated into the revised permit in Attachment 4 as reference. Other changes made to Subpart ZZZZ are not significant to Century's operation.

Other Requested Changes to Title V Permit

Excess Emissions Reports

Per 40 CFR 63.850(d)(1), excess emissions reports are required to be submitted semiannually for the Potlines (EU E1, E3, and E5), the Paste Production Plant (EU M2-M7), the Anode Bake Furnace (EU N2), and the Pitch Storage Tanks (EP U5), unless there are excess emission events in a quarter, in which case quarterly reports are required. Century requests a revision to the language for the Potlines, Paste Production Plant, and Anode Bake Furnace as outlined in the revised permit in Attachment 4 to cite the full language of the applicable requirement for 40 CFR 63.850(d)(1) (as it is corrected cited for the Pitch Storage Tanks) and to remove the unnecessary requirement of submitting a quarterly excess emissions report in quarters which there are no excess emissions events. Century will continue to comply with the regulations through submittal of the required information in 40 CFR 63.10(e)(3)(v) as part of the semiannual report, unless excess emissions occur, and a quarterly report is required.

CO and SO_2 Testing Requirements

Century is requesting a revision to the language for Condition 3(r)(i) and (ii) in Section B for "Subject Item 4 Requirements: Existing Potlines" to clarify the CO and SO_2 testing requirements of the potline primary and secondary emissions. The suggested edits for CO testing clarify that once per permit term testing is only required of a representative potline stack and roof monitor. This is how the permit condition has historically been interpreted and applied and the edits to the permit language are only intended to make this clearer.

During the previous Title V permit renewal process concluded in 2019, Century had submitted comments to the Division requesting the removal of the newly proposed (at that time) and burdensome annual SO_2 obligation for both the Potline A-398 scrubber system stack and the roof monitors. In issuing the final permit, the Division had agreed to reduce the testing requirement for the Potline A-398 scrubber systems (which account for roughly 98% of the total SO_2 emissions) to a once per permit term obligation, consistent with the current CO testing requirements for the Potline scrubber stack. However, the annual testing obligation for the potline roof vents, which only account for roughly 2% of total SO_2 emissions was retained.

As part of the current permit renewal, Century is seeking to update the SO_2 testing permit condition wording as detailed in the revised permit in Attachment 4 to extend the once per permit term requirement currently in place for the Potline A-398 scrubber system stack to the roof vent as well. There currently is no applicable SO_2 limit for the potline roof monitors and they contribute only a tiny fraction to total plant SO_2 emissions. Century already invests significant resources to sample sulfur content of the petroleum coke and pitch received at the plant to quantify total SO_2 emissions from the facility accurately on a mass balance basis. Century contends that the once per permit term test is sufficient for validating the SO_2 emissions data available from the mass balance.

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Thank you in advance for your assistance in reviewing and processing this renewal application. We look forward to working in cooperation with the Division to facilitate the agency's review and processing of the application. Century requests that the Division issue a letter of completeness upon initial review of this application, so the facility is covered under the Application Shield provisions listed in Section 8 of 401 KAR 52:020 in the event the renewal permit is not issued by November 11, 2024.

If you have any questions or need information as part of the agency's review, please do not hesitate to contact Ms. Megan Flood of Trinity Consultants at (859) 341-8100 ext. 1818, megan.flood@trinityconsultants.com or me at 270-521-6215, christopher.goddard@centuryaluminum.com.

Sincerely,

Chris Goddard

Chris Goddard
Environmental Manager

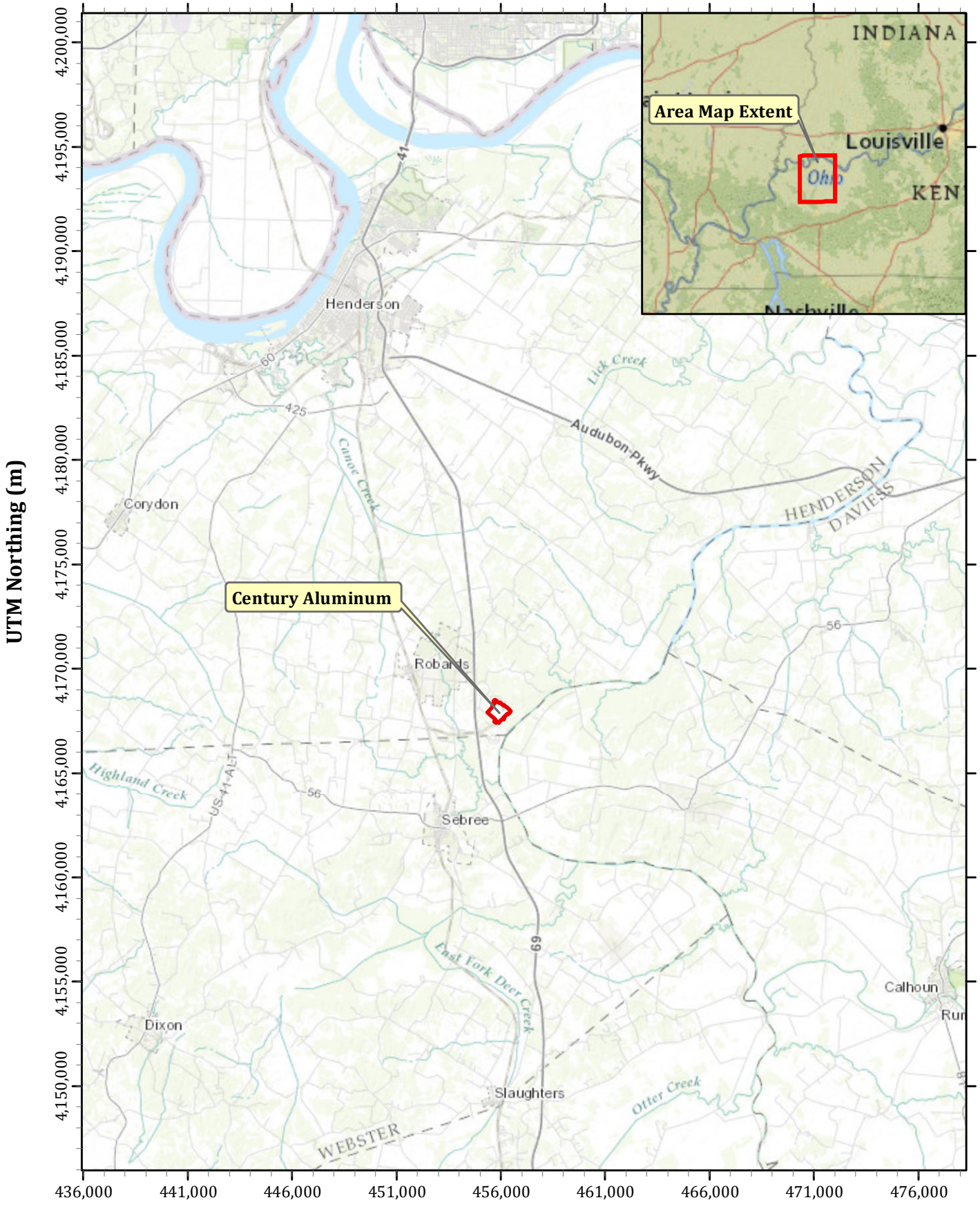
Attachments

cc: Ms. Megan Flood, Trinity Consultants

ATTACHMENT 1

Facility Location Map;
Main Site Operations Aerial Overview

Figure 1 Area Map
Century Aluminum, Sebree, Kentucky



UTM Northing (m)

UTM Easting (m)

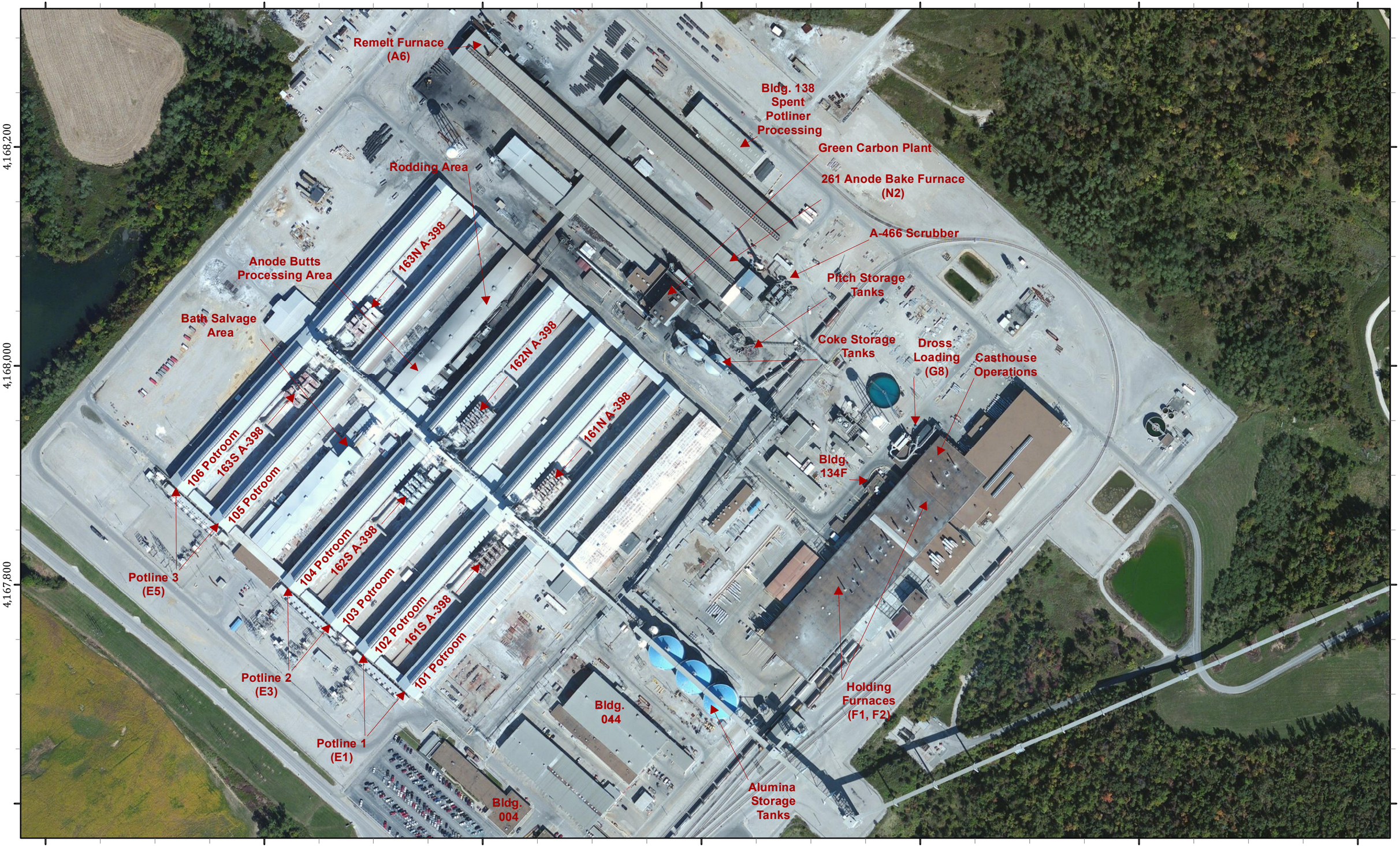
All Coordinates shown in UTM Coordinates, Zone 16, NAD 83 Datum

Century ALUMINUM Sebree

Trinity Consultants

Figure 2. Site Operations Layout

Century Aluminum (Sebree, KY)



UTM Northing (m)

UTM Easting (m)

All Coordinates shown in UTM Coordinates, Zone 16, NAD 83 Datum

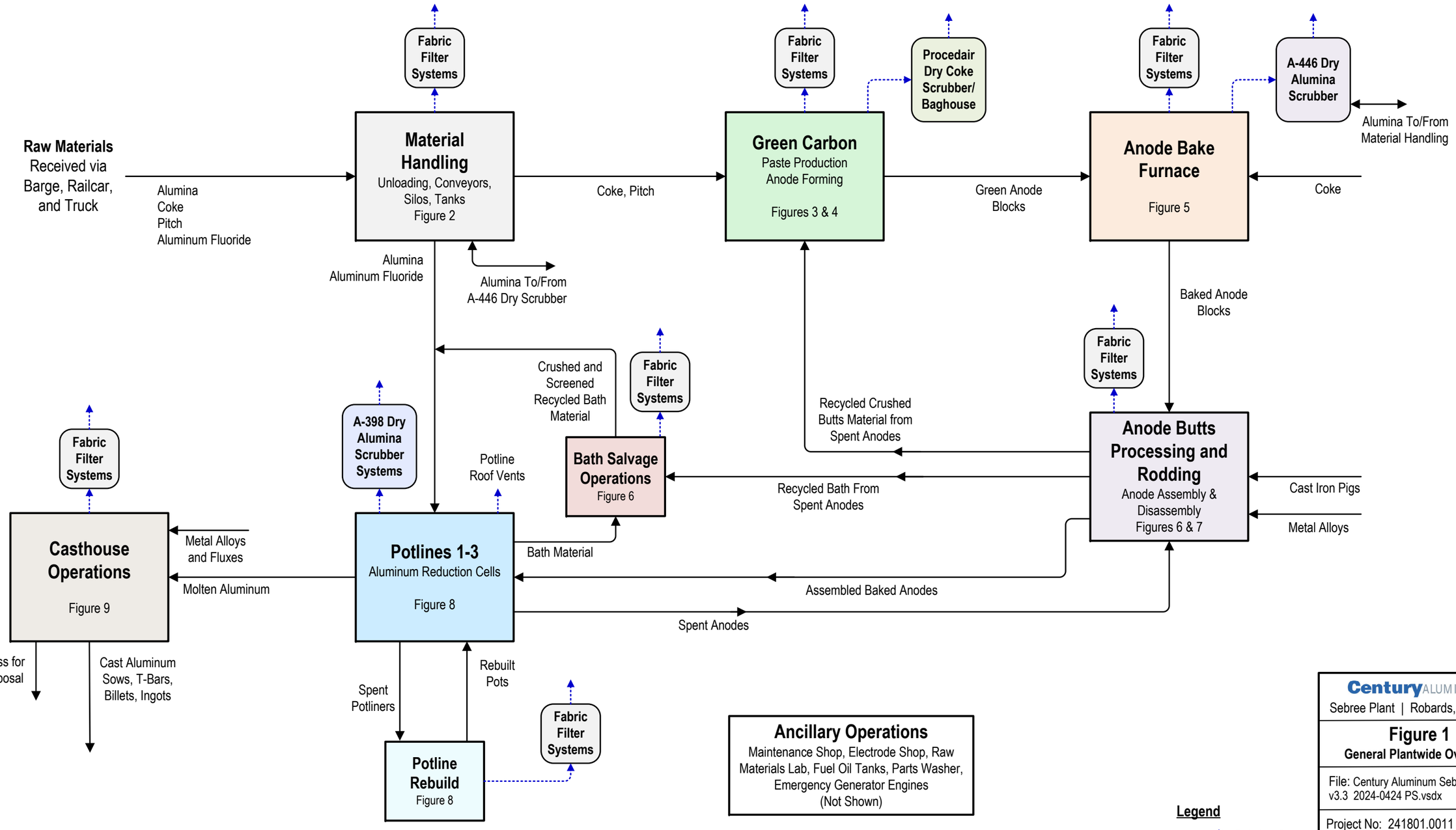
Century ALUMINUM Sebree

Trinity Consultants

ATTACHMENT 2

Facility Process Flow Diagrams

Figure 1
General Plantwide Overview



Century ALUMINUM
Sebree Plant | Robards, Kentucky

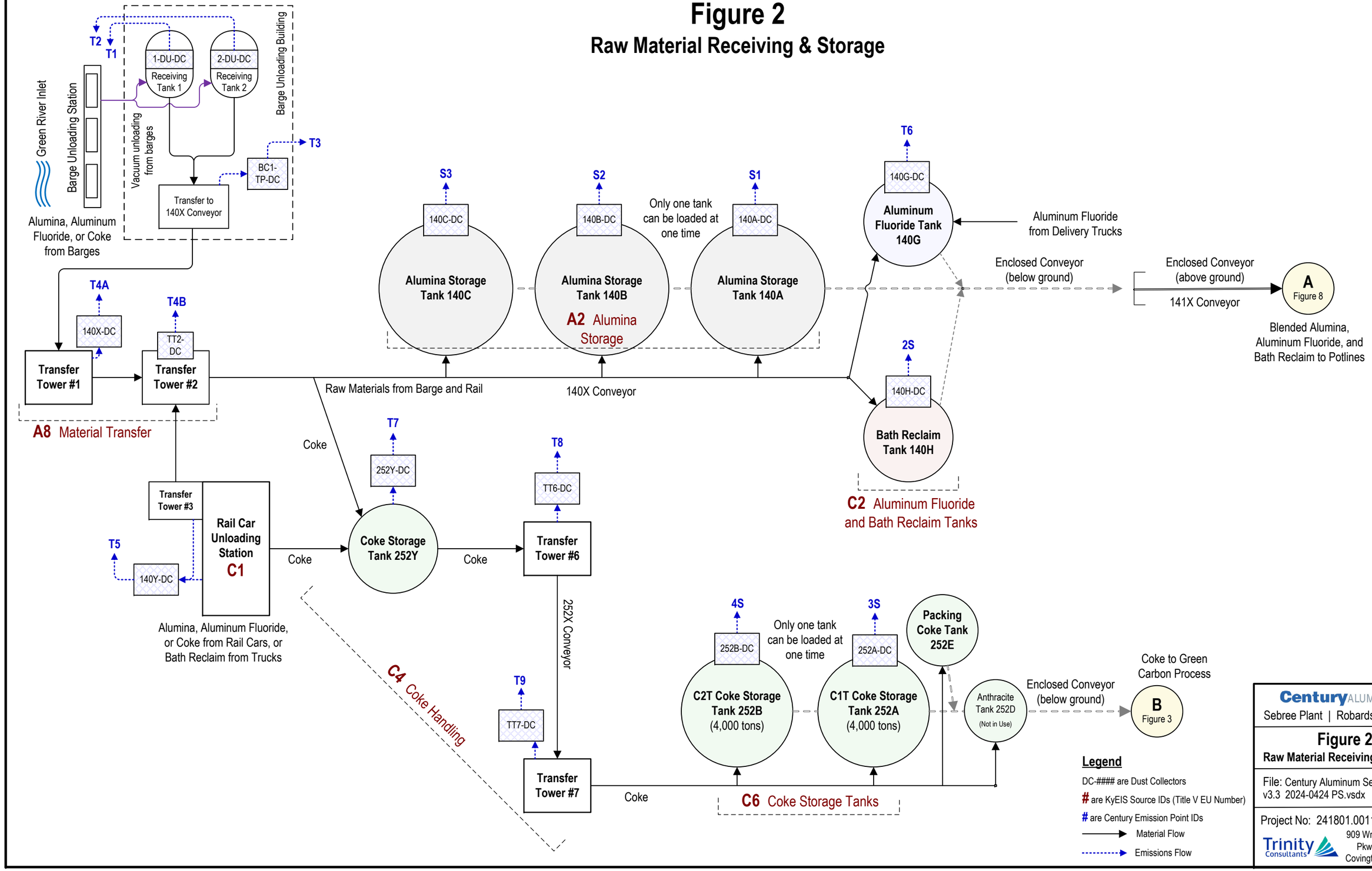
Figure 1
General Plantwide Overview

File: Century Aluminum Sebree PFD v3.3 2024-0424 PS.vsdx

Project No: 241801.0011

Trinity Consultants
909 Wright's Summit Pkwy, Ste. 230
Covington, KY 41011

Figure 2
Raw Material Receiving & Storage



Century ALUMINUM
Sebree Plant | Robards, Kentucky

Figure 2
Raw Material Receiving & Storage

File: Century Aluminum Sebree PFD v3.3 2024-0424 PS.vsdx

Project No: 241801.0011

Trinity Consultants
909 Wright's Summit Pkwy, Ste. 230
Covington, KY 41011

Figure 3

Green Carbon Processing – Dry Circuit

All operations shown are inside the Green Carbon Building

Clean Packing Material to ABF via Hopper and Fork Truck

B Figure 2 — From Coke Storage Tanks

Coke

C-8-BE Bucket Elevator

C-9A-VS & C-9B-VS Screens

C-10A-VS & C-10B-VS Screens

+28 mesh Coke

CC-3-T Coarse Tank (35 tons)

+28 mesh Coke (Coarse)

CC-4-T Coarse Tanks (260 tons)

C-12-BE Bucket Elevator

CC14-T Scale Feed Tank

L1 Coke Ball Mill

E7

Oversize

CF-13-DC

CF-4 Coke Ball Mill

CF-8-CL Classifier System

-100 mesh Coke (Fines)

CF-17-T Fines Tanks (145 tons)

CF-25-BE Bucket Elevator

CF-27-T Scale Feed Tank

E9

MD-2-DC

BL-1-H Mix Hopper M1

F Figure 4 — To Dry Coke Mix Screw Conveyors

Oversized Coke for Size Reduction

E6

CCD-2-DC

-28 mesh Coke

Recovered Coke

C-12-HM Coke Hammermill K7

Reduced Size Coke

C Figure 6 — From Anode Butts Fines Tank

CI-10-T Intermediates Tank

CIF-3-T Intermediate Fines (15 tons)

CFD-5-T Dust Tank (15 tons)

E8

CFD-2-DC

Pickup points from elevators and conveyors

N Figure 6 — Pickup points from Anode Butts Area

L3 Coke Fines Handling

CI7

CI-7-DC

-28 + 100 mesh Coke (Intermediate)

Fines

CI-1-T Intermediate All Tank (35 tons)

CI-4-CL Classifier System

-28 + 100 mesh Coke (Intermediate)

U2 Coke Intermediates Handling

CI-12-T Intermediate Tanks (145 tons)

CI-17-BE Bucket Elevator

CI-19-T Scale Feed Tank

Butts Dust From BD-6-DC

M Figure 6

Butts Material

Green Scrap

D Figure 6 — Butts Material from B-14-T Butts Tank

E Figure 6 — Green Scrap from GS-2-T Green Scrap Tank

Legend

DC-#### are Dust Collectors

are KyEIS Source IDs (Title V EU Number)

are Century Emission Point IDs

Material Flow

Emissions Flow

Century ALUMINUM

Sebree Plant | Robards, Kentucky

Figure 3

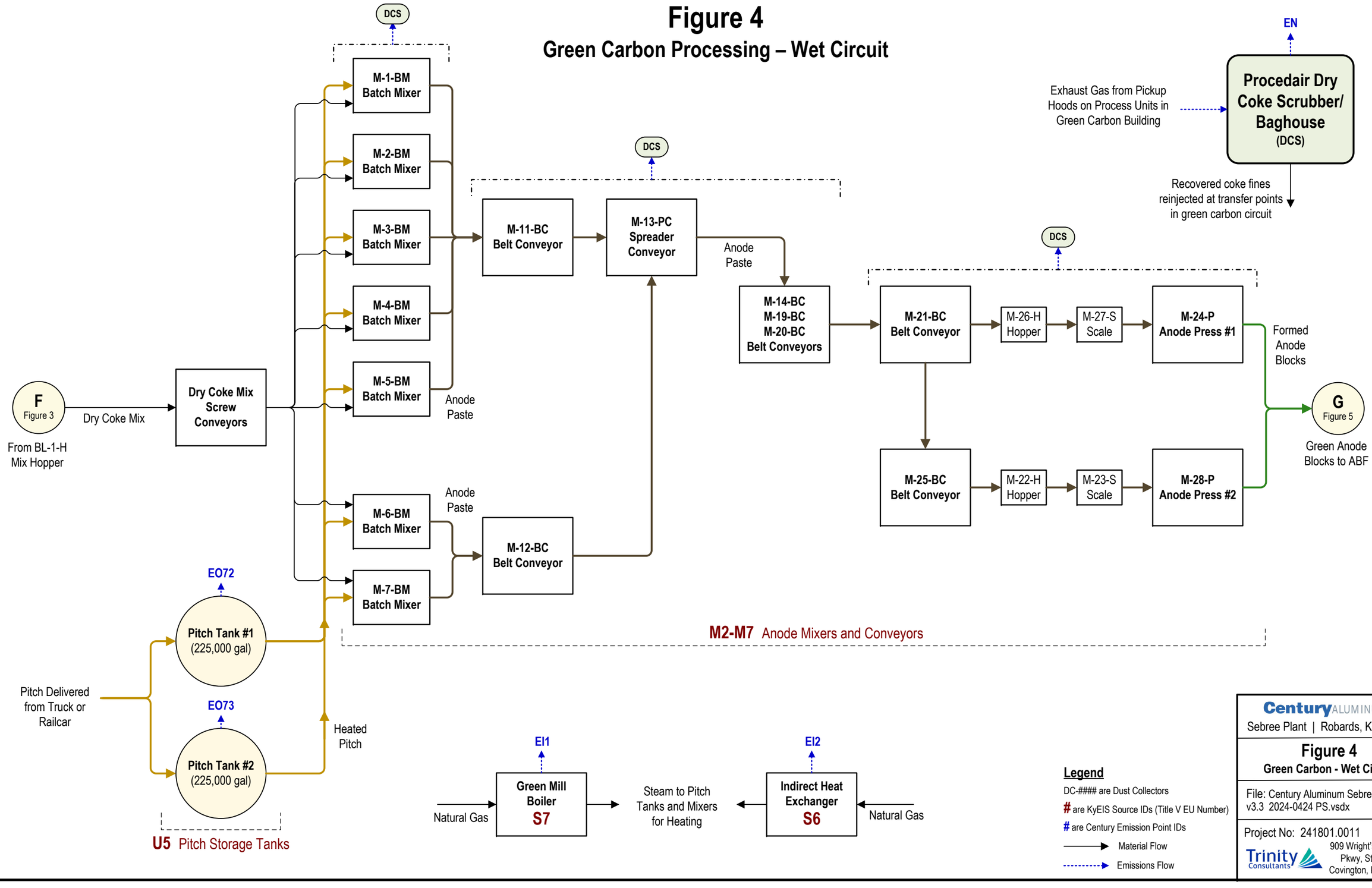
Green Carbon - Dry Circuit

File: Century Aluminum Sebree PFD v3.3 2024-0424 PS.vsdx

Project No: 241801.0011

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Figure 4
Green Carbon Processing – Wet Circuit



Century ALUMINUM
Sebree Plant | Robards, Kentucky

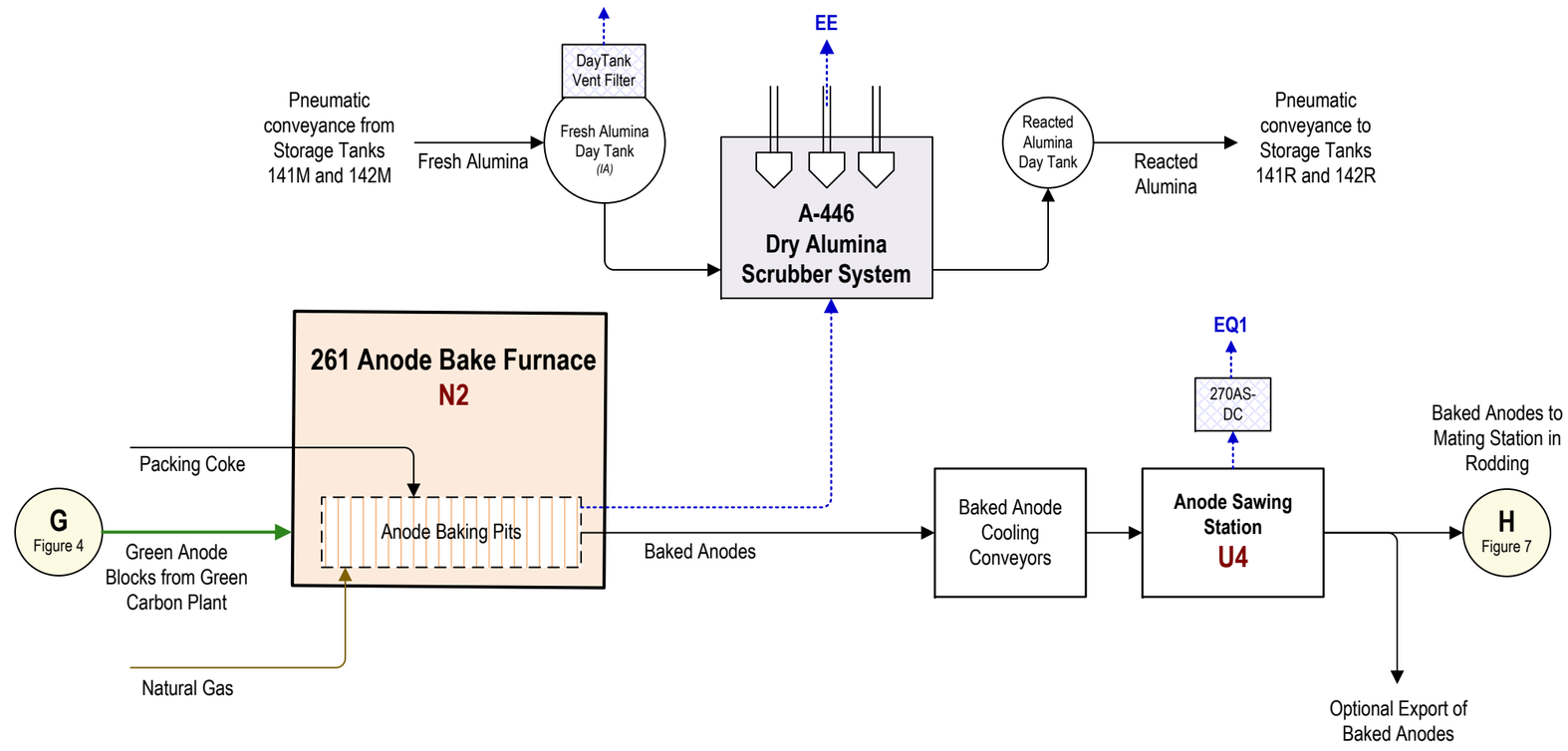
Figure 4
Green Carbon - Wet Circuit

File: Century Aluminum Sebree PFD v3.3 2024-0424 PS.vsdx

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Figure 5
Anode Bake Furnace



Legend

DC-#### are Dust Collectors

are KyEIS Source IDs (Title V EU Number)

are Century Emission Point IDs

Material Flow

Emissions Flow

Century ALUMINUM

Sebree Plant | Robards, Kentucky

Figure 5
Anode Bake Furnace

File: Century Aluminum Sebree PFD v3.3 2024-0424 PS.vsdx

Project No: 241801.0011

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Figure 6
Anode Butts Processing and Bath Salvage

Fugitive
Oversized Anode Butt Materials from Potline
Scrap Baked and Green Anodes
Imported Anode Butt Materials
Oversized Anode Butt Crushing Operations *(IA)*
Reduced Size Anode Butts Material for Recycle

Anode Butts from Potlines
I Figure 8
EJ
CB-DC
Central Anode Butts Cleaning Station U3
Straightening Press
E2
SW-DC
Butts Shot Cleaning (South Wheelabrator) J2
Residual Bath to Landfill
Cleaned Butts
E3
232H-DC
Stripper Press
K Figure 7
Anode Rods to Rodding Area
J3 Butt Stripping/ Crushing
Butts Crusher (Williams Impactor)
Butts Material
Optional Diversion of Butts Material to Backup when Butts Crusher is Down
Fugitive
Portable Backup Crusher *(IA)*
Optional Diversion of Bath Material to Backup when RB10 Crusher is Down
Magnetic Separator
Cast Iron Residuals
O Figure 7

E1
254Y-DC
Bagged and Sold
B-2-T Butts Tank, 254Y J1
B-28-BE Bucket Elevator
Reduced Size Butts Material
B-24-VS Screens
Oversize Material
B-26-IM Impactor K5
E5
BD-6-DC
M Figure 3
Collected fines to CI-1-T Tank
B-8-BE Bucket Elevator
GS-2-T Green Scrap Tank
Green Scrap to BL-1-H Mix Hopper
E Figure 3
Oversize Material
B-11-VS Vibrating Screens
Butts Fines
BF-1-T Butts Fines Tank
C Figure 3
Butts Fines to Green Carbon
E4
254A-DC
B-14-T Butts Tanks (130 tons) K3
N Figure 3
Dust streams to CFD-2-DC
B-19-BE Bucket Elevator
B-21-T Scale Feed Tank
D Figure 3
Butts Material to BL-1-H Mix Hopper

Bath Reclaim Bunker
P1
RB10-DC
RB10 Bath Crusher K1
BE12 Bucket Elevator
Bath and Metal Scrap from Crucible Cleaning
Crucible Cleaning Operations
Crucible Cleaning Storage Bin
J Figure 8
Bath Material from Potlines

5P
104H-BS-DC
Pickup ducts on conveyors, screens, tanks, bins, and bunkers
Conveying and Screens
Bath Tank A
Bath Tank B
Bath Tank C
Bath Tank D
Bagging for Off-site Shipment
Storage Bins and Bunkers
Coarse and fine bath reclaim material
Bath Fill Stations
Carbon Buckets
Bath Reclaim to Potlines for Cover Material
U1 Bath Transfer to Storage Processing

Legend
DC-#### are Dust Collectors
are KyEIS Source IDs (Title V EU Number)
are Century Emission Point IDs
Material Flow
Emissions Flow

Century ALUMINUM
Sebree Plant | Robards, Kentucky

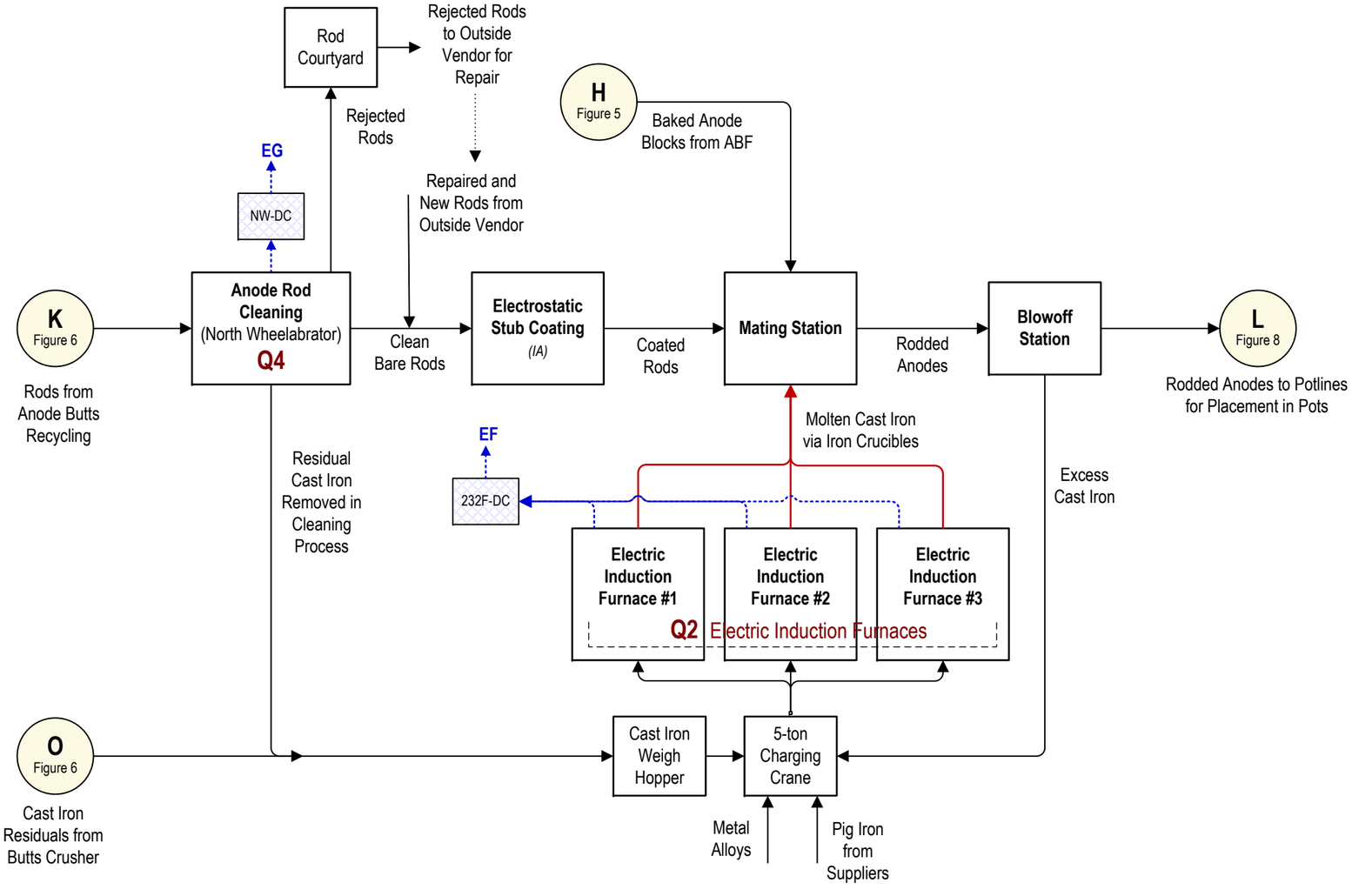
Figure 6
Anode Butts and Bath Salvage

File: Century Aluminum Sebree PFD v3.3 2024-0424 PS.vsdx

Project No: 241801.0011

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Figure 7
Rodding



Legend

DC-#### are Dust Collectors

are KyEIS Source IDs (Title V EU Number)

are Century Emission Point IDs

Material Flow

Emissions Flow

Century ALUMINUM
Sebree Plant | Robards, Kentucky

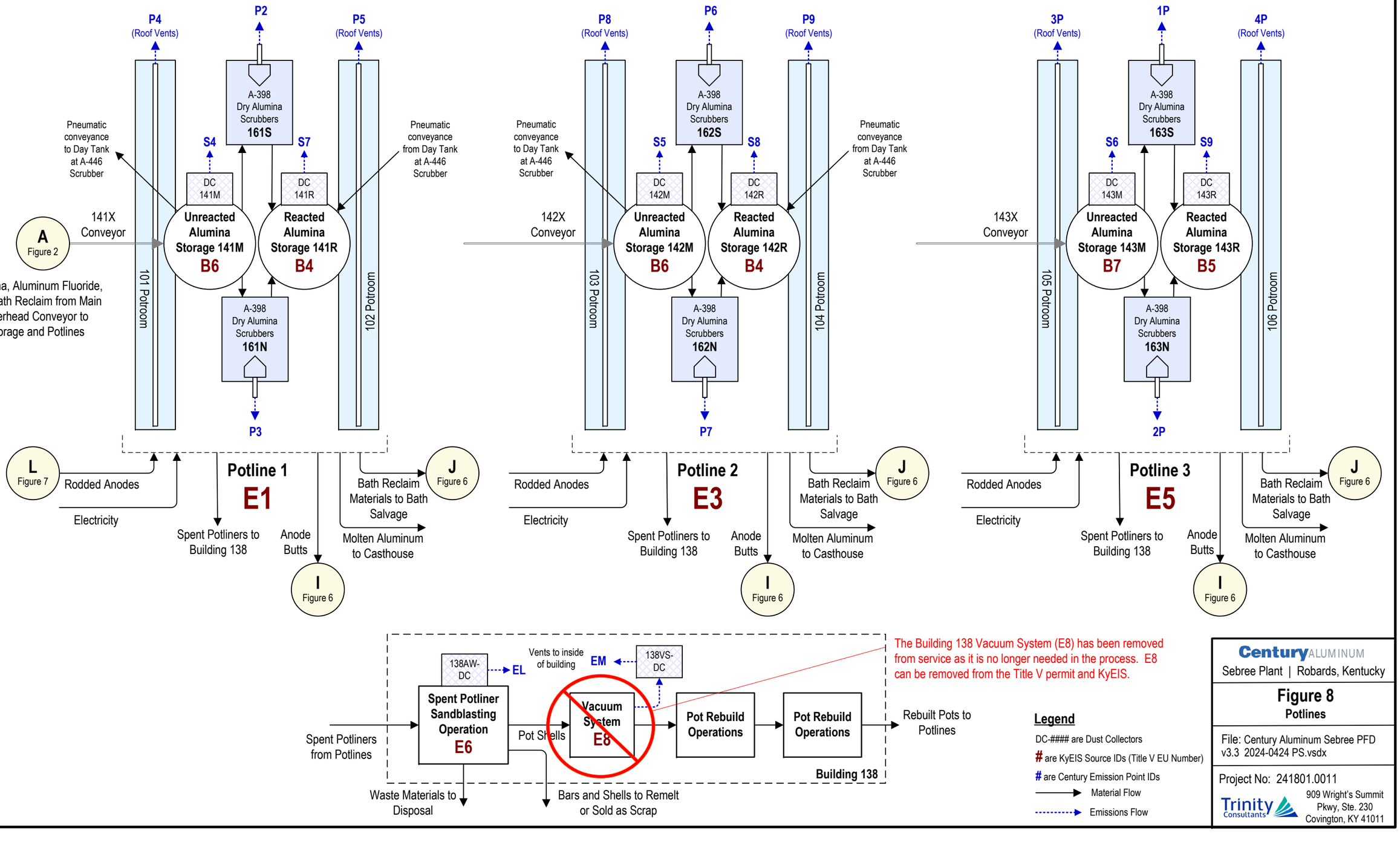
Figure 7
Rodding

File: Century Aluminum Sebree PFD v3.3 2024-0424 PS.vsdx

Project No: 241801.0011

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Covington, KY 41011

Figure 8
Potlines



Century ALUMINUM
Sebree Plant | Robards, Kentucky

Figure 8
Potlines

File: Century Aluminum Sebree PFD v3.3 2024-0424 PS.vsdx

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Covington, KY 41011

Figure 9
Casthouse Operations

Molten Metal via Crucibles from Potlines or Remelt Furnace

Building 136

Auto Sow Casting System

Crucibles → Sow Molds (Preheaters; Natural Gas) → Sow Puller → Sows → Shipment to Customers

Manual Sow Casting Stations → Sows

F2 Holding Furnaces 7 to 8

F1 Holding Furnaces 1 to 6

	Flux	Molten Metal and Scrap	Natural Gas	Molten	Dross	Flux
Holding Furnace 8 (I8)	→	→	→	→	→	→ In-Line Degasser 8
Holding Furnace 7 (I7)	→	→	→	→	→	→ In-Line Degasser 7
Holding Furnace 6 (I6)	→	→	→	→	→	→ In-Line Degasser 6
Holding Furnace 5 (I5)	→	→	→	→	→	→ In-Line Degasser 5
Holding Furnace 4 (I4)	→	→	→	→	→	→ In-Line Degasser 4
Holding Furnace 3 (I3)	→	→	→	→	→	→ In-Line Degasser 3
Holding Furnace 2 (I2)	→	→	→	→	→	→ In-Line Degasser 1
Holding Furnace 1 (I1)	→	→	→	→	→	→ In-Line Degasser 1

In-Line Degasser 8, 7, 6, 5 → Pit 3 / Pit 2

In-Line Degasser 4, 3 → Pit 1

Pit 3 → T-Bar or Slab Casting → T-Bar or Slab Cutting → Shipment to Customers

Pit 3 / Pit 2 / Pit 1 → Billet Casting

Billet Casting → Homogenizing Furnace 4 H4 (I31; Natural Gas)
Billet Casting → Homogenizing Furnace 3 H3 (3I; Natural Gas)
Billet Casting → Homogenizing Furnace 2 H2 (2I; Natural Gas)
Billet Casting → Homogenizing Furnace 1 H1 (1I; Natural Gas)

Homogenizing Furnaces 4, 3, 2, 1 → Billet Sawing → Shipment to Customers

In-Line Degasser 1 → Small Form Casting → Small Form Oven #1 (IA) → Small Form Oven #2 (IA) → Small Form Oven #3 (IA) → Ingot Bundling → Shipment to Customers

Fugitive into Building

Remelt Furnace A6 (89, 90; Remelt Furnace Stack; Hold Chamber Hood; Melting Chamber Hood)

Charge Materials → Melting Chamber (Dry Hearth) → Holding Chamber (Molten) → Molten Metal via Crucibles to Holding Furnaces

Dross

Natural Gas to 4 Melting Chamber Burners

Natural Gas to 1 Holding Chamber Burner

5 Crucible Pre-Heat Stations (IA) — Natural Gas

Dross Loading Operations G8 (I9; DL-DC)

Dross from Holding Furnaces and Remelt Furnace → Dross Shipment via Trucks

Molten Metal via Crucibles from Potlines or Remelt Furnace

Scrap

Legend

DC-#### are Dust Collectors or Baghouses

are KyEIS Source IDs (Title V EU Number)

are Century Emission Point IDs

Material Flow

Emissions Flow

Century ALUMINUM
Sebree Plant | Robards, Kentucky

Figure 9
Casthouse Operations

File: Century Aluminum Sebree PFD v3.3 2024-0424 PS.vsdx

Project No: 241801.0011

Trinity Consultants
909 Wright's Summit Pkwy, Ste. 230
Covington, KY 41011

ATTACHMENT 3

Updated DEP7007 Application Forms

Division for Air Quality

300 Sower Boulevard

Frankfort, KY 40601

(502) 564-3999

DEP7007AI

Administrative Information

___ Section AI.1: Source Information

___ Section AI.2: Applicant Information

___ Section AI.3: Owner Information

___ Section AI.4: Type of Application

___ Section AI.5: Other Required Information

___ Section AI.6: Signature Block

___ Section AI.7: Notes, Comments, and Explanations

Additional Documentation

___ Additional Documentation attached

Source Name: Century Aluminum Sebree, LLC

KY EIS (AFS) #: 21- 101-00029

Permit #: V-19-010 R2

Agency Interest (AI) ID: 1788

Date: 5/9/2024

Section AI.1: Source Information

Physical Location Address:	**Street:**	9404 State Route 2096					
	City:	Robards	**County:**	Henderson	**Zip Code:**	42452	
Mailing Address:	**Street or P.O. Box:**	9404 State Route 2096					
	City:	Robards	**State:**	KY	**Zip Code:**	42452	

Standard Coordinates for Source Physical Location

Longitude: -87.501351 (decimal degrees) **Latitude:** 37.65378 (decimal degrees)

Primary (NAICS) Category: Alumina Refining and Primary Aluminum Production **Primary NAICS #:** 331313

Classification (SIC) Category: Primary Production of Aluminum **Primary SIC #:** 3334

Briefly discuss the type of business conducted at this site: At the Sebree Plant, Century produces primary aluminum through the electrolytic reduction of raw alumina (Al2O3) in vessels termed reduction cells or "pots". Century operates three nearly identical potlines at the Sebree Plant. Raw material inputs to the pots include alumina, bath, carbon anodes, and various other additives to the aluminum production process such as aluminum fluoride. The molten aluminum produced by the reduction cells from all three potlines is sent to the casthouse to be formed into billets and T-bars, along with other products. The casthouse utilizes natural gas-fired holding furnaces to condition molten aluminum and homogenizing furnaces to condition the aluminum billets.

Description of Area Surrounding Source: ☑ Rural Area ☐ Industrial Park ☐ Residential Area ☐ Urban Area ☐ Industrial Area ☐ Commercial Area

Is any part of the source located on federal land? ☐ Yes ☑ No

Number of Employees: ~500

Approximate distance to nearest residence or commercial property: *Approximately 2,500 ft*

Property Area: *Approximately 2,600 acres*

Is this source portable? ☐ Yes ☑ No

What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky?

NPDES/KPDES:	☑ Currently Hold	☐ Need	☐ N/A
Solid Waste:	☑ Currently Hold	☐ Need	☐ N/A
RCRA:	☐ Currently Hold	☐ Need	☑ N/A
UST:	☐ Currently Hold	☐ Need	☑ N/A

Type of Regulated Waste Activity:

☐ Mixed Waste Generator ☑ Generator ☐ Recycler ☐ Other: _____

☐ U.S. Importer of Hazardous Waste ☐ Transporter ☐ Treatment/Storage/Disposal Facility ☐ N/A

Section AI.2: Applicant Information

Applicant Name: Chris Goddard

Title: (if individual) Environmental Manager

Mailing Address:
Street or P.O. Box: 9404 State Route 2096
City: Robards **State:** KY **Zip Code:** 42452

Email: (if individual) christopher.goddard@centuryaluminum.com

Phone: 270-521-6215

Technical Contact

Name: Same as Applicant

Title:

Mailing Address:
Street or P.O. Box:
City: **State:** **Zip Code:**

Email:

Phone:

Air Permit Contact for Source

Name: Same as Applicant

Title:

Mailing Address:
Street or P.O. Box:
City: **State:** **Zip Code:**

Email:

Phone:

Section AI.3: Owner Information

☑ **Owner same as applicant**

Name: _____

Title: _____

Mailing Address:

Street or P.O. Box: _____

City: _____ **State:** _____ **Zip Code:** _____

Email: _____

Phone: _____

List names of owners and officers of the company who have an interest in the company of 5% or more.

Name	Position

Section AI.4: Type of Application

Current Status: ☑ Title V ☐ Conditional Major ☐ State-Origin ☐ General Permit ☐ Registration ☐ None

Requested Action: *(check all that apply)*

☐ Name Change	☐ Initial Registration	☐ Significant Revision	☐ Administrative Permit Amendment
☑ Renewal Permit	☐ Revised Registration	☐ Minor Revision	☐ Initial Source-wide OperatingPermit
☐ 502(b)(10)Change	☐ Extension Request	☐ Addition of New Facility	☐ Portable Plant Relocation Notice
☐ Revision	☐ Off Permit Change	☐ Landfill Alternate Compliance Submittal	☐ Modification of Existing Facilities
☐ Ownership Change	☐ Closure		

Requested Status: ☑ Title V ☐ Conditional Major ☐ State-Origin ☐ PSD ☐ NSR ☐ Other:

Is the source requesting a limitation of potential emissions? ☐ Yes ☑ No

Pollutant:	Requested Limit:	Pollutant:	Requested Limit:
☐ Particulate Matter		☐ Single HAP	
☐ Volatile Organic Compounds (VOC)		☐ Combined HAPs	
☐ Carbon Monoxide		☐ Air Toxics (40 CFR 68, Subpart F)	
☐ Nitrogen Oxides		☐ Carbon Dioxide	
☐ Sulfur Dioxide		☐ Greenhouse Gases (GHG)	
☐ Lead		☐ Other	

For New Construction:

Proposed Start Date of Construction: *(MM/YYYY)* NA

Proposed Operation Start-Up Date: *(MM/YYYY)* NA

For Modifications:

Proposed Start Date of Modification: *(MM/YYYY)* NA

Proposed Operation Start-Up Date: *(MM/YYYY)* NA

Applicant is seeking coverage under a permit shield. ☑ **Yes** ☐ **No**

Identify any non-applicable requirements for which permit shield is sought on a separate attachment to the application.

Section AI.5 Other Required Information

Indicate the documents attached as part of this application:

- ☐ DEP7007A Indirect Heat Exchangers and Turbines
- ☐ DEP7007B Manufacturing or Processing Operations
- ☐ DEP7007C Incinerators and Waste Burners
- ☐ DEP7007F Episode Standby Plan
- ☐ DEP7007J Volatile Liquid Storage
- ☐ DEP7007K Surface Coating or Printing Operations
- ☐ DEP7007L Mineral Processes
- ☐ DEP7007M Metal Cleaning Degreasers
- ☑ DEP7007N Source Emissions Profile
- ☐ DEP7007P Perchloroethylene Dry Cleaning Systems
- ☐ DEP7007R Emission Offset Credit
- ☐ DEP7007S Service Stations
- ☐ DEP7007T Metal Plating and Surface Treatment Operations
- ☐ DEP7007V Applicable Requirements and Compliance Activities
- ☐ DEP7007Y Good Engineering Practice and Stack Height Determination
- ☐ DEP7007AA Compliance Schedule for Non-complying Emission Units
- ☐ DEP7007BB Certified Progress Report
- ☐ DEP7007CC Compliance Certification
- ☐ DEP7007DD Insignificant Activities
- ☑ DEP7007EE Internal Combustion Engines
- ☐ DEP7007FF Secondary Aluminum Processing
- ☐ DEP7007GG Control Equipment
- ☐ DEP7007HH Haul Roads
- ☐ Confidentiality Claim
- ☐ Ownership Change Form
- ☐ Secretary of State Certificate
- ☑ Flowcharts or diagrams depicting process
- ☐ Digital Line Graphs (DLG) files of buldings, roads, etc.
- ☐ Site Map
- ☑ Map or drawing depicting location of facility
- ☐ Safety Data Sheet (SDS)
- ☐ Emergency Response Plan
- ☐ Other: _____

Section AI.6: Signature Block

I, the undersigned, hereby certify under penalty of law, that I am a responsible official*, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.

Levi Chaffin
Authorized Signature

5/9/2024
Date

Levi Chaffin
Type or Printed Name of Signatory

Sebree Plant Manager
Title of Signatory

*Responsible official as defined by 401 KAR 52:001.

Section AI.7: Notes, Comments, and Explanations

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007N

Source Emissions Profile

__ Section N.1: Emission Summary
__ Section N.2: Stack Information
__ Section N.3: Fugitive Information
__ Section N.4: Notes, Comments, and Explanations

Additional Documentation

__ Complete DEP7007AI

Source Name: Century Aluminum Sebree, LLC
KY EIS (AFS) #: 21- 101-00029
Permit #: V-19-010 R2
Agency Interest (AI) ID: 1788
Date: 5/9/2024

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
Z9	001 IT Back-up Emergency Generator	1	Natural Gas Combustion	na	na	na	0.0003	PM/PM10/PM2.5	10.19	AP-42 Table 3.2-2, 07/2000	na	na	3.46E-03	na	8.65E-04	na
Z9	001 IT Back-up Emergency Generator	1	Natural Gas Combustion	na	na	na	0.0003	NOx	447	Statement of Exhaust Emissions	na	na	0.15	na	0.04	na
Z9	001 IT Back-up Emergency Generator	1	Natural Gas Combustion	na	na	na	0.0003	SO2	0.600	AP-42 Table 3.2-2, 07/2000	na	na	2.04E-04	na	5.09E-05	na
Z9	001 IT Back-up Emergency Generator	1	Natural Gas Combustion	na	na	na	0.0003	VOC	486.07	Statement of Exhaust Emissions	na	na	1.65E-01	na	4.13E-02	na
Z9	001 IT Back-up Emergency Generator	1	Natural Gas Combustion	na	na	na	0.0003	CO	21,038	Statement of Exhaust Emissions	na	na	7.15	na	1.79	na
Z9	001 IT Back-up Emergency Generator	1	Natural Gas Combustion	na	na	na	0.0003	CO2	119,317	40 CFR 98, Subpart C, Table C-1	na	na	40.52	na	10.13	na
Z9	001 IT Back-up Emergency Generator	1	Natural Gas Combustion	na	na	na	0.0003	N2O	0.22	40 CFR 98, Subpart C, Table C-2	na	na	7.64E-05	na	1.91E-05	na
Z9	001 IT Back-up Emergency Generator	1	Natural Gas Combustion	na	na	na	0.0003	CH4	2.25	40 CFR 98, Subpart C, Table C-2	na	na	7.64E-04	na	1.91E-04	na
Z9	001 IT Back-up Emergency Generator	1	Natural Gas Combustion	na	na	na	0.0003	Formaldehyde	53.86	AP-42 Table 3.2-2, 07/2000	na	na	1.83E-02	na	4.57E-03	na
Z9	001 IT Back-up Emergency Generator	1	Natural Gas Combustion	na	na	na	0.0003	Ammonia	18.00	SCAQMD Document, 12/2016	na	na	6.11E-03	na	1.53E-03	na
Z9	001 IT Back-up Emergency Generator	1	Natural Gas Combustion	na	na	na	0.0003	Lead	5.00E-04	AP-42 Table 1.4-2	na	na	1.70E-07	na	4.25E-08	na
Z9	001 IT Back-up Emergency Generator	1	Natural Gas Combustion	na	na	na	0.0003	Total HAP	73.64	Sum of individual HAP	na	na	2.50E-02	na	6.25E-03	na

Section N.2: Stack Information

UTM Zone: 16

Stack ID	Identify all Emission Units (with Process ID) and Control Devices that Feed to Stack	Stack Physical Data			Stack UTM Coordinates		Stack Gas Stream Data		
		Equivalent Diameter *(ft)*	Height *(ft)*	Base Elevation *(ft)*	Northing *(m)*	Easting *(m)*	Flowrate *(acfm)*	Temperature *(°F)*	Exit Velocity *(ft/sec)*
na	001 IT Back-up Emergency Generator	0.17	3.22	446	4,167,506	455,836	165.00	482.00	126.05

Section N.3: Fugitive Information

UTM Zone:

Emission Unit #	Emission Unit Name	Process ID	Area Physical Data		Area UTM Coordinates		Area Release Data	
			Length of the X Side *(ft)*	Length of the Y Side *(ft)*	Northing *(m)*	Easting *(m)*	Release Temperature *(°F)*	Release Height *(ft)*
Not Applicable for this Application								

Section N.4: Notes, Comments, and Explanations

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007EE

Internal Combustion Engines

___ Section EE.1: General Information
___ Section EE.2: Operating Information
___ Section EE.3: Design Information
___ Section EE.4: Fuel Information
___ Section EE.5: Emission Factor Information
___ Section EE.6: Notes, Comments, and Explanations

Additional Documentation

__ Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG

__ Attach EPA certification of the engine

Source Name: Century Aluminum Sebree, LLC
KY EIS (AFS) #: 21- 101-00029
Permit #: V-19-010 R2
Agency Interest (AI) ID: 1788
Date: 5/9/2024

Section EE.1: General Information

Emission Unit #	Emission Unit Name	Control Device ID	Stack ID	Manufacturer	Model Number	Model Year	Date of Manufacture	Proposed/Actual Date of Construction Commencement *(MM/YYYY)*	Date Reconstructed/ Modified	List Applicable Regulations
Z9	001 IT Back-up Emergency Generator	na	na	Generac	RG022	2021	8/27/2021	2021	N/A	40 CFR 60 Subpart JJJJ, 40 CFR 63 Subpart ZZZZ

Section EE.2: Operating Information

Emission Unit #	Engine Purpose (Identify if Non-Emergency, Emergency,Fire/Water Pump, Black-start engine for combustion turbine, Engine Testing)	Hours Operated	Is this engine a rental? *(Yes/No)*	Rental Time Period *(hrs)*	Alternate Operating Scenarios (Describe any operating scenarios in which the engine may be used in a different configuration)
Z9	Emergency	500	No	na	na

Section EE.3: Design Information

Emission Unit #	Engine Type (Identify all that apply: Commercial, Institutional, Stationary, Non-Road)	Ignition Type (Identify if either Compression or Spark Ignition)	Engine Family (Identify all that apply: 2-stroke, 4-stroke, Rich Burn, Lean Burn)	Maximum Engine Power *(bhp)*	Maximum Engine Speed *(rpm)*	Total Displacement *(L)*	Number of Cylinders
Z9	Stationary	Spark Ignition	4-Stroke, Lean Burn	32.0	1,800	2.4	4

Section EE.4: Fuel Information

Emission Unit #	Identify if Primary, Secondary, or Tertiary Fuel	Fuel Type (Identify if Diesel, Gasoline, Natural Gas, Liquefied Petroleum Gas (LPG), Landfill/Digester Gas, or Other)	Fuel Grade	Percent Time Used *(%)*	Maximum Fuel Consumption	Heat Content	Sulfur Content *(%)*	SCC Code	SCC Units
Z9	Primary	Natural Gas	na	100	3.40E-04 MMscf/hr	1020 MMBtu/MMscf	Neg.	20200202	MMscf NG Burned

Section EE.5: Emission Factor Information

Emission factors expressed here are based on the potential to emit.

Emission Unit #	Fuel	Pollutant	Emission Factor	Emission Factor Units	Source of Emission Factor
Z9	Primary	PM/PM10/PM2.5	10.19	lb/MMscf NG Burned	AP-42 Table 3.2-2, 07/2000
Z9	Primary	NOx	446.60	lb/MMscf NG Burned	Statement of Exhaust Emissions
Z9	Primary	SO2	0.600	lb/MMscf NG Burned	AP-42 Table 3.2-2, 07/2000
Z9	Primary	VOC	486.07	lb/MMscf NG Burned	Statement of Exhaust Emissions
Z9	Primary	CO	21,038	lb/MMscf NG Burned	Statement of Exhaust Emissions
Z9	Primary	CO2	119,317	lb/MMscf NG Burned	40 CFR 98, Subpart C, Table C-1
Z9	Primary	N2O	0.22	lb/MMscf NG Burned	40 CFR 98, Subpart C, Table C-2
Z9	Primary	CH4	2.25	lb/MMscf NG Burned	40 CFR 98, Subpart C, Table C-2
Z9	Primary	Formaldehyde	53.86	lb/MMscf NG Burned	AP-42 Table 3.2-2, 07/2000

Emission Unit #	Fuel	Pollutant	Emission Factor	Emission Factor Units	Source of Emission Factor
Z9	Primary	Ammonia	18.00	lb/MMscf NG Burned	SCAQMD Document, 12/2016
Z9	Primary	Lead	5.00E-04	lb/MMscf NG Burned	AP-42 Table 1.4-2
Z9	Primary	Total HAP	73.64	lb/MMscf NG Burned	Sum of individual HAP

Section EE.6: Notes, Comments, and Explanations

ATTACHMENT 4

Redline/Strikeout Markups to Existing Permit

Only Sections with proposed edits are included

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

SUBJECT ITEM 2 REQUIREMENTS: New Process Sources

EU	Equip. Desig.	Cons. Date	Description	Controls	Material	Capacity (tons/hr)
Emission Group IV: Anode Bake Furnace						
U4	(EQ1)	2004	Anode Saw Dust Collector	240AS-DC	Anodes	20.50
Emission Group V: Anode Butts Processing						
J3	(E3)	7/28/1977	Butt Stripping/Crushing	232H-DC	Anode Butts	15.75
K3	(E4)	6/19/1979	Butt Dust Collector	254A-DC	Anode Butts	30.00
U3	(EJ)	1990	Central Anode Butts Cleaning	CB-DC	Anode Butts	9.13
Emission Group VII: Anode Rods						
Q2	(EF)	#1 & #2: 12/6/1989 #3: 1/2006	Electric Induction Furnaces #1, #2, #3	232F-DC	Cast Iron	3.75*
Emission Group VIII: Potlines						
B5	(S9)	8/4/1979	Reacted Alumina Storage	143R-DC	Reacted Alumina	20.0
B7	(S6)	7/28/1977	Unreacted Alumina Storage	143M-DC	Unreacted Alumina	200.0
Emission Group IX: Spent Potliner Processing						
E6	(EL)	10/1/1995	Transloading Spent Potliner & Sandblasting Operations	138AW-DC	Spent Potliner	20.62
~~E8~~	~~(EM)~~	~~6/17/1995~~	~~Building 138 Vacuum System~~	~~138VS-DC~~	~~Potliner~~	~~0.88~~

Note: Emissions from all units controlled by baghouse(s).
*Refer to Operating Limitations

Commented [PS1]: Refer to Section 4 in application report. The Building 138 Vacuum System is inoperable and can be removed from the permit.

APPLICABLE REGULATIONS:
401 KAR 59:010, *New process operations*
40 CFR 64, *Compliance Assurance Monitoring*, applicable to PM emissions from emission units E6, J3, K3, U3, and U4.

PRECLUDED REGULATIONS:
401 KAR 51:017, *Prevention of significant deterioration of air quality,* for Q2

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

SUBJECT ITEM 3 REQUIREMENTS: Indirect Heat Exchangers

EU	Equip. Desig.	Cons. Date	Description	Controls	Fuel	Capacity (MMBtu/hr)
Emission Group III: Green Carbon Wet						
~~S5~~	~~(EI)~~	~~12/31/1972~~	~~Electrode Boiler~~	~~None~~	~~Natural Gas~~	~~12.5~~
S6	(EI)	12/31/1972	Indirect Heat Exchanger	None	Natural Gas	12.5
S7	---	9/2021	Green Mill Boiler	None	Natural Gas	12.6
Emission Group XIII: Boilers						
A3	---	1974	Building 004 Security Boiler	None	Natural Gas	1.26
A4	---	1972	Building 044 Main Building Boiler	None	Natural Gas	1.68
~~A7~~	~~---~~	~~1972~~	~~Building 004 Water Heater~~	~~None~~	~~Natural Gas~~	~~2.22~~
~~A9~~	~~---~~	~~1972~~	~~Building 004 Miller Pickling Boiler~~	~~None~~	~~Natural Gas~~	~~1.80~~
I4	---	1972	Building 134F Boiler	None	Natural Gas	1.89

Commented [PS2]: The Electrode Boiler (EU S5) was replaced at the time the new Green Mill Boiler (EU S7) was installed in September 2021.

Commented [PS3]: Refer to Section 4 of the application letter. Emission Units A7 and A9, the Building 004 Water Heater and Building 004 Miller Pickling Boiler are no longer in service and can be removed from the permit.

APPLICABLE REGULATIONS:
401 KAR 59:015, *New indirect heat exchangers*

401 KAR 60:005, Section 2(2)(d) 40 C.F.R. 60.40c through 60.48c **(Subpart Dc)**, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*

401 KAR 63:002, Section 2(4)(iiii), 40 C.F.R. 63.7480 ~~to~~ through 63.7575, Tables 1 ~~to~~ through 13 (Subpart DDDDD), *National Emission Standards for Hazardous Air Pollutants for Industrial/Commercial/Institutional Boilers and Process Heaters*

1. **Operating Limitations:**
   a. The permittee must meet each emission limit and work practice standard in Table 3 to 40 CFR 63, Subpart DDDDD that applies to the boiler or process heater, for each boiler or process heater at the source. [40 CFR 63.7500(a)(1)]

   b. At all times, the permittee shall operate and maintain any affected source (as defined in 40 CFR 63.7490), including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [40 CFR 63.7500(a)(3)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

c. For emission units A3, A4, ~~A7, A9,~~ and I4, the permittee shall complete a tune-up every 5 years as specified in 40 CFR 63.7540. Boilers and process heaters in the units designed to burn gas 1 fuels subcategory are not subject to the emission limits in Tables 1 and 2 or 11 through ~~13~~ 15 to 40 CFR 63, Subpart DDDDD, or the operating limits in Table 4 to 40 CFR 63, Subpart DDDDD. [40 CFR 63.7500(e)]

d. For emission units ~~S5~~ S6 and ~~S6~~S7, the permittee shall conduct an annual tune-up of the boiler or process heater to demonstrate continuous compliance as specified in 40 CFR 63.7540(a)(10)(i) through (vi). The permittee shall conduct the tune-up while burning the type of fuel that provided the majority of the heat input to the boiler or process heater over the 12 months prior to the tune-up. [40 CFR 63.7540(a)(10) and 40 CFR 63, Subpart DDDDD, Table 3(3)]
   i. As applicable, inspect the burner, and clean or replace any components of the burner as necessary (the permittee may perform the burner inspection any time prior to the tune-up or delay the burner inspection until the next scheduled unit shutdown). At units where entry into a piece of process equipment or into a storage vessel is required to complete the tune-up inspections, inspections are required only during planned entries into the storage vessel or process equipment; [40 CFR 63.7540(a)(10)(i)]
   ii. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available; [40 CFR 63.7540(a)(10)(ii)]
   iii. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (the permittee may delay the inspection until the next scheduled unit shutdown). [40 CFR 63.7540(a)(10)(iii)]
   iv. Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any NO_X requirement to which the unit is subject; [40 CFR 63.7540(a)(10)(iv)]
   v. Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer; and [40 CFR 63.7540(a)(10)(v)]
   vi. Maintain on-site and submit, if requested by the Administrator, a report containing the information in 40 CFR 63.7540(a)(10)(vi)(A) through (C), [40 CFR 63.7540(a)(10)(vi)]
      1) The concentrations of CO in the effluent stream in parts per million by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler or process heater; [40 CFR 63.7540(a)(10)(vi)(A)]
      2) A description of any corrective actions taken as a part of the tune-up; [40 CFR 63.7540(a)(10)(vi)(B)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

e. For emission units A3, A4, ~~A7, A9,~~ and I4, the permittee shall conduct a tune-up of the boiler or process heater every 5 years as specified in 40 CFR 63.7540(a)(10)(i) through (vi) to demonstrate continuous compliance. The permittee may delay the burner inspection specified in 40 CFR 63.7540(a)(10)(i) until the next scheduled or unscheduled unit shutdown, but the permittee must inspect each burner at least once every 72 months. [40 CFR 63.7540(a)(12) and 40 CFR 63, Subpart DDDDD, Table 3(1)]

f. If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup. [40 CFR 63.7540(a)(13)]

2. Emission Limitations:

a. The permittee shall not cause emissions of particulate matter in excess of the following: [401 KAR 59:015, Section 4(1)(c)]

EU	Description	Emission Limit (lbs/MMBtu)
A3	Building 004 Boiler Security	0.420
A4	Building 044 Main Building Boiler	0.424
~~A7~~	~~Building 004 Water Heater~~	~~0.424~~
~~A9~~	~~Miller Pickling Boiler~~	~~0.424~~
I4	Building 134F Boiler	0.424
~~S5 (EI)~~	~~Electrode Boiler~~	~~0.424~~
S6 (EI)	Indirect Heat Exchanger Boiler	0.424
S7	Green Mill Boiler	0.42

b. The permittee shall not cause emissions in excess of twenty (20) percent opacity. [401 KAR 59:015, Section 4(2)]

c. The permittee shall not cause emissions of gases that contain sulfur dioxide in excess of the following: [401 KAR 59:015, Section 5(1)(c)]

EU	Unit Name	Emission Limit (lbs/MMBtu)
A3	Building 004 Boiler Security	1.82
A4	Building 044 Main Building Boiler	1.85
~~A7~~	~~Building 004 Water Heater~~	~~1.85~~
~~A9~~	~~Miller Pickling Boiler~~	~~1.85~~
I4	Building 134F Boiler	1.85
~~S5 (EI)~~	~~Electrode Boiler~~	~~1.85~~
S6 (EI)	Indirect Heat Exchanger Boiler	1.85
S7	Green Mill Boiler	1.82

Compliance Demonstration:

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

The permittee is assumed to be in compliance with the particulate matter, opacity, and sulfur dioxide standards when burning natural gas.

3. **Testing Requirements:**
Pursuant to 401 KAR 59:005, Section 2(2) and 401 KAR 50:045, Section 1, performance testing using the reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division.

4. **Specific Monitoring Requirements:**
a. For each emission unit listed above, the permittee shall monitor annual natural gas usage.

~~a.~~b. The permittee shall monitor the amount of natural gas combusted (in MMscf) in Emission Unit S7 on a monthly basis. [40 CFR 60.48c(g)(2)]

~~b.~~c. Refer to **SECTION F.**

Commented [PS4]: Add new NSPS Subpart Dc requirement for the Green Mill Boiler installed in September 2021 and authorized via a Section 502(b)(10) notification.

5. **Specific Recordkeeping Requirements:**
a. The permittee shall keep records according to 40 CFR 63.7555(a)(1) and (2). [40 CFR 63.7555(a)]
   i. A copy of each notification and report that is submitted to comply with 40 CFR 63, Subpart DDDDD, including all documentation supporting any Initial Notification or Notification of Compliance Status or semiannual compliance report that is submitted, according to the requirements in 40 CFR 63.10(b)(2)(xiv). [40 CFR 63.7555(a)(1)]
   ii. Records of performance tests, fuel analyses, or other compliance demonstrations and performance evaluations as required in 40 CFR 63.10(b)(2)(viii). [40 CFR 63.7555(a)(2)]

b. The permittee shall maintain records of the amount of natural gas combusted (in MMscf) in Emission Unit S7 on a monthly basis. [40 CFR 60.48c(g)(2)]

c. The permittee shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of Emission Unit S7. [40 CFR 60.7(b)]

~~b.~~d. For each emission unit listed above, the permittee shall maintain records of annual natural gas usage.

~~c.~~e. Refer to **SECTION F.**

6. **Specific Reporting Requirements:**
a. The permittee shall report each instance in which the permittee did not meet each emission limit and operating limit in Tables 1 through 4 or 11 through ~~13~~ 15 to 40 CFR 63, Subpart DDDDD that applies. These instances are deviations from the emission limits or operating limits, respectively, in 40 CFR 63, Subpart DDDDD. These deviations must be reported according to the requirements in 40 CFR 63.7550. [40 CFR 63.7540(b)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

b. The permittee shall submit each report in Table 9 to 40 CFR 63, Subpart DDDDD that applies. [40 CFR 63.7550(a)]

c. The permittee shall submit each report, according to 40 CFR 63.7550(h), by the date in Table 9 to 40 CFR 63, Subpart DDDDD and according to the requirements in 40 CFR 63.7550(b)(1) through (4). For the emission units listed above, the permittee may submit only an annual or 5-year compliance report, as applicable, as specified in 40 CFR 63.7550(b)(1) through (4), instead of a semi-annual compliance report. [40 CFR 63.7550(b)]
   i. The first compliance report must cover the period beginning on the compliance date that is specified for each boiler or process heater in 40 CFR 63.7495 and ending on December 31 within 1 or 5 years, as applicable, after the compliance date that is specified for the source in 40 CFR 63.7495. [40 CFR 63.7550(b)(1)]
   ii. The first annual or 5-year compliance report must be postmarked or submitted no later than January 31. [40 CFR 63.7550(b)(2)]
   iii. Each subsequent annual and 5-year compliance reports must cover the applicable 1- or 5-year periods from January 1 to December 31. [40 CFR 63.7550(b)(3)]
   iv. Each subsequent annual and 5-year compliance reports must be postmarked or submitted no later than January 31. [40 CFR 63.7550(b)(4)]
   v. The permittee may submit the first and subsequent compliance reports according to the dates the Division has established in **SECTION F** instead of according to the dates in 40 CFR 63.7550(b)(1) through (4). [40 CFR 63.7550(b)(5)]

d. A compliance report must contain the following information depending on how the facility chooses to comply with the limits set in 40 CFR 63, Subpart DDDDD. [40 CFR 63.7550(c)]
   i. If the facility is subject to the requirements of a tune up the permittee shall submit a compliance report with the information in 40 CFR 63.7550(c)(5)(i) through (iii), (xiv) and (xvii). [40 CFR 63.7550(c)(1)]
   ii. Company and Facility name and address. [40 CFR 63.7550(c)(5)(i)]
   iii. Process unit information, emissions limitations, and operating parameter limitations. [40 CFR 63.7550(c)(5)(ii)]
   iv. Date of report and beginning and ending dates of the reporting period. [40 CFR 63.7550(c)(5)(iii)]
   v. Include the date of the most recent tune-up for each unit subject to only the requirement to conduct an annual or 5-year tune-up according to 40 CFR 63.7540(a)(10) or (12) respectively. Include the date of the most recent burner inspection if it was not done annually or on a 5-year period and was delayed until the next scheduled or unscheduled unit shutdown. [40 CFR 63.7550(c)(5)(xiv)]
   vi. Statement by a responsible official with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report. [40 CFR 63.7550(c)(5)(xvii)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

e. For each deviation from an emission limit or operating limit in 40 CFR 63, Subpart DDDDD that occurs at an individual boiler or process heater, or from the work practice standards for periods of startup and shutdown, the compliance report must additionally contain the information required in 40 CFR 63.7550(d)(1) through (3). [40 CFR 63.7550(d)]
   i. A description of the deviation and which emission limit, operating limit, or work practice standard from which the permittee deviated. [40 CFR 63.7550(d)(1)]
   ii. Information on the number, duration, and cause of deviations (including unknown cause), as applicable, and the corrective action taken. [40 CFR 63.7550(d)(2)]

f. The permittee shall submit the reports according to the procedures specified in 40 CFR 63.7550(h)(1) through (3). [40 CFR 63.7550(h)]
g. Refer to **SECTION F.**

7. Specific Control Equipment Operating Conditions:
None

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

SUBJECT ITEM 4 REQUIREMENTS: Existing Potlines

EU	Equip. Desig.	Cons. Date	Description	Controls	Material	Capacity (tons/hr)
Emission Group VIII: Potlines						
E1	E1-1 (P4, P5)	8/4/1972	Potline 1 Roof Monitors	None – Vents to Atmosphere	Aluminum	9.65*
	E1-2 (P2, P3)		Potline 1	A-398 Dry Alumina Scrubbers: 161S A-398 161N A-398		
E3	E3-1 (P8, P9)	8/4/1972	Potline 2 Roof Monitors	None – Vents to Atmosphere	Aluminum	9.65*
	E3-2 (P6, P7)		Potline 2	A-398 Dry Alumina Scrubbers: 162S A-398 162N A-398		
E5	E5-1 (3P, 4P)	8/1/1979	Potline 3 Roof Monitors	None – Vents to Atmosphere	Aluminum	9.65*
	E5-2 (1P, 2P)		Potline 3	A-398 Dry Alumina Scrubbers: 163S A-398 163N A-398		

*Refer to 1. Operating Limitations (e) – The hourly capacity values listed are based upon an annual average.

APPLICABLE REGULATIONS:
401 KAR 51:017, *Prevention of significant deterioration of air quality*
401 KAR 53:010, *Ambient air quality standards* for HF & TF
401 KAR 61:165, *Existing primary aluminum reduction plants*
401 KAR 63:002, Section 2(4)(bb), 40 C.F.R. 63.840 to 63.855, Tables 1 to 4, and Appendix A (Subpart LL), *National Emission Standards for Hazardous Air Pollutants for Primary Aluminum Reduction Plants,* applicable with respect to each existing CWPB1 potline associated with primary aluminum production and located at a major source as defined in 40 CFR 63.2.
40 CFR 64, *Compliance Assurance Monitoring,* applicable to Potlines #1-3 with respect to $PM_{10}/PM_{2.5}$. Refer to Appendix A-1.

1. **Operating Limitations:**
   a. At all times, the permittee shall operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to,

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

monitoring results, review of operation and maintenance procedures, review of operation and maintenance records and inspection of the source. [40 CFR 63.843(f)]

b. The permittee shall comply with the requirements of 40 CFR 63.854(a)(1) through (8) during periods of operation other than startup. [40 CFR 63.854(a)]
   i. Ensure the potline scrubbers and exhaust fans are operational at all times. [40 CFR 63.854(a)(1)]
   ii. Ensure that the primary capture and control system is operating at all times. [40 CFR 63.854(a)(2)]
   iii. Hood covers should be replaced as soon as possible after each potroom operation. [40 CFR 63.854(a)(3)]
   iv. Inspect potlines daily and perform the work practices specified in 40 CFR 63.854(a)(4)(i) through (iii). [40 CFR 63.854(a)(4)]
      1) Identify unstable pots as soon as practicable but in no case more than 12 hours from the time the pot became unstable; [40 CFR 63.854(a)(4)(i)]
      2) Reduce cell temperatures to as low as practicable, and follow the written operating plan described in 40 CFR 63.854(b)(4) if the cell temperature exceeds the specified high temperature limit; and [40 CFR 63.854(a)(4)(ii)]
      3) Reseal pot crusts that have been broken as often and as soon as practicable. [40 CFR 63.854(a)(4)(iii)]
   v. Ensure that hood covers fit properly and are in good condition. [40 CFR 63.854(a)(5)]
   vi. If the exhaust system is equipped with an adjustable damper system, the hood exhaust rate for individual pots must be increased whenever hood covers are removed from a pot, provided that the exhaust system will not be overloaded by placing too many pots on high exhaust. [40 CFR 63.854(a)(6)]
   vii. Dust entrainment must be minimized during material handling operations and sweeping of the working aisles. [40 CFR 63.854(a)(7)]
   viii. Only tapping crucibles with functional aspirator air return systems (for returning gases under the collection hooding) can be used, unless the regulatory authority approves an alternative tapping crucible. [40 CFR 63.854(a)(8)]

c. The permittee shall comply with the requirements of 40 CFR 63.854(a)(1) through (8) and (b)(1) through (4) during periods of startup for each affected potline. [40 CFR 63.854(b)]
   i. Develop a potline startup schedule before starting up the potline. [40 CFR 63.854(b)(1)]
   ii. Keep records of the number of pots started each day. [40 CFR 63.854(b)(2)]
   iii. Inspect potlines daily and adjust pot parameters to their optimum levels, as specified in the operating plan described in 40 CFR 63.854(b)(4), including, but not limited to: alumina addition rate, exhaust air flow rate, cell voltage, feeding level, anode current and liquid and solid bath levels. [40 CFR 63.854(b)(3)]
   iv. Prepare a written operating plan to minimize emissions during startup to include, but not limited to, the requirements in 40 CFR 63.854(b)(1) through (3). The operating plan must include a specified high temperature limit for pots that will trigger corrective action. [40 CFR 63.854(b)(4)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Compliance Demonstration:
Refer to **5. Specific Recordkeeping Requirements (k).**

d. In the event of a recorded violation of the fluoride standard (either HF or TF) prescribed in 401 KAR 53:010, the Cabinet shall require that remedial measures be initiated from the source(s) responsible for causing said violation. [401 KAR 61:165, Section 4(2)]

Compliance Demonstration:
In the event of a recorded violation of the fluoride standard (either HF or TF) prescribed in 401 KAR 53:010, the permittee shall initiate remedial measures for the source(s) responsible for causing the violation. A record of these immediate remedial measures and a corrective action plan for future corrective action and remediation must be submitted to the Division with the next quarterly report required in **6. Specific Reporting Requirements (j).**

e. The total aluminum production shall not exceed 253,531 cumulative tons per year from Potlines 1, 2, & 3, on a rolling 12-month basis. [401 KAR 51:017]

Compliance Demonstration:
Refer to **4. Specific Monitoring Requirements (f)(ii)** and **5. Specific Recordkeeping Requirements (h)(ii).**

f. The permittee shall operate each dry scrubber/baghouse system when the associated potline is in operation. [401 KAR 51:017]

Compliance Demonstration:
Records shall be kept of the times when the units are operating but the control devices are not. Records shall also be kept of the maintenance activities for the control devices.

g. The petroleum coke used to make the green anodes shall not exceed 3.0 percent sulfur by weight and the pitch shall not exceed 0.80 percent sulfur by weight as measured by the standard ASTM method, an approved alternative method, or by vendor Certificate of Analysis (per shipment basis). [401 KAR 51:017]

Compliance Demonstration:
Refer to **5. Specific Recordkeeping Requirements (h)(v).**

h. The permittee shall follow good design and combustion practices for the potlines to control CO emissions. The standard operating procedures for following good operational procedures shall be kept available at site for inspection. Records shall be kept of continuing practices and maintenance. [401 KAR 51:017]

Compliance Demonstration:

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Refer to **5. Specific Recordkeeping Requirements (h)(ix).**

i. Refer to **SECTION D.**

2. Emission Limitations:

a. For each potline (combined roof monitor and stack emissions), the permittee shall not discharge or cause to be discharged into the atmosphere any emissions of TF, POM, or PM in excess of the applicable limits in 40 CFR 63.843(a)(1) through (3). [40 CFR 63.843(a)]
   i. Emissions of TF shall not exceed 1.9 lb/ton (0.95 kg/Mg) of aluminum produced. [40 CFR 63.843(a)(1)(i)]
   ii. Emissions of POM shall not exceed 1.1 lb/ton (0.55 kg/Mg) of aluminum produced. [40 CFR 63.843(a)(2)(iv)]
   iii. Emissions of PM shall not exceed 7.4 lb/ton (3.7 kg/Mg) of aluminum produced. [40 CFR 63.843(a)(3)(i)]

b. Emissions of COS shall not exceed 3.9 lb/ton (1.95 kg/Mg) of aluminum produced for each potline (combined roof monitor and stack emissions). [40 CFR 63.843(e)]

c. The owner or operator may average emissions from potlines and demonstrate compliance with the limits in 40 CFR 63, Subpart LL, Tables 1 through 3 using the procedures in 40 CFR 63.846(b)(1) through (3). [40 CFR 63.846(b)]
   i. Semiannual average emissions of TF shall not exceed 1.6 lb/ton if 3 potlines are averaged or 1.7 lb/ton if 2 potlines are averaged. The emission rate shall be calculated based on the total primary and secondary emissions from all potlines comprising the averaging group over the period divided by the quantity of aluminum produced during the period, from all potlines comprising the averaging group. To determine compliance with the applicable emission limit in 40 CFR 63, Subpart LL, Table 1 for TF emissions, the permittee shall determine the average emissions (in lb/ton) from each potline from at least three runs per potline semiannually for TF secondary emissions and at least three runs per potline primary control system each year using the procedures and methods in 40 CFR 63.847 and 63.849. The permittee shall combine the results of secondary TF average emissions with the TF results for the primary control system and divide total emissions by total aluminum production. [40 CFR 63.846(b)(1)]
   ii. Semiannual average emissions of POM shall not exceed 0.9 lb/ton if 3 potlines are averaged, or 1 lb/ton if 2 potlines are averaged. The emission rate shall be calculated based on the total primary and secondary emissions from all potlines comprising the averaging group over the period divided by the quantity of aluminum produced during the period, from all potlines comprising the averaging group. To determine compliance with the applicable emission limit in 40 CFR 63, Subpart LL, Table 2 for POM emissions, the permittee shall determine the average emissions (in lb/ton) from each potline from at least three runs per potline semiannually for POM secondary emissions and at least three runs per potline primary control system each year for POM primary emissions using the procedures and methods in 40 CFR 63.847 and 63.849. The permittee shall combine the results of secondary POM average emissions with the POM

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

results for the primary control system and divide total emissions by total aluminum production. [40 CFR 63.846(b)(2)]

iii. Semiannual average emissions of PM shall not exceed 6.1 lb/ton. The emission rate shall be calculated based on the total primary and secondary emissions from all potlines comprising the potline group over the period divided by the quantity of aluminum produced during the period, from all potlines comprising the averaging group. To determine compliance with the applicable emission limit in 40 CFR 63, Subpart LL, Table 3 for PM emissions, the permittee shall determine the average emissions (in lb/ton) from each potline from at least three runs per potline semiannually for PM secondary emissions and at least three runs per potline primary control system each year for PM primary emissions using the procedures and methods in 40 CFR 63.847 and 63.849. The permittee shall combine the results of secondary PM average emissions with the PM results for the primary control system and divide total emissions by total aluminum production. [40 CFR 63.846(b)(3)]

Compliance Demonstration:

1. The permittee shall determine compliance with the applicable TF, POM, or PM emission limits using the following equations and procedures: [40 CFR 63.847(e)]
   A. Compute the emission rate (E_p) of TF, POM, or PM from each potline using the following equation: [40 CFR 63.847(e)(1)]

$$E_p = \frac{[(C_{s1} \times Q_{sd})_1 + (C_{s2} \times Q_{sd})_2]}{(P \times K)}$$

   Where:
   E_p = emission rate of TF, POM, or PM from a potline, lb/ton (kg/Mg);
   C_{s1} = concentration of TF, POM, or PM from the primary control system, mg/dscf (mg/dscm);
   Q_{sd} = volumetric flow rate of effluent gas corresponding to the appropriate subscript location, dscf/hr (dscm/hr);
   C_{s2} = concentration of TF, POM, or PM as measured for roof monitor emissions, mg/dscf (mg/dscm);
   P = aluminum production rate, ton/hr (Mg/hr);
   K = conversion factor, 453,600 mg/lb (106 mg/kg) for TF, POM, and PM;
   1 = subscript for primary control system effluent gas; and
   2 = subscript for secondary control system or roof monitor effluent gas.

   B. Determine the weight of the aluminum tapped from the potline using the monitoring devices required in 40 CFR 63.848(j). [40 CFR 63.847(e)(5)]

   C. Determine the aluminum production rate (P) by dividing the number of hours in the calendar month into the weight of aluminum tapped from the potline during the calendar month that includes the three runs of a performance test. [40 CFR 63.847(e)(6)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

D. Refer to **3. Testing Requirements (d), (f),** and **(g)** and **7. Specific Control Equipment Operating Conditions (b).**

2. The permittee shall calculate, for each potline, the emission rate of COS for each calendar month of operation using the following equation: [40 CFR 63.847(j)]

$$E_{COS} = [K] \times \left[\frac{Y}{Z}\right] \times [S]$$

Where:

E_{COS} = the emission rate of COS during the calendar month, pounds per ton of aluminum produced;

K = factor accounting for molecular weights and conversion of sulfur to carbonyl sulfide = 234;

Y = the mass of anode consumed in the potline during the calendar month, tons;

Z = the mass of aluminum produced by the potline during the calendar month, tons; and

S = the weighted average fraction of sulfur in the anode coke consumed in the production of aluminum during the calendar month (e.g., if the weighted average sulfur content of the anode coke consumed during the calendar month was 2.5 percent, then S = 0.025). The weight of anode coke used during the calendar month of each different concentration of sulfur is used to calculate the overall weighted average fraction of sulfur.

Compliance is demonstrated if the calculated value of E_{COS} is less than the applicable standard for COS emissions in 40 CFR 63.843(e). Refer to **3. Testing Requirements (l).**

d. The permittee shall not cause to be discharged into the atmosphere: [401 KAR 61:165, Section 3]
   i. From any potroom roof monitor any gases which exhibit ten (10) percent opacity or greater during normal potroom operation except start-up cells; [401 KAR 61:165, Section 3(1)]
   ii. From any potroom roof monitor section directly above sick cells or start-up cells any gases which exhibit forty (40) percent opacity or greater; [401 KAR 61:165, Section 3(2)]
   iii. From any dry scrubbing plant primary control system any gases which exhibit ten (10) percent opacity or greater. [401 KAR 61:165, Section 3(3)]

Compliance Demonstration:
Refer to **4. Specific Monitoring Requirements (e)** and **5. Specific Recordkeeping Requirements (h)(iii).**

e. The permittee shall not, from a dry scrubbing plant, cause to be discharged into the atmosphere gases which contain total fluorides in excess of one and nine-tenths (1.9) lb/ton of aluminum produced. [401 KAR 61:165, Section 4(1)(a) and 401 KAR 51:017]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Compliance Demonstration:
Compliance **2. Emission Limitations (e)** shall be demonstrated by complying with **2. Emission Limitations (a)(i)** or **(c)(i).**

f. The permittee shall not allow CO emissions from the potlines (combined roof monitor and stack emissions) to exceed 233.6 lb/ton of aluminum produced. [401 KAR 51:017]

g. The permittee shall not allow PM emissions from the potlines (combined roof monitor and stack emissions) to exceed 4.88 lb/ton of aluminum produced. [401 KAR 51:017]

h. The permittee shall not allow $PM_{10}/PM_{2.5}$ emissions from the potlines (combined roof monitor and stack emissions) to exceed 2.1 lb/ton of aluminum produced. [401 KAR 51:017]

Compliance Demonstration:
Refer to **3. Testing Requirements (r).**

i. For SO_2 standards, refer to **SECTION D 3.**

j. For HF standards, refer to **SECTION D 4.**

k. For TF standards, refer to **SECTION D 5**.

3. Testing Requirements:

a. The permittee shall prepare a site-specific test plan prior to the initial performance test according to the requirements of 40 CFR 63.7(c). The test plan shall include procedures for conducting the initial performance test and for subsequent performance tests required in 40 CFR 63.848 for emission monitoring. In addition to the information required by 40 CFR 63.7, the test plan shall include: [40 CFR 63.847(b)]
   i. Procedures to ensure a minimum of three runs are performed annually for the primary control system for each source; [40 CFR 63.847(b)(1)]
   ii. For a source with a single control device exhausted through multiple stacks, procedures to ensure that at least three runs are performed annually by a representative sample of the stacks satisfactory to the Division; [40 CFR 63.847(b)(2)]
   iii. Procedures for establishing the frequency of testing to ensure that at least one run is performed before the 15th of the month, at least one run is performed after the 15th of the month, and that there are at least 6 days between two of the runs during the month, or that secondary emissions are measured according to an alternate schedule satisfactory to the Division. [40 CFR 63.847(b)(8)]

b. Following approval of the site-specific test plan, the permittee shall conduct a performance test to demonstrate initial compliance according to the procedures in 40 CFR 63.847(d). If a performance test has been conducted on the primary control system for the potlines within the 12 months prior to the compliance date, the results of that performance test may be

Commented [PS5]: Possibly reword to make more clear this is referring to semiannual roof vent testing only.

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

used to demonstrate initial compliance. The permittee shall conduct the performance test: [40 CFR 63.847(c)]

i. During the first month following: [40 CFR 63.847(c)(1)]
   1) October 7, 1999 for TF testing. [40 CFR 63.847(a)(1)]
   2) October 17, 2016 for calculation of COS emissions pursuant to 40 CFR 63.847(j). [40 CFR 63.847(a)(2)(ii)]
   3) October 16, 2017 for POM and PM testing. [40 CFR 63.847(a)(2)(iii)]

ii. For an existing potline that was shut down at the time compliance would have otherwise been required and is subsequently restarted, by the 180th day following startup for a potline or potroom group. The 180-day period starts when the first pot in a potline or potroom group is energized. [40 CFR 63.847(c)(3)(i)]

c. The initial performance test and all subsequent performance tests shall be conducted in accordance with the applicable requirements of the general provisions in 40 CFR 63, Subpart A, the approved test plan, and the procedures in 40 CFR 63.847. Performance tests shall be conducted under such conditions as the Division specifies to the permittee based on representative performance of the affected source for the period being tested. Upon request, the permittee shall make available to the Division such records as may be necessary to determine the conditions of performance tests. [40 CFR 63.847(d)]

d. For each potline, the permittee shall measure and record the emission rates of TF, POM and PM exiting the outlet of the primary control system and the rate of secondary emissions exiting through each roof monitor. Using the equation in 40 CFR 63.847(e)(1), the permittee shall compute and record the average of at least three runs semiannually for secondary emissions and at least three runs each year for the primary control system to determine compliance with the applicable emission limit. Compliance is demonstrated when the emission rates of TF, POM, and PM are equal to or less than the applicable emission limits in 40 CFR 63.843 or 40 CFR 63.846. [40 CFR 63.847(d)(1)]

e. If the permittee has performed more than one test of primary emission control device(s) for a potline during the previous consecutive 12 months, the average of all runs performed in the previous 12-month period shall be used to determine the contribution from the primary emission control system. [40 CFR 63.847(d)(3)]

f. Using the procedures in 40 CFR 63.847 and in the approved test plan, the permittee shall monitor emissions of TF and PM from each potline by conducting annual performance tests on the primary control system and semiannual performance tests on the secondary emissions. The permittee shall compute and record the average semiannually from at least three runs for secondary emissions and the average from at least three runs for the primary control system to determine compliance with the applicable emission limit. The permittee shall include all valid runs in the semiannual average. The duration of each run for secondary emissions shall represent a complete operating cycle. Potline emissions shall be recorded as the sum of the average of at least three runs from the primary control system

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

and the average of at least three runs from the roof monitor or secondary emissions control device. [40 CFR 63.848(a)]

g. Using the procedures in 40 CFR 63.847 and in the approved test plan, the permittee shall monitor emissions of POM from each potline stack annually and secondary potline POM emissions semiannually. The permittee shall compute and record the semiannual average from at least three runs for secondary emissions and at least three runs for the primary control systems to determine compliance with the applicable emission limit. The permittee shall include all valid runs in the semiannual average. The duration of each run for secondary emissions shall represent a complete operating cycle. The primary control system shall be sampled over an 8-hour period, unless site-specific factors dictate an alternative sampling time subject to the approval of the Division. Potline emissions shall be recorded as the sum of the average of at least three runs from the primary control system and the average of at least three runs from the roof monitor or secondary emissions control device. [40 CFR 63.848(b)]

h. The permittee shall use the following reference methods to determine compliance with the applicable emission limits for TF, POM, PM, and conduct visible emissions observations: [40 CFR 63.849(a)]
   i. Method 1 in 40 CFR 60, Appendix A for sample and velocity traverses; [40 CFR 63.849(a)(1)]
   ii. Method 2 in 40 CFR 60, Appendix A for velocity and volumetric flow rate; [40 CFR 63.849(a)(2)]
   iii. Method 3 in 40 CFR 60, Appendix A for gas analysis; [40 CFR 63.849(a)(3)]
   iv. Method 13A or Method 13B in 40 CFR 60, Appendix A, or an approved alternative, for the concentration of TF where stack or duct emissions are sampled; [40 CFR 63.849(a)(4)]
   v. Method 13A or Method 13B and Method 14 or Method 14A in 40 CFR 60, Appendix A or an approved alternative method for the concentration of TF where emissions are sampled from roof monitors not employing wet roof scrubbers; [40 CFR 63.849(a)(5)]
   vi. Method 315 in 40 CFR 63, Appendix A or an approved alternative method for the concentration of POM where stack or duct emissions are sampled; [40 CFR 63.849(a)(6)]
   vii. Method 315 in 40 CFR 63, Appendix A and Method 14 or 14A in 40 CFR 60, Appendix A or an approved alternative method for the concentration of POM where emissions are sampled from roof monitors not employing wet roof scrubbers. Method 315 need not be set up as required in the method. Instead, when using Method 14A, replace the Method 14A monitor cassette filter with the filter specified by Method 315. Recover and analyze the filter according to Method 315. When using Method 14, test at ambient conditions, do not heat the filter and probe, and do not analyze the back half of the sampling train; [40 CFR 63.849(a)(7)]
   viii. Method 5 in 40 CFR 60, Appendix A or an approved alternative method for the concentration of PM where stack or duct emissions are sampled; [40 CFR 63.849(a)(8)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

ix. Method 17 and Method 14 or Method 14A in 40 CFR 60, Appendix A or an approved alternative method for the concentration of PM where emissions are sampled from roof monitors not employing wet roof scrubbers. Method 17 need not be set up as required in the method. Instead, when using Method 14A, replace the Method 14A monitor cassette filter with the filter specified by Method 17. Recover and analyze the filter according to Method 17. When using Method 14, test at ambient conditions, do not heat the filter and probe, and do not analyze the back half of the sampling train; [40 CFR 63.849(a)(9)]

x. Method 22 in 40 CFR 60, Appendix A or an approved alternative method for determination of visual emissions; [40 CFR 63.849(a)(12)]

i. Except as provided in 40 CFR 63.845(g)(1), references to "potroom" or "potroom group" in Method 14 in 40 CFR 60, Appendix A shall be interpreted as "potline" for the purposes of 40 CFR 63, Subpart LL. [40 CFR 63.849(c)]

j. For sampling using Method 14 in 40 CFR 60, Appendix A, the permittee shall install one Method 14 manifold per potline in a potroom that is representative of the entire potline, and this manifold shall meet the installation requirements specified in 40 CFR 60, Appendix A, Method 14, Section 2.2.1. [40 CFR 63.849(d)]

k. The permittee may use an alternative test method for TF or POM emissions providing: [40 CFR 63.849(e)]
   i. The permittee has already demonstrated the equivalency of the alternative method for a specific plant and has received previous approval from the U.S. EPA or the Division for TF or POM measurements using the alternative method; or [40 CFR 63.849(e)(1)]
   ii. The permittee demonstrates to the satisfaction of the Division that the results from the alternative method meet the criteria specified in 40 CFR 63.848(d)(1) and (d)(3) through (d)(6). The results from the alternative method shall be based on simultaneous sampling using the alternative method and the following reference methods: [40 CFR 63.849(e)(2)]
      1) For TF, Methods 13 and 14 or Method 14A in 40 CFR 60, Appendix A; or [40 CFR 63.849(e)(2)(i)]
      2) For POM, Method 315 in 40 CFR 63, Appendix A and Method 14 in 40 CFR 60, Appendix A. [40 CFR 63.849(e)(2)(ii)]

l. The permittee shall use either ASTM D4239-14e1 or ASTM D6376-10 (incorporated by reference; see 40 CFR 63.14) for determination of the sulfur content in anode coke shipments to determine compliance with the applicable emission limit for COS emissions. [40 CFR 63.849(f)]

m. Reference methods as defined in Appendix A of 40 CFR 60 or as otherwise specified, filed by reference in 401 KAR 50:015, except as provided for in 401 KAR 50:045, shall be used to determine compliance with the standards prescribed in 401 KAR 61:165, Sections 3, 4 and 5 as follows: [401 KAR 61:165, Section 7(1)]
   i. For sampling emissions from stacks: [401 KAR 61:165, Section 7(1)(a)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

1) Reference Method 13A or 13B for the concentration of total fluoride and the associated moisture content; [401 KAR 61:165, Section 7(1)(a)(1)]
2) Reference Method 1 for sample and velocity traverses; [401 KAR 61:165, Section 7(1)(a)(2)]
3) Reference Method 2 for velocity and volumetric flow rate; [401 KAR 61:165, Section 7(1)(a)(3)]
4) Reference Method 3 for gas analysis; and [401 KAR 61:165, Section 7(1)(a)(4)]
5) Reference Method 5 for particulate emissions. [401 KAR 61:165, Section 7(1)(a)(5)]

ii. For sampling emissions from roof monitors not employing stacks or pollutant collection systems: [401 KAR 61:165, Section 7(1)(b)]
1) Reference Method 14 and Kentucky Method 130 for the concentration of gaseous fluorides and associated moisture content; [401 KAR 61:165, Section 7(1)(b)(1)]
2) Reference Method 1 for sample and velocity traverses; [401 KAR 61:165, Section 7(1)(b)(2)]
3) Reference Method 2 and Reference Method 14 for velocity and volumetric flow rate; and [401 KAR 61:165, Section 7(1)(b)(3)]
4) Reference Method 3 for gas analysis. [401 KAR 61:165, Section 7(1)(b)(4)]

iii. For opacity determination: Reference Method 9. [401 KAR 61:165, Section 7(1)(c)]

n. For Reference Method 13A or 13B, 14, and Kentucky Method 130, the sampling time for each run shall be at least eight (8) hours for any potroom sample, and the minimum sample volume shall be six and eight-tenths (6.8) dscm (240 dscf) for any potroom sample except that shorter sampling times or smaller volumes, when necessitated by process variables or other factors, may be approved by the Cabinet. [401 KAR 61:165, Section 7(2)]

o. The air pollution control system for each affected facility shall be constructed so that volumetric flow rates and total fluoride emissions can be accurately determined using applicable methods specified under 401 KAR 61:165, Section 7(1). [401 KAR 61:165, Section 7(3)]

p. For the purposes of demonstrating compliance with the requirements of 401 KAR 61:165, the rate of aluminum production is determined by dividing 720 hours into the weight of aluminum tapped from the affected facility during a period of thirty (30) days prior to and including the final run of a performance test. [401 KAR 61:165, Section 7(4)]

q. For each run for any plant with an emission limitation expressed in lbs/ton of aluminum produced, potroom group emissions expressed in kg/metric ton of aluminum produced shall be determined using the equation in 401 KAR 61:165, Appendix A. [401 KAR 61:165, Section 7(5)]

r. The following compliance tests shall be performed to demonstrate compliance with all emission limitations listed above for CO, SO_2, PM, PM_{10}, and $PM_{2.5}$:

Commented [PS6]: Refer to Section 5 of the application letter for additional discussion regarding the proposed edits to the potline CO and SO2 testing permit condition language.

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

i. The permittee shall perform testing according to Reference Method 10 for CO emissions from a representative Potline A-398 scrubber system and from a representative Potline roof monitor once within the 5 year permit term of permit V-19-010. ~~Where similar potlines exist, the permittee may perform sampling on a representative potline.~~

ii. The permittee shall perform testing according to Reference Method 6 for SO_2 emissions from a representative Potline A-398 scrubber system once within the 5 year permit term of permit V-19-010. ~~Where similar potlines exist, the permittee may perform sampling on a representative potline.~~ The permittee shall also perform ~~annual~~ testing of SO_2 emissions ~~of~~ from the roof monitor~~s~~ associated with a representative potline to determine the contribution from the roof monitors to the SO_2 emission once within the 5 year permit term. ~~limits~~. ~~The test shall be performed within 180 days of the issuance of permit V-19-010.~~

iii. The permittee shall conduct a performance test for particulate emissions (filterable PM, $PM_{10,}$ $PM_{2.5}$ and Condensable Particulate) once every 12 months during the life of permit V-19-010. The tests shall be performed according to Reference Method 5 and Reference Method 201A/202 for particulate emissions (filterable PM, $PM_{10,}$ $PM_{2.5}$ and Condensable Particulate). Where similar potlines exist, the permittee may perform sampling on a representative potline. These tests can be performed simultaneously with the testing required by 40 CFR 63, Subpart LL.

iv. The permittee may use other test methods as approved by the Division.

s. For sampling emissions from roof monitors not employing stacks or pollutant collection systems, the permittee may use Reference Method 14A for the concentration of gaseous fluorides and associated moisture content in lieu of the methods specified in 401 KAR 61:165, Section 7(1)(b)(1).

t. If the permittee chooses to perform representative sampling on a potline in lieu of performing testing on each potline, the permittee shall ensure that each potline is equipped for sampling (both stack and roof monitor sampling) such that different potlines can be sampled in future tests.

u. Pursuant to 401 KAR 61:005, Section 2(2) and 401 KAR 50:045, Section 1, performance testing using the reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division.

4. Specific Monitoring Requirements:

a. The permittee shall determine the operating limits and monitoring frequency for each control device that is to be monitored as required in 40 CFR 63.848(f). [40 CFR 63.847(h)]

i. For potlines, the permittee shall determine upper and/or lower operating limits, as appropriate, for each monitoring device for the emission control system from the values recorded during each of the runs performed during the initial performance test and from historical data from previous performance tests conducted by the methods specified in 40 CFR 63, Subpart LL. [40 CFR 63.847(h)(1)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

ii. The permittee may redetermine the upper and/or lower operating limits, as appropriate, based on historical data or other information and submit an application to the Division to change the applicable limit(s). The redetermined limits shall become effective upon approval by the Division. [40 CFR 63.847(h)(3)]

b. As an alternative to semiannual monitoring of TF, POM or PM secondary emissions from each potline using the methods in 40 CFR 63.849, the permittee may perform semiannual monitoring of TF, POM or PM secondary emissions from one potline using the test methods in 40 CFR 63.849(a) or (b) to represent the performance of similar potline(s). The similar potline(s) shall be monitored using an alternative method that meets the requirements of 40 CFR 63.848(d)(1) through (7). Two or more potlines are similar if the permittee demonstrates that their structure, operability, type of emissions, volume of emissions and concentration of emissions are substantially equivalent. [40 CFR 63.848(d)]

i. To demonstrate (to the satisfaction of the Division) that the level of emission control performance is the same or better, the permittee shall perform an emission test using an alternative monitoring procedure for the similar potline simultaneously with an emission test using the applicable test methods. The results of the emission test using the applicable test methods shall be in compliance with the applicable emission limit for existing or new potlines in 40 CFR 63.843 or 40 CFR 63.844. An alternative method: [40 CFR 63.848(d)(1)]

1) For TF emissions, shall account for or include gaseous fluoride and cannot be based on measurement of particulate matter or particulate fluoride alone; and [40 CFR 63.848(d)(1)(i)]

2) For TF, POM and PM emissions, shall meet or exceed Method 14 criteria. [40 CFR 63.848(d)(1)(ii)]

ii. An HF continuous emission monitoring system is an approved alternative for the monitoring of TF secondary emissions. [40 CFR 63.848(d)(2)]

iii. If the permittee elects to use an alternative monitoring procedure, the permittee shall establish an alternative emission limit based on at least nine simultaneous runs using the applicable test methods and the alternative monitoring method. All runs shall represent a full process cycle. [40 CFR 63.848(d)(3)]

iv. The permittee shall derive an alternative emission limit for the HF continuous emission monitor or an alternative method using either of the following procedures: [40 CFR 63.848(d)(4)]

1) Use the highest value from the alternative method associated with a simultaneous run by the applicable test method that does not exceed the applicable emission limit; or [40 CFR 63.848(d)(4)(i)]

2) Correlate the results of the two methods (the applicable test method results and the alternative monitoring method results) and establish an emission limit for the alternative monitoring system that corresponds to the applicable emission limit. [40 CFR 63.848(d)(4)(ii)]

v. The permittee shall submit the results required in 40 CFR 63.848(d)(4) and all supporting documentation to the Division for review and approval. [40 CFR 63.848(d)(5)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

vi. The Division will review and approve or disapprove the request for an alternative method and alternative emission limit. The criterion for approval shall be a demonstration (to the satisfaction of the Division) that the alternative method and alternative emission limit achieve a level of emission control that is the same as or better than the level that would have otherwise been achieved by the applicable method and emission limit. [40 CFR 63.848(d)(6)]

vii. If the alternative method is approved by the Division, the permittee shall perform semiannual emission monitoring using the approved alternative monitoring procedure to demonstrate compliance with the alternative emission limit for each similar potline. [40 CFR 63.848(d)(7)]

c. The permittee shall install, operate, and maintain a monitoring device to determine the daily weight of aluminum produced. [40 CFR 63.848(j)]

d. The permittee shall install, use, and maintain ambient air monitoring equipment for the detection of fluorides in accordance with such methods as the Cabinet shall prescribe; establish and maintain records of same; and make periodic emission reports at intervals prescribed by the Cabinet. [401 KAR 61:165, Section 6(3)]

e. The permittee shall perform a qualitative visual observation of the opacity of emissions at each stack and roof monitor daily and maintain a log of the observations. If visible emissions from a stack or roof monitor are observed (not including condensed water in the plume), then an inspection of process/control equipment shall be initiated and corrective action taken. If visible emissions are present after the corrective action, the permittee shall determine the opacity using Reference Method 9. The Method 22 observations performed for 40 CFR 63, Subpart LL may also be used to meet the qualitative requirement for the stack. [401 KAR 52:020, Section 10]

f. For each emission unit listed above, the permittee shall monitor the following parameters: [401 KAR 52:020, Section 10]
   i. Monthly hours of operation;
   ii. Monthly and 12-month rolling throughput for each potline;
   iii. Monthly anode consumption in potlines 1-3.

g. For Potlines 1-3, refer to Appendix A for CAM requirements pursuant to 40 CFR 64.

h. Refer to **SECTION F.**

5. Specific Recordkeeping Requirements:

a. The permittee shall develop a written startup plan as described in 40 CFR 63.854(b) that contains specific procedures to be followed during startup periods of potline(s). Compliance with the applicable standards in 40 CFR 63.854(b) will be demonstrated through site inspection(s) and review of site records by the Division. [40 CFR 63.847(k)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

b. The permittee shall maintain files of all information (including all reports and notifications) required by 40 CFR 63.10(b) and by 40 CFR 63, Subpart LL. [40 CFR 63.850(e)]

c. The permittee shall retain each record for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The most recent 2 years of records must be retained at the facility. The remaining 3 years of records may be retained offsite; [40 CFR 63.850(e)(1)]

d. The permittee may retain records on microfilm, on a computer, on computer disks, on magnetic tape, or on microfiche; [40 CFR 63.850(e)(2)]

e. The permittee may report required information on paper or on a labeled computer disc using commonly available and compatible computer software; and [40 CFR 63.850(e)(3)]

f. In addition to the general records required by 40 CFR 63.10(b), the permittee shall maintain records of the following information: [40 CFR 63.850(e)(4)]
   i. Daily production rate of aluminum; [40 CFR 63.850(e)(4)(i)]
   ii. Records supporting the monitoring of similar potlines demonstrating that the performance of similar potlines is the same as or better than that of potlines sampled by manual methods; [40 CFR 63.850(e)(4)(vi)]
   iii. Records supporting a request for reduced sampling of potlines; [40 CFR 63.850(e)(4)(vii)]
   iv. The current implementation plan for emission averaging and any subsequent amendments; [40 CFR 63.850(e)(4)(ix)]
   v. Records, such as a checklist or the equivalent, demonstrating that the daily visual inspection of the exhaust stack for each control device has been performed as required in 40 CFR 63.848(g), including the results of each inspection; [40 CFR 63.850(e)(4)(xi)]
   vi. For a potline equipped with an HF continuous emission monitor, records of information and data required by 40 CFR 63.10(c); [40 CFR 63.850(e)(4)(xii)]
   vii. Records documenting the corrective actions taken when the limit(s) for an operating parameter established under 40 CFR 63.847(h) were exceeded or when visible emissions indicating abnormal operation were observed from a control device stack during a daily inspection required under 40 CFR 63.848(g). [40 CFR 63.850(e)(4)(xiii)]
   viii. Records documenting any POM data that are invalidated due to the installation and startup of a cathode; [40 CFR 63.850(e)(4)(xiv)]
   ix. Records documenting the portion of TF that is measured as particulate matter and the portion that is measured as gaseous when the particulate and gaseous fractions are quantified separately using an approved test method; [40 CFR 63.850(e)(4)(xv)]
   x. Records of the occurrence and duration of each malfunction of operation (i.e. process equipment) or the air pollution control equipment and monitoring equipment; and [40 CFR 63.850(e)(4)(xvi)]
   xi. Records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.843(f) and 63.844(f), including corrective actions to

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation. [40 CFR 63.850(e)(4)(xvii)]

g. Records of the installation, use, and maintenance of the ambient air monitoring equipment required by 401 KAR 61:165. [401 KAR 61:165, Section 6(3)]

h. For each emission unit listed above, the permittee shall maintain the following records: [401 KAR 52:020, Section 10]
   i. Monthly hours of operation;
   ii. Monthly and 12-month rolling throughput for each potline;
   iii. The qualitative visual observations required by **4. Specific Monitoring Requirements (e),** including the date, time, initials of observer, whether any emissions were observed (yes/no), any Method 9 readings taken, and any corrective action taken including results due to observed emissions;
   iv. Monthly anode consumption in potlines 1-3;
   v. Records of sulfur contents of coal and pitch from standard ASTM method, an approved alternative method, or by vendor Certificate of Analysis per shipment basis;
   vi. Records of ambient air monitoring results for fluorides;
   vii. Records of calibration for all monitoring devices;
   viii. Records of the quarterly ambient monitoring data reports required by **6. Specific Reporting Requirements (e).**
   ix. Records of standard operating procedures, continuing practices, and maintenance used to meet **1. Operating Limitations (h)**.
   x. Records of violations of the ambient air standards for total and gaseous fluorides as prescribed in 401 KAR 53:010. [401 KAR 61:165, Section 4(2)]

i. The permittee shall record the occurrence, duration, cause and any corrective action taken for any incident or malfunction that occurs that causes or might cause an exceedance of the particulate emission or opacity standard when an emission unit is in operation. A log of Method 9 observations (if performed) shall be kept and made available for inspection. [401 KAR 52:020, Section 10]

j. For Potlines 1-3:
   i. The permittee shall comply with the recordkeeping requirements specified in **SECTION F**. The permittee shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan required pursuant to 40 CFR 64.8 and any activities undertaken to implement a quality improvement plan, and other supporting information required to be maintained under 40 CFR 64 (such as data used to document the adequacy of monitoring, or records of monitoring maintenance or corrective actions). [40 CFR 64.9(b)(1)]
   ii. Instead of paper records, the permittee may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements. [40 CFR 64.9(b)(1)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

k. Refer to **SECTION F.**

6. Specific Reporting Requirements:

a. If the permittee chooses to average emissions, the permittee shall develop and submit an implementation plan for emission averaging to the Division for review and approval according to the following procedures and requirements: [40 CFR 63.846(d)]

i. The permittee shall submit the implementation plan no later than 6 months before the date that the facility intends to comply with the emission averaging limits. [40 CFR 63.846(d)(1)]

ii. The permittee shall include the following information in the implementation plan or in the application for an operating permit for all emission sources to be included in an emissions average: [40 CFR 63.846(d)(2)]

1) The identification of all emission sources (potlines) in the average; [40 CFR 63.846(d)(2)(i)]

2) The assigned TF, POM and/or PM emission limit for each averaging group of potlines; [40 CFR 63.846(d)(2)(ii)]

3) The specific control technologies or pollution prevention measures to be used for each emission source in the averaging group and the date of its installation or application. If the pollution prevention measures reduce or eliminate emissions from multiple sources, the permittee shall identify each source; [40 CFR 63.846(d)(2)(iii)]

4) The test plan for the measurement of TF, POM and/or PM emissions in accordance with the requirements in 40 CFR 63.847(b); [40 CFR 63.846(d)(2)(iv)]

5) The operating parameters to be monitored for each control system or device and a description of how the operating limits will be determined; [40 CFR 63.846(d)(2)(v)]

6) If the permittee requests to monitor an alternative operating parameter pursuant to 40 CFR 63.848(l): [40 CFR 63.846(d)(2)(vi)]

A. A description of the parameter(s) to be monitored and an explanation of the criteria used to select the parameter(s); and [40 CFR 63.846(d)(2)(vi)(A)]

B. A description of the methods and procedures that will be used to demonstrate that the parameter indicates proper operation of the control device; the frequency and content of monitoring, reporting, and recordkeeping requirements; and a demonstration, to the satisfaction of the Division, that the proposed monitoring frequency is sufficient to represent control device operating conditions; and [40 CFR 63.846(d)(2)(vi)(B)]

7) A demonstration that compliance with each of the applicable emission limit(s) will be achieved under representative operating conditions. [40 CFR 63.846(d)(2)(vii)]

iii. Upon receipt, the Division will review and approve or disapprove the plan or permit application according to the following criteria: [40 CFR 63.846(d)(3)]

1) Whether the content of the plan includes all of the information specified in 40 CFR 63.846(d)(2); and [40 CFR 63.846(d)(3)(i)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

2) Whether the plan or permit application presents sufficient information to determine that compliance will be achieved and maintained. [40 CFR 63.846(d)(3)(ii)]

iv. The Division will not approve an implementation plan or permit application containing any of the following provisions: [40 CFR 63.846(d)(4)]
   1) Any averaging between emissions of differing pollutants or between differing sources. Emission averaging shall not be allowed between TF, POM and/or PM, and emission averaging shall not be allowed between potlines and anode bake furnaces; [40 CFR 63.846(d)(4)(i)]
   2) The inclusion of any emission source other than an existing potline or existing anode bake furnace or the inclusion of any potline or anode bake furnace not subject to the same operating permit; or [40 CFR 63.846(d)(4)(ii)]
   3) The inclusion of any potline or anode bake furnace while it is shut down, in the emission calculations. [40 CFR 63.846(d)(4)(iii)]

v. Following review, the Division will approve the plan or permit application, request changes, or request additional information. Once the Division receives any additional information requested, the Division will approve or disapprove the plan or permit application within 120 days. [40 CFR 63.846(d)(5)]
   1) The Division will approve the plan for the term of the operating permit; [40 CFR 63.846(d)(5)(i)]
   2) To revise the plan prior to the end of the permit term, the permittee shall submit a request to the Division; and [40 CFR 63.846(d)(5)(ii)]
   3) The permittee may submit a request to the Division to implement emission averaging after the applicable compliance date. [40 CFR 63.846(d)(5)(iii)]

vi. While operating under an approved implementation plan, the permittee shall monitor the operating parameters of each control system, keep records, and submit periodic reports as required for each source subject to 40 CFR 63, Subpart LL. [40 CFR 63.846(d)(6)]

b. The permittee shall submit recommended accuracy requirements to the Division for review and approval. All monitoring devices required by 40 CFR 63.848 must be certified by the permittee to meet the accuracy requirements and must be calibrated in accordance with the manufacturer's instructions. [40 CFR 63.848(k)]

c. The permittee shall develop and submit to the Division, if requested, an engineering plan that describes the techniques that will be used to address the capture efficiency of the reduction cells for gaseous hazardous air pollutants in compliance with the emission limits in 40 CFR 63.843, 63.844, and 63.846; and [40 CFR 63.850(a)(8)]

d. One-time notification of startup of an existing potline or potroom group that was shut down for a long period and subsequently restarted. The permittee must provide written notice to the Administrator at least 30 days before the startup. [40 CFR 63.850(a)(9)]

e. Within 60 days after the date of completing each performance test (as defined in 40 CFR 63.2) required by 40 CFR 63, Subpart LL, the permittee shall submit the results of the

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

performance tests following the procedure specified in either 40 CFR 63.850(b)(1) or (b)(2). [40 CFR 63.850(b)]

f. In addition to the information required under 40 CFR 63.10 of the General Provisions, the permittee shall provide semiannual reports containing the information specified in 40 CFR 63.850(d)(1) and (2) to the Division. [40 CFR 63.850(d)]
   i. Excess emissions report. As required by 40 CFR 63.10(e)(3), the permittee shall submit a report (or a summary report) if measured emissions are in excess of the applicable standard. The report shall contain the information specified in 40 CFR 63.10(e)(3)(v) and be submitted semiannually unless quarterly reports are required as a result of excess emissions.~~quarterly~~. [40 CFR 63.850(d)(1)]
   ii. If there was a malfunction during the reporting period, the permittee shall submit a report that includes the number, duration and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limitation to be exceeded. The report shall also include a description of actions taken by the permittee during a malfunction of an affected source to minimize emissions in accordance with 40 CFR 63.843(f) and 63.844(f), including actions taken to correct a malfunction. [40 CFR 63.850(d)(2)]

g. All reports required by 40 CFR 63, Subpart LL not subject to the requirements in 40 CFR 63.850(b) or (c) shall be sent to the Administrator at the appropriate address listed in 40 CFR 63.13. If acceptable to both the Administrator and the permittee, these reports may be submitted on electronic media. The Administrator retains the right to require submittal of reports subject to 40 CFR 63.850(b) in paper format. [40 CFR 63.850(f)]

h. The Division will notify the permittee in writing of the need for additional time to review the submissions in 40 CFR 63.851(a)(1) through (a)(5) or of approval or intent to deny approval of the submissions in 40 CFR 63.851(a)(1) through (a)(5) within 60 calendar days after receipt of sufficient information to evaluate the submission. The 60-day period begins after the permittee has been notified that the submission is complete. [40 CFR 63.851(a)]
   i. The test plan in 40 CFR 63.847(b); [40 CFR 63.851(a)(1)]
   ii. Request to change limits for operating parameters in 40 CFR 63.847(h)(3); [40 CFR 63.851(a)(2)]
   iii. Request for similar potline monitoring in 40 CFR 63.848(d)(5); [40 CFR 63.851(a)(3)]
   iv. Request for an alternative method in 40 CFR 63.849(e)(2). [40 CFR 63.851(a)(5)]

i. The Division will notify the permittee in writing whether the submission is complete within 30 calendar days of receipt of the original submission or within 30 days of receipt of any supplementary information that is submitted. When a submission is incomplete, the Division will specify the information needed to complete the submission and will give the permittee 30 calendar days after receipt of the notification to provide the information. [40 CFR 63.851(b)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

j. The permittee shall submit to the Division quarterly ambient monitoring data reports. If the maximum 24-hour average primary standard or any of the secondary standards for HF as defined in 401 KAR 53:010, Appendix A, are exceeded more than once annually, than any subsequent exceedance is a violation. Any exceedance of the secondary standards for TF as defined in 401 KAR 53:010, Appendix A, is a violation. Refer to **SECTION D.** [401 KAR 61:165]

k. For Potlines 1-3:
   i. On and after the date specified in 40 CFR 64.7(a) by which the permittee must use monitoring that meets the requirements of 40 CFR 64, the permittee shall submit monitoring reports to the Division in accordance with **SECTION F**. [40 CFR 64.9(a)(1)]
   ii. Refer to Appendix A for reporting requirements under 40 CFR 64.

l. Refer to **SECTION F.**

7. Specific Control Equipment Operating Conditions:

a. The permittee shall install, operate, calibrate, and maintain a continuous parameter monitoring system for each emission control device. The permittee shall submit for approval by the Division a description of the parameter(s) to be monitored, the operating limits, and the monitoring frequency to ensure that the control device is being properly operated and maintained. An explanation of the criteria used for selection of the parameter(s), the operating limits, and the monitoring frequency, including how these relate to emission control also shall be submitted to the Division. Except as provided in 40 CFR 63.848(l), the following monitoring devices shall be installed: [40 CFR 63.848(f)]
   i. For dry alumina scrubbers, devices for the measurement of alumina flow and air flow; [40 CFR 63.848(f)(1)]

b. The owner or operator of an existing affected source that is equipped with a control device and is subject to a PM limit shall: [40 CFR 63.848(g)]
   i. Install and operate a bag leak detection system in accordance with 40 CFR 63.848(f)(6); or [40 CFR 63.848(g)(1)]
   ii. Install and operate a PM CEMS in accordance with 40 CFR 63.848(f)(7); or [40 CFR 63.848(g)(2)]
   iii. Visually inspect the exhaust stack(s) using Method 22 on a twice daily basis (at least 4 hours apart) for evidence of any visible emissions indicating abnormal operations and, shall initiate corrective actions within 1 hour of a visible emissions inspection that indicates abnormal operation. Corrective actions shall include, at a minimum, isolating, shutting down and conducting an internal inspection of the compartment that is the source of the visible emissions that indicate abnormal operations. [40 CFR 63.848(g)(3)]

c. If a monitoring device for a primary control device measures an operating parameter outside the limit(s) established pursuant to 40 CFR 63.847(h) or if visible emissions indicating abnormal operation are observed from the exhaust stack of a control device

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

during a daily inspection, the permittee shall initiate corrective action procedures within 1 hour. Failure to initiate the corrective action procedures within 1 hour or to take the necessary corrective actions to remedy the problem is a violation. [40 CFR 63.848(h)]

d. If the limit for a given operating parameter associated with monitoring a specific control device is exceeded six times in any semiannual reporting period, then any subsequent exceedance in that reporting period is a violation. For the purpose of determining the number of exceedances, no more than one exceedance shall be attributed in any given 24-hour period. [40 CFR 63.848(i)]

e. The permittee may monitor alternative control device operating parameters subject to prior written approval by the Division. [40 CFR 63.848(l)]

f. The permittee shall install, operate, and maintain the dry alumina scrubbers and baghouses in accordance with manufacturer's specifications. [401 KAR 51:017]

g. The permittee shall continuously monitor the alumina bed differential pressure and the baghouse differential pressure. [401 KAR 51:017]

h. Refer to **SECTION E.**

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

SUBJECT ITEM 5 REQUIREMENTS: Paste Production Plant

EU	Equip. Desig.	Cons. Date	Description	Controls	Material	Capacity (tons/hr)
Emission Group III: Green Carbon Wet						
M2-M7	(1E-9E)	6/19/1979; Modified to duct to single stack in 1999	Anode Mix Conveying (3) and Mixers (7)	Procedair Dry Coke Scrubber	Green Anodes	28.9

Units M5, M6, and M7 (The 7 Anode Mixers) include a common pitch scale not listed as a separate unit and prepares materials for two existing presses, Press 1 and Press 2.

APPLICABLE REGULATIONS:

401 KAR 59:010, *New process operations*

401 KAR 63:002, Section 2(4)(bb), 40 C.F.R. 63.840 ~~to~~ through 63.855, Tables 1 ~~to~~ through 4, and Appendix A (Subpart LL), *National Emission Standards for Hazardous Air Pollutants for Primary Aluminum Reduction Plants,* applicable with respect to each existing paste production plant associated with primary aluminum production and located at a major source as defined in 40 CFR 63.2.

1. **Operating Limitations:**
   At all times, the permittee shall operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records and inspection of the source. [40 CFR 63.843(f)]

2. **Emission Limitations:**
   a. The permittee shall install, operate and maintain equipment to capture and control POM and PM emissions from the paste production plant. [40 CFR 63.843(b)]
      i. The emission capture system shall be installed and operated to meet the generally accepted engineering standards for minimum exhaust rates as published by the American Conference of Governmental Industrial Hygienists in Chapters 3 and 5 of "Industrial Ventilation: A Handbook of Recommended Practice" (incorporated by reference; see 40 CFR 63.14); and [40 CFR 63.843(b)(1)]
      ii. Captured emissions shall be routed through a closed system to a dry coke scrubber; [40 CFR 63.843(b)(2)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Compliance Demonstration:
Initial compliance with the POM standards for existing paste production plants in 40 CFR 63.843(b) will be demonstrated through site inspection(s) and review of site records by the Division. [40 CFR 63.847(f)(1)]

b. Emissions of PM shall not exceed 0.082 lb/ton (0.041 kg/Mg) of paste. [40 CFR 63.843(b)(4)]

Compliance Demonstration:

1. The permittee shall determine compliance with the applicable PM emission limit using the following equations and procedures: [40 CFR 63.847(e)]
   A. Compute the emission rate (E_{PMpp}) of PM from each paste production plant using the following equation: [40 CFR 63.847(e)(8)]

$$E_{PMpp} = \frac{(C_s \times Q_{sd})}{(P_b \times K)}$$

Where:
E_{PMpp} = emission rate of PM, lb/ton (kg/mg) of green anode material exiting the paste production plant;
C_s = concentration of PM, mg/dscf (mg/dscm);
Q_{sd} = volumetric flow rate of effluent gas, dscf/hr (dscm/hr);
P_b = quantity of green anode material exiting the paste production plant, ton/hr (mg/hr); and
K = conversion factor, 453,600 mg/lb (106 mg/kg).

2. Refer to **3. Testing Requirements (e) and 7. Specific Control Equipment Operating Conditions (b).**

c. The permittee shall not cause, suffer, allow or permit any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than twenty (20) percent opacity. [401 KAR 59:010, Section 3(1)(a)]

Compliance Demonstration:
Refer to **5. Specific Recordkeeping Requirements** and **7. Specific Control Equipment Operating Conditions.**

d. For all emission units listed above: For emissions from a control device or stack the permittee shall not cause, suffer, allow or permit the emission into the open air of particulate matter from any affected facility which is in excess of the quantity specified in 401 KAR 59:010, Appendix A: [401 KAR 59:010, Section 3(2)]
   a. For process weights < 0.5 tons/hour: 2.34 lbs/hr
   b. For process weights < 30 tons/hour: $E = 3.59P^{0.62}$
   Where

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E = rate of emission in lb/hr; and
P = process weight rate in tons/hr.

Compliance Demonstration:
Compliance with the hourly particulate emission limits described above shall be determined by comparing the allowable rate to the actual rate as calculated below:

$$E_{PM_{ij}} = \frac{P_{ij} \times EF_{PM_j}}{h_{ij}} \times \left(1 - CE_j\right)$$

Where:
i = month;
j = unit;
E_{PMij} = actual average hourly particulate emission rate from unit j during month i (pounds/hour);
P_{ij} = actual specific operating parameter for month i (units/month);
EF_{PMj} = overall uncontrolled particulate emission factor as determined from the most recent performance test or approved by the Division for unit j (pounds/unit);
h_{ij} = actual total hours of operation for unit j during month i (hours/month)
CE_j = overall control efficiency (%) of any air pollution control equipment associated with unit j.

3. Testing Requirements:

a. The permittee shall prepare a site-specific test plan prior to the initial performance test according to the requirements of 40 CFR 63.7(c). The test plan shall include procedures for conducting the initial performance test and for subsequent performance tests required in 40 CFR 63.848 for emission monitoring. In addition to the information required by 40 CFR 63.7, the test plan shall include procedures to ensure a minimum of three runs are performed annually for the primary control system for each source; [40 CFR 63.847(b)(1)]

b. Following approval of the site-specific test plan, the permittee shall conduct a performance test to demonstrate initial compliance according to the procedures in 40 CFR 63.847(d). If a performance test has been conducted on the primary control system for the paste production plant within the 12 months prior to the compliance date, the results of that performance test may be used to demonstrate initial compliance. The permittee shall conduct the performance test: [40 CFR 63.847(c)]
   i. During the first month following: [40 CFR 63.847(c)(1)]
      1) October 17, 2016 for PM testing. [40 CFR 63.847(a)(2)(ii)]
   ii. For an existing paste production plant that was shut down at the time compliance would have otherwise been required and is subsequently restarted, by the 30th day following startup of a paste production plant. The 30-day period starts when the paste production plant produces green anodes. [40 CFR 63.847(c)(3)(iii)]

c. The initial performance test and all subsequent performance tests shall be conducted in accordance with the applicable requirements of the general provisions in 40 CFR 63,

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Subpart A, the approved test plan, and the procedures in 40 CFR 63.847. Performance tests shall be conducted under such conditions as the Division specifies to the permittee based on representative performance of the affected source for the period being tested. Upon request, the permittee shall make available to the Division such records as may be necessary to determine the conditions of performance tests. [40 CFR 63.847(d)]

d. For each paste production plant, the permittee shall measure and record the emission rate of PM exiting the exhaust stacks(s) of the primary emission control system. Using the equation in 40 CFR 63.847(e)(8), the permittee shall compute and record the average of at least three runs each year to determine compliance with the applicable emission limits for PM. Compliance with the PM standards is demonstrated when the PM emission rates are less than or equal to the applicable PM emission limits in 40 CFR 63.843(b)(4). [40 CFR 63.847(f)(2)]

e. Using the procedures in 40 CFR 63.847 and in the approved test plan, the permittee shall monitor PM emissions from each paste production plant on an annual basis. The permittee shall compute and record the annual average of PM emissions from at least three runs to determine compliance with the applicable emission limits. The permittee shall include all valid runs in the annual average. [40 CFR 63.848(n)]

f. The permittee shall use the following reference methods to determine compliance with the applicable emission limits for TF, POM, PM, and conduct visible emissions observations: [40 CFR 63.849(a)]
   i. Method 1 in 40 CFR 60, Appendix A for sample and velocity traverses; [40 CFR 63.849(a)(1)]
   ii. Method 2 in 40 CFR 60, Appendix A for velocity and volumetric flow rate; [40 CFR 63.849(a)(2)]
   iii. Method 3 in 40 CFR 60, Appendix A for gas analysis; [40 CFR 63.849(a)(3)]
   iv. Method 5 in 40 CFR 60, Appendix A or an approved alternative method for the concentration of PM where stack or duct emissions are sampled; [40 CFR 63.849(a)(8)]
   v. Method 22 in 40 CFR 60, Appendix A or an approved alternative method for determination of visual emissions; [40 CFR 63.849(a)(12)]

g. Pursuant to 401 KAR 59:005, Section 2(2) and 401 KAR 50:045, Section 1, performance testing using the reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division.

4. <u>Specific Monitoring Requirements:</u>

a. The permittee shall determine the operating limits and monitoring frequency for each control device that is to be monitored as required in 40 CFR 63.848(f). [40 CFR 63.847(h)]
   i. For a paste production plant, the permittee shall specify and provide the basis or rationale for selecting parameters to be monitored and the associated operating limits for the emission control device. [40 CFR 63.847(h)(2)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

ii. The permittee may redetermine the upper and/or lower operating limits, as appropriate, based on historical data or other information and submit an application to the Division to change the applicable limit(s). The redetermined limits shall become effective upon approval by the Division. [40 CFR 63.847(h)(3)]

b. For each emission unit listed above, the permittee shall monitor the following: [401 KAR 52:020, Section 10]
   i. Monthly hours of operation;
   ii. Monthly material processed;
   iii. Hourly particulate emission rates, calculated monthly.

c. Refer to **SECTION F.**

5. Specific Recordkeeping Requirements:

a. The permittee shall develop a written startup plan as described in 40 CFR 63.847(m)(1) through (3), to be followed during startup periods for paste production plants. Compliance with the startup plan will be demonstrated through site inspection(s) and review of site records by the Division. The written startup plan must contain specific procedures to be followed during startup periods of paste production plants, including the following: [40 CFR 63.847(m)]
   i. Records of time, date, duration of paste production plant startup and any nonroutine actions taken during startup of the paste production plants. [40 CFR 63.847(m)(1)]
   ii. A requirement that the associated emission control system be operating within normal parametric limits prior to startup of the paste production plant. [40 CFR 63.847(m)(2)]
   iii. A requirement to take immediate actions to stop the startup process as soon as practicable and continue to comply with 40 CFR 63.843(f) if the associated emission control system is off line at any time during startup. The paste production plant restart may resume once the associated emission control system is back on line and operating within normal parametric limits. [40 CFR 63.847(m)(3)]

b. The permittee shall maintain files of all information (including all reports and notifications) required by 40 CFR 63.10(b) and by 40 CFR 63, Subpart LL. [40 CFR 63.850(e)]

c. The permittee shall retain each record for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The most recent 2 years of records must be retained at the facility. The remaining 3 years of records may be retained offsite; [40 CFR 63.850(e)(1)]

d. The permittee may retain records on microfilm, on a computer, on computer disks, on magnetic tape, or on microfiche; [40 CFR 63.850(e)(2)]

e. The owner or operator may report required information on paper or on a labeled computer disc using commonly available and compatible computer software; and [40 CFR 63.850(e)(3)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

f. In addition to the general records required by 40 CFR 63.10(b), the permittee shall maintain records of the following information: [40 CFR 63.850(e)(4)]
   i. Records of design information for paste production plant capture systems; [40 CFR 63.850(e)(4)(iv)]
   ii. Records, such as a checklist or the equivalent, demonstrating that the daily visual inspection of the exhaust stack for each control device has been performed as required in 40 CFR 63.848(g), including the results of each inspection; [40 CFR 63.850(e)(4)(xi)]
   iii. Records documenting the corrective actions taken when the limit(s) for an operating parameter established under 40 CFR 63.847(h) were exceeded or when visible emissions indicating abnormal operation were observed from a control device stack during a daily inspection required under 40 CFR 63.848(g). [40 CFR 63.850(e)(4)(xiii)]
   iv. Records of the occurrence and duration of each malfunction of operation (i.e. process equipment) or the air pollution control equipment and monitoring equipment; and [40 CFR 63.850(e)(4)(xvi)]
   v. Records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.843(f) and 63.844(f), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation. [40 CFR 63.850(e)(4)(xvii)]

g. For each emission unit listed above, the permittee shall maintain the following records: [401 KAR 52:020, Section 10]
   i. Monthly hours of operation;
   ii. Monthly material processed;
   iii. Hourly particulate rates, calculated monthly;
   iv. Records of calibration for all monitoring devices;

h. Refer to **SECTION F.**

6. Specific Reporting Requirements:

a. The permittee shall submit recommended accuracy requirements to the Division for review and approval. All monitoring devices required by 40 CFR 63.848 must be certified by the permittee to meet the accuracy requirements and must be calibrated in accordance with the manufacturer's instructions. [40 CFR 63.848(k)]

b. One-time notification of startup of a paste production plant that was shut down for a long period and subsequently restarted. The permittee must provide written notice to the Administrator at least 30 days before the startup. [40 CFR 63.850(a)(9)]

c. Within 60 days after the date of completing each performance test (as defined in 40 CFR 63.2) required by 40 CFR 63, Subpart LL, the permittee shall submit the results of the performance tests following the procedure specified in either 40 CFR 63.850(b)(1) or (b)(2). [40 CFR 63.850(b)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

d. In addition to the information required under 40 CFR 63.10 of the General Provisions, the permittee shall provide semiannual reports containing the information specified in 40 CFR 63.850(d)(1) and (2) to the Division. [40 CFR 63.850(d)]
   i. Excess emissions report. As required by 40 CFR 63.10(e)(3), the permittee shall submit a report (or a summary report) if measured emissions are in excess of the applicable standard. The report shall contain the information specified in 40 CFR 63.10(e)(3)(v) and be submitted semiannually unless quarterly reports are required as a result of excess emissions.~~quarterly~~. [40 CFR 63.850(d)(1)]
   ii. If there was a malfunction during the reporting period, the permittee shall submit a report that includes the number, duration and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limitation to be exceeded. The report shall also include a description of actions taken by the permittee during a malfunction of an affected source to minimize emissions in accordance with 40 CFR 63.843(f) and 63.844(f), including actions taken to correct a malfunction. [40 CFR 63.850(d)(2)]

e. All reports required by 40 CFR 63, Subpart LL not subject to the requirements in 40 CFR 63.850(b) or (c) shall be sent to the Administrator at the appropriate address listed in 40 CFR 63.13. If acceptable to both the Administrator and the permittee, these reports may be submitted on electronic media. The Administrator retains the right to require submittal of reports subject to 40 CFR 63.850(b) in paper format. [40 CFR 63.850(f)]

f. The Division will notify the permittee in writing of the need for additional time to review the submissions in 40 CFR 63.851(a)(1) through (a)(5) or of approval or intent to deny approval of the submissions in 40 CFR 63.851(a)(1) through (a)(5) within 60 calendar days after receipt of sufficient information to evaluate the submission. The 60-day period begins after the permittee has been notified that the submission is complete. [40 CFR 63.851(a)]
   i. The test plan in 40 CFR 63.847(b); [40 CFR 63.851(a)(1)]
   ii. Request to change limits for operating parameters in 40 CFR 63.847(h)(3); [40 CFR 63.851(a)(2)]

g. The Division will notify the permittee in writing whether the submission is complete within 30 calendar days of receipt of the original submission or within 30 days of receipt of any supplementary information that is submitted. When a submission is incomplete, the Division will specify the information needed to complete the submission and will give the permittee 30 calendar days after receipt of the notification to provide the information. [40 CFR 63.851(b)]

h. Refer to **SECTION F.**

7. Specific Control Equipment Operating Conditions:

a. The permittee shall install, operate, calibrate, and maintain a continuous parameter monitoring system for each emission control device. The permittee shall submit for

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

approval by the Division a description of the parameter(s) to be monitored, the operating limits, and the monitoring frequency to ensure that the control device is being properly operated and maintained. An explanation of the criteria used for selection of the parameter(s), the operating limits, and the monitoring frequency, including how these relate to emission control also shall be submitted to the Division. Except as provided in 40 CFR 63.848(l), the following monitoring devices shall be installed: [40 CFR 63.848(f)]

i. For dry coke scrubbers, devices for the measurement of coke flow and air flow; [40 CFR 63.848(f)(2)]
ii. For emission sources control device exhaust streams for which the permittee chooses to demonstrate continuous compliance through bag leak detection systems the permittee shall install and operate a bag leak detection system according to the requirements in 40 CFR 63.848(o), and the permittee shall set the operating limit such that the sum of the durations of bag leak detection system alarms does not exceed 5 percent of the process operating time during a 6-month period. [40 CFR 63.848(f)(6)]
iii. For emission sources control device exhaust streams for which the permittee chooses to demonstrate continuous compliance through a PM CEMS, the permittee shall install and operate a PM CEMS according to the requirements in 40 CFR 63.848(p). The permittee shall determine continuous compliance averaged on a rolling 30 operating day basis, updated at the end of each new operating day. All valid hours of data from 30 successive operating days shall be included in the arithmetic average. Compliance is demonstrated when the 30 operating day PM emissions are equal to or less than the applicable emission limits in 40 CFR 63.843. [40 CFR 63.848(f)(7)]

b. The owner or operator of an existing affected source that is equipped with a control device and is subject to a PM limit shall: [40 CFR 63.848(g)]
   i. Install and operate a bag leak detection system in accordance with 40 CFR 63.848(f)(6); or [40 CFR 63.848(g)(1)]
   ii. Install and operate a PM CEMS in accordance with 40 CFR 63.848(f)(7); or [40 CFR 63.848(g)(2)]
   iii. Visually inspect the exhaust stack(s) using Method 22 on a twice daily basis (at least 4 hours apart) for evidence of any visible emissions indicating abnormal operations and, shall initiate corrective actions within 1 hour of a visible emissions inspection that indicates abnormal operation. Corrective actions shall include, at a minimum, isolating, shutting down and conducting an internal inspection of the compartment that is the source of the visible emissions that indicate abnormal operations. [40 CFR 63.848(g)(3)]

c. If a monitoring device for a primary control device measures an operating parameter outside the limit(s) established pursuant to 40 CFR 63.847(h) or if visible emissions indicating abnormal operation are observed from the exhaust stack of a control device during a daily inspection, the permittee shall initiate corrective action procedures within 1 hour. Failure to initiate the corrective action procedures within 1 hour or to take the necessary corrective actions to remedy the problem is a violation. [40 CFR 63.848(h)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

d. If the limit for a given operating parameter associated with monitoring a specific control device is exceeded six times in any semiannual reporting period, then any subsequent exceedance in that reporting period is a violation. For the purpose of determining the number of exceedances, no more than one exceedance shall be attributed in any given 24-hour period. [40 CFR 63.848(i)]

e. The permittee may monitor alternative control device operating parameters subject to prior written approval by the Division. [40 CFR 63.848(l)]

f. Refer to **SECTION E.**

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

SUBJECT ITEM 6 REQUIREMENTS: Anode Bake Furnace

EU	Equip. Desig.	Cons. Date	Description	Controls	Material	Capacity
Emission Group IV: Anode Bake Furnace						
N2	(EE)	8/4/1972; Refurbished 2007	Anode Bake Furnace ("261 Furnace")	A-446 Dry Scrubber/ Baghouse System	Green Anodes; Natural Gas	17.74 tons/hr*; 51.0 MMBtu/hr

*Based on an annual average

APPLICABLE REGULATIONS:
401 KAR 51:017, *Prevention of significant deterioration of air quality*
401 KAR 53:010, *Ambient air quality standards* for HF & TF
401 KAR 59:010, *New process operations*
401 KAR 63:002, Section 2(4)(bb), 40 C.F.R. 63.840 ~~to~~ through 63.855, Tables 1 ~~to~~ through 4, and Appendix A (Subpart LL), *National Emission Standards for Hazardous Air Pollutants for Primary Aluminum Reduction Plants,* applicable with respect to each existing anode bake furnace associated with primary aluminum production and located at a major source as defined in 40 CFR 63.2.
40 CFR 64, *Compliance Assurance Monitoring,* applicable to the Anode Bake Furnace with respect to PM_{10}. Refer to Appendix A-1.

PRECLUDED REGULATIONS:
401 KAR 51:017, *Prevention of significant deterioration of air quality*

1. **Operating Limitations:**
   a. At all times, the permittee shall operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records and inspection of the source. [40 CFR 63.843(f) and 63.844(f)]

   b. The permittee shall install and operate an advanced furnace firing and control system to minimize natural gas usage per unit of baked anode production and thus, CO emissions. [401 KAR 51:017]

   c. Refer to **SECTION D.**

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

2. Emission Limitations:

a. The permittee shall not discharge or cause to be discharged into the atmosphere any emissions of TF, POM, PM or mercury in excess of the limits in 40 CFR 63.843(c)(1) through (4). [40 CFR 63.843(c)]

i. Emissions of TF shall not exceed 0.20 lb/ton (0.10 kg/Mg) of green anode; [40 CFR 63.843(c)(1)]

ii. Emissions of POM shall not exceed 0.18 lb/ton (0.09 kg/Mg) of green anode; [40 CFR 63.843(c)(2)]

iii. Emissions of PM shall not exceed 0.20 lb/ton (0.10 kg/Mg) of green anode; and [40 CFR 63.843(c)(3)]

iv. Emissions of mercury shall not exceed 1.7 µg/dscm. [40 CFR 63.843(c)(4)]

Compliance Demonstration:

1. The permittee shall determine compliance with the applicable TF, POM, PM or Hg emission limits using the following equations and procedures: [40 CFR 63.847(e)]

A. Compute the emission rate (E_b) of TF, POM or PM from each anode bake furnace using the following equation: [40 CFR 63.847(e)(3)]

$$E_b = \frac{(C_s \times Q_{sd})}{(P_b \times K)}$$

Where:
E_b= emission rate of TF, POM or PM, lb/ton (kg/mg) of green anodes;
C_s = concentration of TF, POM or PM, mg/dscf (mg/dscm);
Q_{sd} = volumetric flow rate of effluent gas, dscf/hr (dscm/hr);
P_b = quantity of green anode material placed in the furnace, ton/hr (mg/hr); and
K = conversion factor, 453,600 mg/lb (106 mg/kg).

B. Compliance with the anode bake furnace Hg emission standard is demonstrated if the Hg concentration of the exhaust from the anode bake furnace control device is equal to or less than the applicable concentration standard in 40 CFR 63.843(c)(4). [40 CFR 63.847(e)(4)]

C. Determine the weight of the green anode material placed in the anode bake furnace using the monitoring devices required in 40 CFR 63.848(j). [40 CFR 63.847(e)(5)]

D. Determine the rate of green anode material introduced into the furnace by dividing the number of operating hours in the calendar month into the weight of green anode material used during the calendar month in which the performance test was conducted. [40 CFR 63.847(e)(7)]

2. Refer to **3. Testing Requirements (e)** and **(f)** and **7. Specific Control Equipment Operating Conditions (b).**

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

b. The permittee shall not cause, suffer, allow or permit any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than twenty (20) percent opacity. [401 KAR 59:010, Section 3(1)(a)]

Compliance Demonstration:
Refer to **5. Specific Recordkeeping Requirements** and **7. Specific Control Equipment Operating Conditions.**

c. For all emission units listed above: For emissions from a control device or stack the permittee shall not cause, suffer, allow or permit the emission into the open air of particulate matter from any affected facility which is in excess of the quantity specified in 401 KAR 59:010, Appendix A: [401 KAR 59:010, Section 3(2)]
   i. For process weights < 0.5 tons/hour: 2.34 lbs/hr
   ii. For process weights < 30 tons/hour: $E = 3.59P^{0.62}$
   Where
   E = rate of emission in lb/hr; and
   P = process weight rate in tons/hr.

Compliance Demonstration:
Compliance with the hourly particulate emission limits described above shall be determined by comparing the allowable rate to the actual rate as calculated below:

$$E_{PM_{ij}} = \frac{P_{ij} \times EF_{PM_j}}{h_{ij}} \times \left(1 - CE_j\right)$$

Where:
i = month;
j = unit;
E_{PMij} = actual average hourly particulate emission rate from unit j during month i (pounds/hour);
P_{ij} = actual specific operating parameter for month i (units/month);
EF_{PMj} = overall uncontrolled particulate emission factor as determined from the most recent performance test or approved by the Division for unit j (pounds/unit);
h_{ij} = actual total hours of operation for unit j during month i (hours/month)
CE_j = overall control efficiency (%) of any air pollution control equipment associated with unit j.

d. The permittee shall not allow PM/PM_{10} emissions from the Anode Bake Furnace to exceed 5.14 lbs/hr based on a 3-hour average. [To preclude 401 KAR 51:017]

Compliance Demonstration:
Refer to **3. Testing Requirements (k)** and **4. Specific Monitoring Requirements (d)**.

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

e. For SO_2 standards, refer to **SECTION D 3.**

3. Testing Requirements:

a. The permittee shall prepare a site-specific test plan prior to the initial performance test according to the requirements of 40 CFR 63.7(c). The test plan shall include procedures for conducting the initial performance test and for subsequent performance tests required in 40 CFR 63.848 for emission monitoring. In addition to the information required by 40 CFR 63.7, the test plan shall include: [40 CFR 63.847(b)]
   i. Procedures to ensure a minimum of three runs are performed annually for the primary control system for each source; [40 CFR 63.847(b)(1)]
   ii. For a source with a single control device exhausted through multiple stacks, procedures to ensure that at least three runs are performed annually by a representative sample of the stacks satisfactory to the Division; [40 CFR 63.847(b)(2)]
   iii. Procedures for sampling single stacks associated with multiple anode bake furnaces; [40 CFR 63.847(b)(4)]

b. The permittee shall conduct the performance test: For an existing anode bake furnace that was shut down at the time compliance would have otherwise been required and is subsequently restarted, by the 45th day from the start of the second anode bake cycle (but no later than the 180th day from the startup of the anode bake furnace). [40 CFR 63.847(c)(3)(ii)]

c. All performance tests shall be conducted in accordance with the applicable requirements of the general provisions in 40 CFR 63, Subpart A, the approved test plan, and the procedures in 40 CFR 63.847. Performance tests shall be conducted under such conditions as the Division specifies to the permittee based on representative performance of the affected source for the period being tested. Upon request, the permittee shall make available to the Division such records as may be necessary to determine the conditions of performance tests. [40 CFR 63.847(d)]

d. If the permittee has performed more than one test of primary emission control device(s) for a bake furnace during the previous consecutive 12 months, the average of all runs performed in the previous 12-month period shall be used to determine the contribution from the primary emission control system. [40 CFR 63.847(d)(3)]

e. For each anode bake furnace, the permittee shall measure and record the emission rate of TF, POM, PM and Hg exiting the exhaust stacks(s) of the primary emission control system. In accordance with 40 CFR 63.847(e)(3) and (4), the permittee shall compute and record the average of at least three runs each year to determine compliance with the applicable emission limits for TF, POM, PM and Hg. Compliance is demonstrated when the emission rates of TF, POM, PM and Hg are equal to or less than the applicable TF, POM, PM and Hg emission limits in 40 CFR 63.843. [40 CFR 63.847(d)(4)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

f. Using the procedures in 40 CFR 63.847 and in the approved test plan, the permittee shall determine TF, PM, Hg and POM emissions from each anode bake furnace on an annual basis. The permittee shall compute and record the annual average of TF, PM, Hg and POM emissions from at least three runs to determine compliance with the applicable emission limits. A minimum of four dscm per run must be collected for monitoring of Hg emissions. The owner or operator must include all valid runs in the annual average. [40 CFR 63.848(c)]

g. The permittee shall use the following reference methods to determine compliance with the applicable emission limits for TF, POM, PM, and conduct visible emissions observations: [40 CFR 63.849(a)]
   i. Method 1 in 40 CFR 60, Appendix A for sample and velocity traverses; [40 CFR 63.849(a)(1)]
   ii. Method 2 in 40 CFR 60, Appendix A for velocity and volumetric flow rate; [40 CFR 63.849(a)(2)]
   iii. Method 3 in 40 CFR 60, Appendix A for gas analysis; [40 CFR 63.849(a)(3)]
   iv. Method 13A or Method 13B in 40 CFR 60, Appendix A, or an approved alternative, for the concentration of TF where stack or duct emissions are sampled; [40 CFR 63.849(a)(4)]
   v. Method 315 in 40 CFR 63, Appendix A or an approved alternative method for the concentration of POM where stack or duct emissions are sampled; [40 CFR 63.849(a)(6)]
   vi. Method 5 in 40 CFR 60, Appendix A or an approved alternative method for the concentration of PM where stack or duct emissions are sampled; [40 CFR 63.849(a)(8)]
   vii. Method 29 in 40 CFR 60, Appendix A or an approved alternative method for the concentration of mercury, nickel and arsenic where stack or duct emissions are sampled; [40 CFR 63.849(a)(10)]
      1) Pursuant to Section 1.2.1 of Method 29 in 40 CFR 60, Appendix A, mercury emissions can be measured, alternatively, using Method 101A of Appendix B in 40 CFR 61.
   ~~vii.~~viii. Method 22 in 40 CFR 60, Appendix A or an approved alternative method for determination of visual emissions; [40 CFR 63.849(a)(12)]

h. The permittee may use an alternative test method for TF or POM emissions providing: [40 CFR 63.849(e)]
   i. The permittee has already demonstrated the equivalency of the alternative method for a specific plant and has received previous approval from the U.S. EPA or the Division for TF or POM measurements using the alternative method; or [40 CFR 63.849(e)(1)]
   ii. The permittee demonstrates to the satisfaction of the Division that the results from the alternative method meet the criteria specified in 40 CFR 63.848(d)(1) and (d)(3) through (d)(6). The results from the alternative method shall be based on simultaneous sampling using the alternative method and the following reference methods: [40 CFR 63.849(e)(2)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

1) For TF, Methods 13 and 14 or Method 14A in 40 CFR 60, Appendix A; or [40 CFR 63.849(e)(2)(i)]
2) For POM, Method 315 in 40 CFR 63, Appendix A and Method 14 in 40 CFR 60, Appendix A. [40 CFR 63.849(e)(2)(ii)]

i. A sample of green anode and baked anode shall be tested monthly for sulfur content.

j. A sample of packing coke shall be tested quarterly for sulfur content.

k. The following compliance tests shall be performed to demonstrate compliance with the emission limitations listed above and to develop emission factors:
   i. The permittee shall perform testing according to Reference Method 10 for CO emissions once within the 5 year permit term of permit V-19-010.
   ii. The permittee shall perform testing according to Reference Method 6 for SO_2 emissions once within the 5 year permit term of permit V-19-010. The test shall be performed within 180 days of the issuance of permit V-19-010.
   iii. The permittee shall conduct a performance test for particulate emissions (filterable PM, $PM_{10,}$ $PM_{2.5}$ and Condensable Particulate) from each stack once during the within the 5 year permit term of permit V-19-010. The tests shall be performed according to Reference Method 5 and Reference Method 201A/202 for particulate emissions (filterable PM, $PM_{10,}$ $PM_{2.5}$ and Condensable Particulate).
   iv. The permittee may use other test methods as approved by the Division.

l. Pursuant to 401 KAR 59:005, Section 2(2) and 401 KAR 50:045, Section 1, performance testing using the reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division.

4. <u>Specific Monitoring Requirements:</u>

a. The permittee shall determine the operating limits and monitoring frequency for each control device that is to be monitored as required in 40 CFR 63.848(f). [40 CFR 63.847(h)]
   i. For anode bake furnaces, the permittee shall determine upper and/or lower operating limits, as appropriate, for each monitoring device for the emission control system from the values recorded during each of the runs performed during the initial performance test and from historical data from previous performance tests conducted by the methods specified in 40 CFR 63, Subpart LL. [40 CFR 63.847(h)(1)]
   ii. The permittee may redetermine the upper and/or lower operating limits, as appropriate, based on historical data or other information and submit an application to the Division to change the applicable limit(s). The redetermined limits shall become effective upon approval by the Division. [40 CFR 63.847(h)(3)]

b. The permittee shall install, operate, and maintain a monitoring device to determine the daily weight of green anode material placed in the anode bake furnace. The weight of green anode material may be determined by monitoring the weight of all anodes or by monitoring

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

the number of anodes placed in the furnace and determining an average weight from measurements of a representative sample of anodes. [40 CFR 63.848(j)]

c. The permittee shall monitor the following: [401 KAR 52:020, Section 10]
   i. Monthly hours of operation;
   ii. Monthly material processed;
   iii. Hourly PM emissions, calculated monthly.

d. For the Anode Bake Furnace, refer to Appendix A for CAM requirements pursuant to 40 CFR 64.

e. Refer to **SECTION F.**

5. Specific Recordkeeping Requirements:

a. The permittee shall develop a written startup plan as described in 40 CFR 63.847(l)(1) through (4), to be followed during startup periods of bake furnaces. Compliance with the startup plan will be demonstrated through site inspection(s) and review of site records by the Division. The written startup plan must contain specific procedures to be followed during startup periods of anode bake furnaces, including the following: [40 CFR 63.847(l)]
   i. A requirement to develop an anode bake furnace startup schedule. [40 CFR 63.847(l)(1)]
   ii. Records of time, date, duration of anode bake furnace startup and any nonroutine actions taken during startup of the furnaces. [40 CFR 63.847(l)(2)]
   iii. A requirement that the associated emission control system be operating within normal parametric limits prior to startup of the anode bake furnace. [40 CFR 63.847(l)(3)]
   iv. A requirement to take immediate actions to stop the startup process as soon as practicable and continue to comply with 40 CFR 63.843(f) if the associated emission control system is off line at any time during startup. The anode bake furnace restart may resume once the associated emission control system is back on line and operating within normal parametric limits. [40 CFR 63.847(l)(4)]

b. The permittee shall maintain files of all information (including all reports and notifications) required by 40 CFR 63.10(b) and by 40 CFR 63, Subpart LL. [40 CFR 63.850(e)]

c. The permittee shall retain each record for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The most recent 2 years of records must be retained at the facility. The remaining 3 years of records may be retained offsite; [40 CFR 63.850(e)(1)]

d. The permittee may retain records on microfilm, on a computer, on computer disks, on magnetic tape, or on microfiche; [40 CFR 63.850(e)(2)]

e. The permittee may report required information on paper or on a labeled computer disc using commonly available and compatible computer software; and [40 CFR 63.850(e)(3)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

f. In addition to the general records required by 40 CFR 63.10(b), the permittee shall maintain records of the following information: [40 CFR 63.850(e)(4)]
   i. Daily production rate of green anode material placed in the anode bake furnace; [40 CFR 63.850(e)(4)(ii)]
   ii. Records, such as a checklist or the equivalent, demonstrating that the daily visual inspection of the exhaust stack for each control device has been performed as required in 40 CFR 63.848(g), including the results of each inspection; [40 CFR 63.850(e)(4)(xi)]
   iii. Records documenting the corrective actions taken when the limit(s) for an operating parameter established under 40 CFR 63.847(h) were exceeded or when visible emissions indicating abnormal operation were observed from a control device stack during a daily inspection required under 40 CFR 63.848(g). [40 CFR 63.850(e)(4)(xiii)]
   iv. Records documenting the portion of TF that is measured as particulate matter and the portion that is measured as gaseous when the particulate and gaseous fractions are quantified separately using an approved test method; [40 CFR 63.850(e)(4)(xv)]
   v. Records of the occurrence and duration of each malfunction of operation (i.e. process equipment) or the air pollution control equipment and monitoring equipment; and [40 CFR 63.850(e)(4)(xvi)]
   vi. Records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.843(f) and 63.844(f), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation. [40 CFR 63.850(e)(4)(xvii)]

g. The permittee shall maintain the following records:
   i. Monthly hours of operation;
   ii. Monthly material processed;
   iii. Records of sulfur content measurements of green anodes, baked anodes, and packing coke used in quantifying SO_2 emissions using the Century Aluminum SO_2 Calculation Engine.

h. For the Anode Bake Furnace:
   i. The permittee shall comply with the recordkeeping requirements specified in **SECTION F**. The permittee shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan required pursuant to 40 CFR 64.8 and any activities undertaken to implement a quality improvement plan, and other supporting information required to be maintained under 40 CFR 64 (such as data used to document the adequacy of monitoring, or records of monitoring maintenance or corrective actions). [40 CFR 64.9(b)(1)]
   ii. Instead of paper records, the permittee may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements. [40 CFR 64.9(b)(1)]

i. Refer to **SECTION F.**

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

6. Specific Reporting Requirements:

a. The permittee shall submit recommended accuracy requirements to the Division for review and approval. All monitoring devices required by 40 CFR 63.848 must be certified by the permittee to meet the accuracy requirements and must be calibrated in accordance with the manufacturer's instructions. [40 CFR 63.848(k)]

b. One-time notification of startup of an existing anode bake furnace that was shut down for a long period and subsequently restarted. The permittee must provide written notice to the Administrator at least 30 days before the startup. [40 CFR 63.850(a)(9)]

c. Within 60 days after the date of completing each performance test (as defined in 40 CFR 63.2) required by 40 CFR 63, Subpart LL, the permittee shall submit the results of the performance tests following the procedure specified in either 40 CFR 63.850(b)(1) or (b)(2). [40 CFR 63.850(b)]

d. In addition to the information required under 40 CFR 63.10 of the General Provisions, the permittee shall provide semiannual reports containing the information specified in 40 CFR 63.850(d)(1) and (2) to the Division. [40 CFR 63.850(d)]

   i. Excess emissions report. As required by 40 CFR 63.10(e)(3), the permittee shall submit a report (or a summary report) if measured emissions are in excess of the applicable standard. The report shall contain the information specified in 40 CFR 63.10(e)(3)(v) and be submitted semiannually unless quarterly reports are required as a result of excess emissions.~~quarterly~~. [40 CFR 63.850(d)(1)]

   ii. If there was a malfunction during the reporting period, the permittee shall submit a report that includes the number, duration and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limitation to be exceeded. The report shall also include a description of actions taken by the permittee during a malfunction of an affected source to minimize emissions in accordance with 40 CFR 63.843(f) and 63.844(f), including actions taken to correct a malfunction. [40 CFR 63.850(d)(2)]

e. All reports required by 40 CFR 63, Subpart LL not subject to the requirements in 40 CFR 63.850(b) or (c) shall be sent to the Administrator at the appropriate address listed in 40 CFR 63.13. If acceptable to both the Administrator and the permittee, these reports may be submitted on electronic media. The Administrator retains the right to require submittal of reports subject to 40 CFR 63.850(b) in paper format. [40 CFR 63.850(f)]

f. The Division will notify the permittee in writing of the need for additional time to review the submissions in 40 CFR 63.851(a)(1) through (a)(5) or of approval or intent to deny approval of the submissions in 40 CFR 63.851(a)(1) through (a)(5) within 60 calendar days after receipt of sufficient information to evaluate the submission. The 60-day period begins after the permittee has been notified that the submission is complete. [40 CFR 63.851(a)]

   i. The test plan in 40 CFR 63.847(b); [40 CFR 63.851(a)(1)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

ii. Request to change limits for operating parameters in 40 CFR 63.847(h)(3); [40 CFR 63.851(a)(2)]
iii. Request for an alternative method in 40 CFR 63.849(e)(2). [40 CFR 63.851(a)(5)]

g. The Division will notify the permittee in writing whether the submission is complete within 30 calendar days of receipt of the original submission or within 30 days of receipt of any supplementary information that is submitted. When a submission is incomplete, the Division will specify the information needed to complete the submission and will give the permittee 30 calendar days after receipt of the notification to provide the information. [40 CFR 63.851(b)]

h. For the Anode Bake Furnace:
   i. On and after the date specified in 40 CFR 64.7(a) by which the permittee must use monitoring that meets the requirements of 40 CFR 64, the permittee shall submit monitoring reports to the Division in accordance with **SECTION F**. [40 CFR 64.9(a)(1)]
   ii. Refer to Appendix A for reporting requirements under 40 CFR 64.

i. Refer to **SECTION F.**

7. Specific Control Equipment Operating Conditions:

a. The permittee shall install, operate, calibrate, and maintain a continuous parameter monitoring system for each emission control device. The permittee shall submit for approval by the Division a description of the parameter(s) to be monitored, the operating limits, and the monitoring frequency to ensure that the control device is being properly operated and maintained. An explanation of the criteria used for selection of the parameter(s), the operating limits, and the monitoring frequency, including how these relate to emission control also shall be submitted to the Division. Except as provided in 40 CFR 63.848(l), the following monitoring devices shall be installed: [40 CFR 63.848(f)]
   i. For dry alumina scrubbers, devices for the measurement of alumina flow and air flow; [40 CFR 63.848(f)(1)]
   ii. For emission sources control device exhaust streams for which the permittee chooses to demonstrate continuous compliance through bag leak detection systems the permittee shall install and operate a bag leak detection system according to the requirements in 40 CFR 63.848(o), and the permittee shall set the operating limit such that the sum of the durations of bag leak detection system alarms does not exceed 5 percent of the process operating time during a 6-month period. [40 CFR 63.848(f)(6)]
   iii. For emission sources control device exhaust streams for which the permittee chooses to demonstrate continuous compliance through a PM CEMS, the permittee shall install and operate a PM CEMS according to the requirements in 40 CFR 63.848(p). The permittee shall determine continuous compliance averaged on a rolling 30 operating day basis, updated at the end of each new operating day. All valid hours of data from 30 successive operating days shall be included in the arithmetic average. Compliance

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

is demonstrated when the 30 operating day PM emissions are equal to or less than the applicable emission limits in 40 CFR 63.843. [40 CFR 63.848(f)(7)]

b. The owner or operator of an existing affected source that is equipped with a control device and is subject to a PM limit shall: [40 CFR 63.848(g)]
   i. Install and operate a bag leak detection system in accordance with 40 CFR 63.848(f)(6); or [40 CFR 63.848(g)(1)]
   ii. Install and operate a PM CEMS in accordance with 40 CFR 63.848(f)(7); or [40 CFR 63.848(g)(2)]
   iii. Visually inspect the exhaust stack(s) using Method 22 on a twice daily basis (at least 4 hours apart) for evidence of any visible emissions indicating abnormal operations and, shall initiate corrective actions within 1 hour of a visible emissions inspection that indicates abnormal operation. Corrective actions shall include, at a minimum, isolating, shutting down and conducting an internal inspection of the compartment that is the source of the visible emissions that indicate abnormal operations. [40 CFR 63.848(g)(3)]

c. If a monitoring device for a primary control device measures an operating parameter outside the limit(s) established pursuant to 40 CFR 63.847(h) or if visible emissions indicating abnormal operation are observed from the exhaust stack of a control device during a daily inspection, the permittee shall initiate corrective action procedures within 1 hour. Failure to initiate the corrective action procedures within 1 hour or to take the necessary corrective actions to remedy the problem is a violation. [40 CFR 63.848(h)]

d. If the limit for a given operating parameter associated with monitoring a specific control device is exceeded six times in any semiannual reporting period, then any subsequent exceedance in that reporting period is a violation. For the purpose of determining the number of exceedances, no more than one exceedance shall be attributed in any given 24-hour period. [40 CFR 63.848(i)]

e. The permittee may monitor alternative control device operating parameters subject to prior written approval by the Division. [40 CFR 63.848(l)]

f. Refer to **SECTION E**.

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

SUBJECT ITEM 7 REQUIREMENTS: Holding Furnaces

EU	Equip. Desig.	Cons. Date	Description	Controls	Material	Capacity
Emission Group X: Casthouse Operations						
F1	(I1-I6)	8/4/1972	Holding Furnaces (6) with In-Line Degassers	None	Aluminum; Natural Gas	25.75 tons/hr*; 91.2 MMBtu/hr (combined)
F2	(I7, I8)	8/4/1979	Holding Furnaces (2) with In-Line Degassers	None	Aluminum; Natural Gas	8.58 tons/hr*; 30.4 MMBtu/hr (combined)

*Based on an annual average

Under 40 CFR 63, Subpart RRR, these Holding Furnaces are classified as existing Group 1 Furnaces without add-on pollution control devices. Reactive flux is used as needed in both the holding furnaces and their associated in-line fluxers and the furnaces process only "clean charge".

APPLICABLE REGULATIONS:
401 KAR 53:010, *Ambient air quality standards* for HF
401 KAR 59:010, *New process operations* for unit F2
401 KAR 61:020, *Existing process operations* for unit F1
401 KAR 63:002, Section 2(4)(ccc), 40 C.F.R. 63.1500 ~~to~~ through 63.1519, Tables 1 though~~o~~ 3, and Appendix A (Subpart RRR), *National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production*

1. **Operating Limitations:**
   a. At all times, the permittee shall operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [40 CFR 63.1506(a)(5)]

   b. The permittee shall provide and maintain easily visible labels posted at each group 1 furnace and in-line fluxer that identifies the applicable emission limits and means of compliance, including: [40 CFR 63.1506(b)]
      i. The type of affected source or emission unit (e.g., Group 1 Furnace, In-Line Fluxer). [40 CFR 63.1506(b)(1)]
      ii. The applicable operational standards and control methods (work practice or control device). This includes, but is not limited to, the type of charge to be used for a furnace (e.g. clean scrap only, etc.), flux materials and addition practices, and the applicable operating parameter ranges and requirements as incorporated in the OM&M plan. [40 CFR 63.1506(b)(2)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

c. The permittee shall: [40 CFR 63.1506(d)]
   i. Except as provided in 40 CFR 63.1506(d)(3), install and operate a device that measures and records or otherwise determine the weight of feed/charge (or throughput) for each operating cycle or time period used in the performance test; and [40 CFR 63.1506(d)(1)]
   ii. Operate each weight measurement system or other weight determination procedure in accordance with the OM&M plan. [40 CFR 63.1506(d)(2)]
   iii. The permittee may choose to measure and record aluminum production weight from an affected source or emission unit rather than feed/charge weight to an affected source or emission unit, provided that: [40 CFR 63.1506(d)(3)]
      1) The aluminum production weight, rather than feed/charge weight is measured and recorded for all emission units within a SAPU; and [40 CFR 63.1506(d)(3)(i)]
      2) All calculations to demonstrate compliance with the emission limits for SAPUs are based on aluminum production weight rather than feed/charge weight. [40 CFR 63.1506(d)(3)(ii)]

d. The permittee shall: [40 CFR 63.1506(n)]
   i. Maintain the total reactive chlorine flux injection rate and fluorine flux injection rate for each operating cycle or time period used in the performance test, at or below the average rate established during the performance test. [40 CFR 63.1506(n)(1)]
   ii. Operate each furnace in accordance with the work practice/pollution prevention measures documented in the OM&M plan and within the parameter values or ranges established in the OM&M plan. [40 CFR 63.1506(n)(2)]
   iii. Operate each group 1 melting/holding furnace subject to the emission standards in 40 CFR 63.1505(i)(2) using only clean charge as the feedstock. [40 CFR 63.1506(n)(3)]

e. When a process parameter or add-on air pollution control device operating parameter deviates from the value or range established during the performance test and incorporated in the OM&M plan, the permittee shall initiate corrective action. Corrective action must restore operation of the affected source or emission unit (including the process or control device) to its normal or usual mode of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. Corrective actions taken must include follow-up actions necessary to return the process or control device parameter level(s) to the value or range of values established during the performance test and steps to prevent the likely recurrence of the cause of a deviation. [40 CFR 63.1506(p)]

2. Emission Limitations:

a. For each group 1 furnace, the permittee shall use the limits in 40 CFR 63.1505(i) to determine the emission standards for a SAPU: [40 CFR 63.1505(i)]
   i. Particulate matter (PM) emissions shall not exceed 0.80 lb/ton (0.40 kg/Mg) of feed/charge. [40 CFR 63.1505(i)(2)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

ii. Hydrofluoric acid (HF) emissions shall not exceed 0.40 lb/ton (0.20 kg/Mg) of feed/charge. [40 CFR 63.1505(i)(4)]
iii. Hydrochloric acid (HCl) emissions shall not exceed 0.40 lb/ton (0.20 kg/Mg) of feed/charge. [40 CFR 63.1505(i)(4)]
iv. The permittee may determine the emission standards for a SAPU by applying the group 1 furnace limits on the basis of the aluminum production weight in each group 1 furnace, rather than on the basis of feed/charge. [40 CFR 63.1505(i)(6)]

b. Except as provided in 40 CFR 63.1505(j)(3) for an in-line fluxer using no reactive flux material, the owner or operator of an in-line fluxer shall use the limits in 40 CFR 63.1505(j) to determine the emission standards for a SAPU. [40 CFR 63.1505(j)]
i. Hydrochloric acid (HCl) emissions shall not exceed 0.04 lb/ton (0.02 kg/Mg) of feed/charge; [40 CFR 63.1505(j)(1)]
ii. Particulate matter (PM) emissions shall not exceed 0.01 lb/ton (0.005 kg/Mg) of feed/charge. [40 CFR 63.1505(j)(2)]
iii. The permittee may determine the emission standards for a SAPU by applying the in-line fluxer limits on the basis of the aluminum production weight in each in-line fluxer, rather than on the basis of feed/charge. [40 CFR 63.1505(j)(5)]

Compliance Demonstration:

1. Compliance shall be by complying with **3. Testing Requirements**, **4. Specific Monitoring Requirements**, and **5. Specific Recordkeeping Requirements.**

2. The permittee shall comply with the emission limits calculated using the equations for PM, HCl and HF in 40 CFR 63.1505(k)(1) and (2) for each secondary aluminum processing unit (SAPU). [40 CFR 63.1505(k)]
   i. The permittee shall not discharge or allow to be discharged to the atmosphere any 3-day, 24-hour rolling average emissions of PM, HCl, or HF in excess of: [40 CFR 63.1505(k)(1) and (2)]

$$L_{c_{PM/HCl/HF}} = \frac{\sum_{i=1}^{n}(L_{ti_{PM/HCl/HF}} \times T_{ti})}{\sum_{i=1}^{n} T_{ti}}$$

Where:

$L_{ti_{PM/HCl/HF}}$ = The PM, HCl, or HF emission limit for individual emission unit *i* in 40 CFR 63.1505(i) for a group 1 furnace or in 40 CFR 63.1505(j) for an in-line fluxer;

T_{ti} = The mass of feed/charge for 24 hours for individual emission unit *i*; and

$L_{c_{PM/HCl/HF}}$ = The daily PM, HCl, or HF emission limit for the secondary aluminum processing unit which is used to calculate the 3-day, 24-hour PM, HCl, or HF emission limit applicable to the SAPU.

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Note for PM calculation: In-line fluxers using no reactive flux materials cannot be included in this calculation since they are not subject to the PM limit. [40 CFR 63.1505(k)(1)]

Note for HCl or HF calculation: Only uncontrolled group 1 furnaces are included in this HF limit calculation. In-line fluxers using no reactive flux materials cannot be included in this calculation since they are not subject to the HCl or HF limit. [40 CFR 63.1505(k)(2)]

ii. A SAPU at a secondary aluminum production facility may demonstrate compliance with the emission limits of 40 CFR 63.1505(k)(1) through (3) by demonstrating that each emission unit within the SAPU is in compliance with the applicable emission limits of 40 CFR 63.1505(i) and (j). [40 CFR 63.1505(k)(4)]

iii. With the prior approval of the Division, the permittee may redesignate any existing group 1 furnace or in-line fluxer at a secondary aluminum production facility as a new emission unit. Any emission unit so redesignated may thereafter be included in a new SAPU at that facility. Any such redesignation will be solely for the purpose of 40 CFR 63, Subpart RRR and will be irreversible. [40 CFR 63.1505(k)(6)]

c. For Emission Unit F2:

i. The permittee shall not cause, suffer, allow, or permit any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than twenty (20) percent opacity. [401 KAR 59:010, Section 3(1)(a)]

ii. For emissions from a control device or stack, the permittee shall not cause, suffer, allow or permit the emission into the open air of particulate matter from any affected facility which is in excess of the quantity specified in Appendix A to 401 KAR 59:010. [401 KAR 59:010, Section 3(2)]

1) For process weight rates of 0.50 ton/hr or less: 2.34 lb/hr
2) For process weight rates ≤ 30.0 tons/hr: $E = 3.59P^{0.62}$

Where:
E = rate of emission in lb/hr
P = process weight rate in tons/hr

d. For Emission Unit F1:

i. The permittee shall not cause, suffer, allow or permit any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than forty (40) percent opacity. [401 KAR 61:020, Section 3(1)(a)]

ii. For emissions from a control device or stack, the permittee shall not cause, suffer, allow or permit the emission into the open air of particulate matter from any affected facility which is in excess of the quantity specified in Appendix A of 401 KAR 61:020. [401 KAR 61:020, Section 3(2)(a)]

1) For process weight rates of 0.50 ton/hr or less: 2.58 lb/hr
2) For process weight rates ≤ 30.0 tons/hr: $E = 4.10P^{0.67}$

Where:
E = rate of emission in lb/hr
P = process weight rate in tons/hr

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iii. The permittee may elect to substitute the following standards in lieu of the value given in 401 KAR 61:020, Appendix A: [401 KAR 61:020, Section 3(2)(b)]
   1) A maximum exit particulate emission concentration of 0.02 grains per standard cubic foot; [401 KAR 61:020, Section 3(2)(b)(1)]
   2) Air pollution control equipment of at least ninety-seven (97) percent actual efficiency; and [401 KAR 61:020, Section 3(2)(b)(2)]
   3) Addition of dilution air shall not constitute compliance. [401 KAR 61:020, Section 3(2)(b)(3)]

Compliance Demonstration:

1. For compliance with the opacity limits identified above, refer to **4. Specific Monitoring Requirements (t)** and **5. Specific Recordkeeping Requirements (f).**
2. Compliance with the hourly particulate emission limits identified above shall be determined by comparing the allowable rate to the actual rate as calculated below:

$$E_{PM_{ij}} = \frac{P_{ij} \times EF_{PM_j}}{h_{ij}} \times \left(1 - CE_j\right)$$

Where:

i = month;
j = unit;
E_{PMij} = actual average hourly particulate emission rate from unit j during month i (pounds/hour);
P_{ij} = actual specific operating parameter for month i (units/month);
EF_{PMj} = overall uncontrolled particulate emission factor as determined from the most recent performance test or approved by the Division for unit j (pounds/unit);
h_{ij} = actual total hours of operation for unit j during month i (hours/month)
CE_j = overall control efficiency (%) of any air pollution control equipment associated with unit j.

e. For HF standards, refer to **SECTION D 4.**

3. Testing Requirements:

a. Prior to conducting any performance test required by 40 CFR 63, Subpart RRR, the permittee shall prepare a site-specific test plan which satisfies all of the rule requirements, and must obtain approval of the plan pursuant to the procedures set forth in 40 CFR 63.7. Performance tests shall be conducted under such conditions as the Administrator specifies to the permittee based on representative performance of the affected source for the period being tested. Upon request, the permittee shall make available to the Administrator such records as may be necessary to determine the conditions of performance tests. [40 CFR 63.1511(a)]

b. Following approval of the site-specific test plan, the permittee shall demonstrate initial compliance with each applicable emission, equipment, work practice, or operational standard for each affected source and emission unit, and report the results in the notification

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of compliance status report as described in 40 CFR 63.1515(b). The permittee shall conduct the initial performance tests no later than the date for compliance established by 40 CFR 63.1501. The permittee shall conduct each performance test in accordance with the requirements and procedures set forth in 40 CFR 63.7(c). [40 CFR 63.1511(b)]

i. The performance tests must be conducted under representative conditions expected to produce the highest level of HAP emissions expressed in the units of the emission standards for the HAP (considering the extent of feed/charge contamination, reactive flux addition rate and feed/charge rate). If a single test condition is not expected to produce the highest level of emissions for all HAP, testing under two or more sets of conditions (for example high contamination at low feed/charge rate, and low contamination at high feed/charge rate) may be required. Any subsequent performance tests for the purposes of establishing new or revised parametric limits shall be allowed upon pre-approval from the Division. These new parametric settings shall be used to demonstrate compliance for the period being tested. [40 CFR 63.1511(b)(1)]

ii. Each performance test for a batch process must consist of three separate runs; pollutant sampling for each run must be conducted over the entire process operating cycle. Additionally, for batch processes where the length of the process operating cycle is not known in advance, and where isokinetic sampling must be conducted based on the procedures in Method 5 in appendix A to part 60, use the following procedure to ensure that sampling is conducted over the entire process operating cycle: [40 CFR 63.1511(b)(3)]
    1) Choose a minimum operating cycle length and begin sampling assuming this minimum length will be the run time (e.g., if the process operating cycle is known to last from four to six hours, then assume a sampling time of four hours and divide the sampling time evenly between the required number of traverse points); [40 CFR 63.1511(b)(3)(i)]
    2) After each traverse point has been sampled once, begin sampling each point again for the same time per point, in the reverse order, until the operating cycle is complete. All traverse points as required by Method 1 of appendix A to part 60, must be sampled at least once during each test run; [40 CFR 63.1511(b)(3)(ii)]
    3) In order to distribute the sampling time most evenly over all the traverse points, do not perform all runs using the same sampling point order (e.g., if there are four ports and sampling for run 1 began in port 1, then sampling for run 2 could begin in port 4 and continue in reverse order.) [40 CFR 63.1511(b)(3)(iii)]

iii. Where multiple affected sources or emission units are exhausted through a common stack, pollutant sampling for each run must be conducted over a period of time during which all affected sources or emission units complete at least 1 entire process operating cycle or for 24 hours, whichever is shorter. [40 CFR 63.1511(b)(4)]

iv. Initial compliance with an applicable emission limit or standard is demonstrated if the average of three runs conducted during the performance test is less than or equal to the applicable emission limit or standard. [40 CFR 63.1511(b)(5)]

v. Apply 40 CFR 63.1511(b)(1) through (5), for each pollutant separately if a different production rate, charge material or, if applicable, reactive fluxing rate would apply and

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thereby result in a higher expected emissions rate for that pollutant. [40 CFR 63.1511(b)(6)]

vi. The permittee shall not conduct performance tests during periods of malfunction. [40 CFR 63.1511(b)(7)]

c. The permittee shall use the following methods in 40 CFR 60, Appendix A, to determine compliance with the applicable emission limits or standards: [40 CFR 63.1511(c)]
   i. Method 1 for sample and velocity traverses. [40 CFR 63.1511(c)(1)]
   ii. Method 2 for velocity and volumetric flow rate. [40 CFR 63.1511(c)(2)]
   iii. Method 3 for gas analysis. [40 CFR 63.1511(c)(3)]
   iv. Method 4 for moisture content of the stack gas. [40 CFR 63.1511(c)(4)]
   v. Method 5 for the concentration of PM. [40 CFR 63.1511(c)(5)]
   vi. Method 9 for visible emission observations. [40 CFR 63.1511(c)(6)]
   vii. Method 26A for the concentration of HCl and HF. Method 26 may also be used, except at sources where entrained water droplets are present in the emission stream. [40 CFR 63.1511(c)(9)]

d. The permittee may use alternative test methods as provided in 40 CFR 63.1511(d)(1) through (3): [40 CFR 63.1511(d)]
   i. In lieu of conducting the annual flow rate measurements using Methods 1 and 2, the permittee may use Method 204 in 40 CFR 51, Appendix M, to conduct annual verification of a permanent total enclosure for the affected source/emission unit. [40 CFR 63.1511(d)(2)]
   ii. The permittee may use an alternative test method approved by the Administrator. [40 CFR 63.1511(d)(3)]

e. The permittee shall conduct a performance test every 5 years following the initial performance test. [40 CFR 63.1511(e)]

f. With the prior approval of the Division, the permittee may utilize emission rates obtained by testing a particular type of group 1 furnace that does not have an add-on control device, or by testing an in-line flux box that does not have an add-on air pollution control device, to determine the emission rate for other units of the same type at the same facility. Such emission test results may only be considered to be representative of other units if all of the following criteria are satisfied: [40 CFR 63.1511(f)]
   i. The tested emission unit must use feed materials and charge rates which are comparable to the emission units that it represents; [40 CFR 63.1511(f)(1)]
   ii. The tested emission unit must use the same type of flux materials in the same proportions as the emission units it represents; [40 CFR 63.1511(f)(2)]
   iii. The tested emission unit must be operated utilizing the same work practices as the emission units that it represents; [40 CFR 63.1511(f)(3)]
   iv. The tested emission unit must be of the same design as the emission units that it represents; and [40 CFR 63.1511(f)(4)]

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v. The tested emission unit must be tested under the highest load or capacity reasonably expected to occur for any of the emission units that it represents. [40 CFR 63.1511(f)(5)]
vi. All 3 separate runs of a performance test must be conducted on the same emission unit. [40 CFR 63.1511(f)(6)]

g. The permittee shall establish a minimum or maximum operating parameter value, or an operating parameter range for each parameter to be monitored as required by 40 CFR 63.1510 that ensures compliance with the applicable emission limit or standard. To establish the minimum or maximum value or range, the permittee shall use the appropriate procedures in 40 CFR 63.1511 and submit the information required by 40 CFR 63.1515(b)(4) in the notification of compliance status report. The permittee may use existing data in addition to the results of performance tests to establish operating parameter values for compliance monitoring provided each of the following conditions are met to the satisfaction of the Division: [40 CFR 63.1511(g)]
   i. The complete emission test report(s) used as the basis of the parameter(s) is submitted. [40 CFR 63.1511(g)(1)]
   ii. The same test methods and procedures as required by 40 CFR 63, Subpart RRR were used in the test. [40 CFR 63.1511(g)(2)]
   iii. The permittee certifies that no design or work practice changes have been made to the source, process, or emission control equipment since the time of the report. [40 CFR 63.1511(g)(3)]
   iv. All process and control equipment operating parameters required to be monitored were monitored as required in 40 CFR 63, Subpart RRR and documented in the test report. [40 CFR 63.1511(g)(4)]
   v. If the permittee wants to conduct a new performance test and establish different operating parameter values, a revised site specific test plan must be submitted and the permittee shall receive approval from the Division in accordance with 40 CFR 63.1511(a). In addition, if the permittee wants to use existing data in addition to the results of the new performance test to establish operating parameter values, the requirements in 40 CFR 63.1511(g)(1) through (4) must be met. [40 CFR 63.1511(g)(5)]

h. In the site-specific monitoring plan required by 40 CFR 63.1510(o), the permittee of a group 1 furnace (including a melting/holding furnace) without add-on air pollution control devices shall include data and information demonstrating compliance with the applicable emission limits. [40 CFR 63.1512(e)]

i. If the group 1 furnaces process only clean charge, the permittee shall conduct emission tests to simultaneously measure emissions of PM, HCl and HF. A D/F test is not required. Each test must be conducted while the group 1 furnace (including a melting/holding furnace) processes only clean charge. [40 CFR 63.1512(e)(2)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

j. The permittee may choose to determine the rate of reactive flux addition to the group 1 furnace and assume, for the purposes of demonstrating compliance with the SAPU emission limit, that all chlorine and fluorine contained in reactive flux added to the group 1 furnace is emitted as HCl and HF. Under these circumstances, the permittee is not required to conduct an emission test for HCl or HF. [40 CFR 63.1512(e)(3)]

k. When testing an existing uncontrolled furnace, the permittee shall comply with the requirements of either 40 CFR 63.1512(e)(4)(i), (ii) or (iii), below, at the next required performance test required by 40 CFR 63.1511(e). [40 CFR 63.1512(e)(4)]
   i. Install hooding that meets ACGIH Guidelines (incorporated by reference, see 40 CFR 63.14), or [40 CFR 63.1512(e)(4)(i)]
   ii. At least 180 days prior to testing, petition the Division that such hoods are impractical under the provisions of 40 CFR 63.1512(e)(6) and propose testing procedures that will minimize unmeasured emissions during the performance test according to 40 CFR 63.1512(e)(7), or [40 CFR 63.1512(e)(4)(ii)]
   iii. Assume an 80-percent capture efficiency for the furnace exhaust (i.e., multiply emissions measured at the furnace exhaust outlet by 1.25). If the permittee fails to demonstrate compliance using the 80-percent capture efficiency assumption, the permittee shall re-test with a hood that meets the ACGIH Guidelines within 180 days, or petition the Division, within 180 days, that such hoods are impractical under the provisions of 40 CFR 63.1512(e)(6) and propose testing procedures that will minimize unmeasured emissions during the performance test according to 40 CFR 63.1512(e)(7). [40 CFR 63.1512(e)(4)(iii)]
   iv. The 80-percent capture efficiency assumption is not applicable in the event of testing conducted under an approved petition submitted pursuant to 40 CFR 63.1512(e)(4)(ii) or (iii). [40 CFR 63.1512(e)(4)(iv)]

l. The installation of hooding that meets ACGIH Guidelines (incorporated by reference, see 40 CFR 63.14) is considered impractical if any of the following conditions exist: [40 CFR 63.1512(e)(6)]
   i. Building or equipment obstructions (for example, wall, ceiling, roof, structural beams, utilities, overhead crane or other obstructions) are present such that the temporary hood cannot be located consistent with acceptable hood design and installation practices; [40 CFR 63.1512(e)(6)(i)]
   ii. Space limitations or work area constraints exist such that the temporary hood cannot be supported or located to prevent interference with normal furnace operations or avoid unsafe working conditions for the furnace operator; or [40 CFR 63.1512(e)(6)(ii)]
   iii. Other obstructions and limitations subject to agreement of the Division. [40 CFR 63.1512(e)(6)(iii)]

m. Testing procedures that will minimize unmeasured emissions may include, but are not limited to the following: [40 CFR 63.1512(e)(7)]
   i. Installing a hood that does not entirely meet ACGIH guidelines; [40 CFR 63.1512(e)(7)(i)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

ii. Using the building as an enclosure, and measuring emissions exhausted from the building if there are no other furnaces or other significant sources in the building of the pollutants to be measured; [40 CFR 63.1512(e)(7)(ii)]
iii. Installing temporary baffles on those sides or top of furnace opening if it is practical to do so where they will not interfere with material handling or with the furnace door opening and closing; [40 CFR 63.1512(e)(7)(iii)]
iv. Minimizing the time the furnace doors are open; [40 CFR 63.1512(e)(7)(iv)]
v. Delaying gaseous reactive fluxing until charging doors are closed; [40 CFR 63.1512(e)(7)(v)]
vi. Agitating or stirring molten metal as soon as practicable after salt flux addition and closing doors as soon as possible after solid fluxing operations, including mixing and dross removal; [40 CFR 63.1512(e)(7)(vi)]
vii. Keeping building doors and other openings closed to the greatest extent possible to minimize drafts that would divert emissions from being drawn into the furnace; [40 CFR 63.1512(e)(7)(vii)]
viii. Maintaining burners on low-fire or pilot operation while the doors are open; [40 CFR 63.1512(e)(7)(viii)]
ix. Use of fans or other device to direct flow into a furnace when door is open; or [40 CFR 63.1512(e)(7)(ix)]
x. Removing the furnace cover one time in order to add a smaller but representative charge and then replacing the cover. [40 CFR 63.1512(e)(7)(x)]

n. The permittee of an in-line fluxer that uses reactive flux materials must conduct a performance test to measure emissions of HCl and PM or otherwise demonstrate compliance in accordance with 40 CFR 63.1512(h)(2). [40 CFR 63.1512(h)(1)]

o. The permittee may choose to limit the rate at which reactive flux is added to an in-line fluxer and assume, for the purposes of demonstrating compliance with the SAPU emission limit, that all chlorine in the reactive flux added to the in-line fluxer is emitted as HCl. Under these circumstances, the permittee is not required to conduct an emission test for HCl. If the permittee of any in-line flux box that has no ventilation ductwork manifolded to any outlet or emission control device chooses to demonstrate compliance with the emission limits for HCl by limiting use of reactive flux and assuming that all chlorine in the flux is emitted as HCl, compliance with the HCl limit shall also constitute compliance with the emission limit for PM and no separate emission test for PM is required. In this case, the permittee of the unvented in-line flux box must use the maximum permissible PM emission rate for the in-line flux boxes when determining the total emissions for any SAPU which includes the flux box. [40 CFR 63.1512(h)(2)]

p. The permittee shall conduct performance tests as described in 40 CFR 63.1512(j)(1) through (3). The results of the performance tests are used to establish emission rates in lb/ton of feed/charge for PM, HCl, and HF from each emission unit. These emission rates are used for compliance monitoring in the calculation of the 3-day, 24-hour rolling average

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emission rates using the equation in 40 CFR 63.1510(t). A performance test is required for: [40 CFR 63.1512(j)]

i. Each group 1 furnace processing only clean charge to measure emissions of PM and emissions of HF and HCl (for determining the emission limit). [40 CFR 63.1512(j)(1)(i)]
ii. Each in-line fluxer to measure emissions of PM and HCl. [40 CFR 62.1512(j)(3)]

q. During the emission test(s) conducted to determine compliance with emission limits in a kg/Mg (lb/ton) format, the permittee shall measure (or otherwise determine) and record the total weight of feed/charge to the affected source or emission unit for each of the three test runs and calculate and record the total weight. A permittee that chooses to demonstrate compliance on the basis of the aluminum production weight shall measure the weight of aluminum produced by the emission unit or affected source instead of the feed/charge weight. [40 CFR 63.1512(k)]

r. The permittee shall use the following procedures to establish an operating parameter value or range for the total reactive chlorine flux injection rate and, for uncontrolled furnaces, the total reactive fluorine flux injection rate. [40 CFR 63.1512(o)]
i. Continuously measure and record the weight of gaseous or liquid reactive flux injected for each 15-minute period during the HCl and HF tests, determine and record the 15-minute block average weights, and calculate and record the total weight of the gaseous or liquid reactive flux for the 3 test runs; [40 CFR 63.1512(o)(1)]
ii. Record the identity, composition, and total weight of each addition of solid reactive flux for the 3 test runs; [40 CFR 63.1512(o)(2)]
iii. Determine the total reactive chlorine flux injection rate and, for uncontrolled furnaces, the total reactive fluorine flux injection rate by adding the recorded measurement of the total weight of chlorine and, for uncontrolled furnaces, fluorine in the gaseous or liquid reactive flux injected and the total weight of chlorine and, for uncontrolled furnaces, fluorine in the solid reactive flux using the equation below. [40 CFR 63.1512(o)(3)]

$$W_t = F_1 W_1 + F_2 W_2$$

Where,

W_t = Total chlorine or fluorine usage, by weight;
F_1 = Fraction of gaseous or liquid flux that is chlorine or fluorine;
W_1 = Weight of reactive flux gas injected;
F_2 = Fraction of solid reactive chloride flux that is chlorine (*e.g.,* F = 0.75 for magnesium chloride) or fraction of solid reactive flux that is fluorine (e.g., F = 0.33 for potassium fluoride); and
W_2 = Weight of solid reactive flux

iv. Divide the weight of total chlorine or fluorine usage (W_t) for the 3 test runs by the recorded measurement of the total weight of feed for the 3 test runs; and [40 CFR 63.1512(o)(4)]

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v. If a solid reactive flux other than magnesium chloride or potassium fluoride is used, the permittee shall derive the appropriate proportion factor subject to approval by the Division. [40 CFR 63.1512(o)(5)]

s. Use the following equation to determine compliance with an emission limit for PM, HCl, or HF: [40 CFR 63.1513(b)(1)]

$$E = \frac{C \times Q \times K_1}{P}$$

Where:
E = Emission rate of PM, HCl or HF, in lb/ton (kg/Mg) of feed;
C = Concentration of PM, HCl or HF, in gr/dscf (g/dscm);
Q = Volumetric flow rate of exhaust gases, in dscf/hr (dscm/hr);
K_1 = Conversion factor, 1 lb/7,000 gr (1 kg/1,000 g); and
P = Production rate, in ton/hr (Mg/hr).

t. The permittee shall use the procedures in 40 CFR 63.1513(e)(1) and (2) or the procedure in 40 CFR 63.1513(e)(4) to determine compliance with emission limits for a secondary aluminum processing unit (SAPU). [40 CFR 63.1513(e)]

i. Use the following equation to compute the mass-weighted PM, HCl, or HF emissions for a secondary aluminum processing unit. Compliance is achieved if the mass-weighted emissions for the secondary aluminum processing unit (E_{cPM}) is less than or equal to the emission limit for the secondary aluminum processing unit (L_{cPM}) calculated using the equations in 40 CFR 63.1505(k). [40 CFR 63.1513(e)(1) and (2)]

$$E_{C_{PM/HCl/HF}} = \frac{\sum_{i=1}^{n}(E_{ti_{PM/HCl/HF}} \times T_{ti})}{\sum_{i=1}^{n} T_{ti}}$$

Where:
$E_{C_{PM/HCl/HF}}$ = The mass-weighted PM, HCl, or HF emissions for the secondary aluminum processing unit;
$E_{ti_{PM/HCl/HF}}$ = Measured PM, HCl, or HF emissions for individual emission unit, or group of co-controlled emission units, i;
T_{ti} = The average feed rate for individual emission unit i during the operating cycle or performance test period, or the sum of the average feed rates for all emission units in the group of co-controlled emission units i; and
n = The number of emission units, and groups of co-controlled emission units in the secondary aluminum processing unit.

ii. As an alternative to using the equations in 40 CFR 63.1513(e)(1) and (2), the permittee may demonstrate compliance for a secondary aluminum processing unit by demonstrating that each existing group 1 furnace is in compliance with the emission limits for a new group 1 furnace in 40 CFR 63.1505(i) and that each existing in-line fluxer is in compliance with the emission limits for a new in-line fluxer in 40 CFR 63.1505(j). [40 CFR 63.1513(e)(4)]

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u. The permittee shall demonstrate compliance during periods of startup and shutdown in accordance with 40 CFR 63.1513(f)(1) or determine the emissions per unit of feed/charge during periods of startup and shutdown in accordance with 40 CFR 63.1513(f)(2). Startup and shutdown emissions for group 1 furnaces and in-line fluxers must be calculated individually, and not on the basis of a SAPU. Periods of startup and shutdown are excluded from the calculation of SAPU emission limits in 40 CFR 63.1505(k), the SAPU monitoring requirements in 40 CFR 63.1510(t) and the SAPU emissions calculations in 40 CFR 63.1513(e). [40 CFR 63.1513(f)]

i. For periods of startup and shutdown, records establishing a feed/charge rate of zero, a flux rate of zero, and that the affected source or emission unit was either heated with electricity, propane or natural gas as the sole sources of heat or was not heated, may be used to demonstrate compliance with the emission limit, or [40 CFR 63.1513(f)(1)]

ii. For periods of startup and shutdown, divide the measured emissions in lb/hr or µg/hr or ng/hr by the feed/charge rate in tons/hr or Mg/hr from the most recent performance test associated with a production rate greater than zero, or the rated capacity of the affected source if no prior performance test data is available. [40 CFR 63.1513(f)(2)]

v. Pursuant to 401 KAR 59:005, Section 2(2), 61:005, Section 2(1), and 401 KAR 50:045, Section 1, performance testing using the Reference Methods specified in 401 KAR 50:015 shall be conducted as required by the Division.

4. Specific Monitoring Requirements:

a. The permittee shall prepare and implement for each affected source and emission unit, a written operation, maintenance, and monitoring (OM&M) plan. Refer to **6. Specific Reporting Requirements (a)** through **(e)**, below, for OM&M plan requirements. [40 CFR 63.1510(b)]

b. The permittee shall inspect equipment labels for each group 1 furnace and in-line fluxer at least once per calendar month to confirm that posted labels as required by the operational standard in 40 CFR 63.1506(b) are intact and legible. [40 CFR 63.1510(c)]

c. The permittee shall install, calibrate, operate, and maintain a device to measure and record the total weight of feed/charge to, or the aluminum production from, the affected source or emission unit over the same operating cycle or time period used in the performance test. Feed/charge or aluminum production within SAPUs must be measured and recorded on an emission unit-by-emission unit basis. As an alternative to a measurement device, the permittee may use a procedure acceptable to the Division to determine the total weight of feed/charge or aluminum production to the affected source or emission unit. [40 CFR 63.1510(e)]

i. The accuracy of the weight measurement device or procedure must be ±1 percent of the weight being measured. The permittee may apply to the Division for approval to use a device of alternative accuracy if the required accuracy cannot be achieved as a result of equipment layout or charging practices. A device of alternative accuracy will

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not be approved unless the permittee provides assurance through data and information that the affected source will meet the relevant emission standard. [40 CFR 63.1510(e)(1)]

ii. The permittee shall verify the calibration of the weight measurement device in accordance with the schedule specified by the manufacturer, or if no calibration schedule is specified, at least once every 6 months. [40 CFR 63.1510(e)(2)]

d. The permittee shall install, calibrate, operate, and maintain a device to continuously measure and record the weight of gaseous or liquid reactive flux injected to each affected source or emission unit: [40 CFR 63.1510(j)(1)]

i. The monitoring system shall record the weight for each 15-minute block period, during which reactive fluxing occurs, over the same operating cycle or time period used in the performance test. [40 CFR 63.1510(j)(1)(i)]

ii. The accuracy of the weight measurement device shall be ±1 percent of the weight of the reactive component of the flux being measured. The permittee may apply to the Division for permission to use a weight measurement device of alternative accuracy in cases where the reactive flux flow rates are so low as to make the use of a weight measurement device of ±1 percent impracticable. A device of alternative accuracy will not be approved unless the permittee provides assurance through data and information that the affected source will meet the relevant emission standards. [40 CFR 63.1510(j)(1)(ii)]

iii. The permittee shall verify the calibration of the weight measurement device in accordance with the schedule specified by the manufacturer, or if no calibration schedule is specified, at least once every 6 months. [40 CFR 63.1510(j)(1)(iii)]

e. Calculate and record the gaseous or liquid reactive flux injection rate (kg/Mg or lb/ton) for each operating cycle or time period used in the performance test using the procedure in 40 CFR 63.1512(o). [40 CFR 63.1510(j)(2)]

f. Record, for each 15-minute block period during each operating cycle or time period used in the performance test during which reactive fluxing occurs, the time, weight, and type of flux for each addition of: [40 CFR63.1510(j)(3)]

i. Gaseous or liquid reactive flux other than chlorine; and [40 CFR 63.1510(j)(3)(i)]

ii. Solid reactive flux. [40 CFR 63.1510(j)(3)(ii)]

g. Calculate and record the total reactive flux injection rate for each operating cycle or time period used in the performance test using the procedures in 40 CFR 63.1512(o). For solid flux that is added intermittently, record the amount added for each operating cycle or time period used in the performance test using the procedures in 40 CFR 63.1512(o). [40 CFR 63.1510(j)(4)]

h. The permittee may apply to the Division for approval of an alternative method for monitoring and recording the total reactive flux addition rate based on monitoring the weight or quantity of reactive flux per ton of feed/charge for each operating cycle or time

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period used in the performance test. An alternative monitoring method will not be approved unless the permittee provides assurance through data and information that the affected source will meet the relevant emission standards on a continuous basis. [40 CFR 63.1510(j)(5)]

i. The permittee shall develop, in consultation with the Division, a written site-specific monitoring plan. The site-specific monitoring plan must be submitted to the Division as part of the OM&M plan. The site-specific monitoring plan must contain sufficient procedures to ensure continuing compliance with all applicable emission limits and shall demonstrate, based on documented test results, the relationship between emissions of PM, HCl, and HF, and the proposed monitoring parameters for each pollutant. Test data shall establish the highest level of PM, HCl, and HF that will be emitted from the furnace in accordance with 40 CFR 63.1511(b)(1). If the Division determines that any revisions of the site-specific monitoring plan are necessary to meet the requirements of 40 CFR 63.1510 or 40 CFR 63, Subpart RRR, the permittee shall promptly make all necessary revisions and resubmit the revised plan. [40 CFR 63.1510(o)(1)]
   i. For existing affected sources, the permittee must submit the site-specific monitoring plan to the Division for review at least 6 months prior to the compliance date. [40 CFR 63.1510(o)(1)(i)]
   ii. The Division will review and approve or disapprove a proposed plan, or request changes to a plan, based on whether the plan contains sufficient provisions to ensure continuing compliance with applicable emission limits and demonstrates, based on documented test results, the relationship between emissions of PM, HCl, and HF and the proposed monitoring parameters for each pollutant. Test data must establish the highest level of PM, HCl, and HF that will be emitted from the furnace. Subject to approval of the OM&M plan, the highest levels may be determined by conducting performance tests and monitoring operating parameters in accordance with 40 CFR 63.1511(b)(1). [40 CFR 63.1510(o)(1)(ii)]

j. Each site-specific monitoring plan must document each work practice, equipment/design practice, pollution prevention practice, or other measure used to meet the applicable emission standards. [40 CFR 63.1510(o)(2)]

k. Each site-specific monitoring plan must include provisions for unit labeling as required in 40 CFR 63.1510(c), feed/charge weight measurement (or production weight measurement) as required in 40 CFR 63.1510(e), and flux weight measurement as required in 40 CFR 63.1510(j). [40 CFR 63.1510(o)(3)]

l. Each site-specific monitoring plan for a melting/holding furnace subject to the clean charge emission standard in 40 CFR 63.1505(i)(3) must include these requirements: [40 CFR 63.1510(o)(4)]
   i. The permittee shall record the type of feed/charge (e.g., ingot, thermally dried chips, dried scrap, etc.) for each operating cycle or time period used in the performance test; and [40 CFR 63.1510(o)(4)(i)]

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ii. The permittee shall submit a certification of compliance with the applicable operational standard for clean charge materials in 40 CFR 63.1506(n)(3) for each 6-month reporting period. Each certification must contain the information in 40 CFR 63.1516(b)(2)(iv). [40 CFR 63.1510(o)(4)(ii)]

m. If a continuous emission monitoring system is included in a site-specific monitoring plan, the plan must include provisions for the installation, operation, and maintenance of the system to provide quality-assured measurements in accordance with all applicable requirements of the general provisions in 40 CFR 63, Subpart A. [40 CFR 63.1510(o)(5)]

n. If a continuous opacity monitoring system is included in a site-specific monitoring plan, the plan must include provisions for the installation, operation, and maintenance of the system to provide quality-assured measurements in accordance with all applicable requirements of 40 CFR 63, Subpart RRR. [40 CFR 63.1510(o)(6)]

o. If a site-specific monitoring plan includes a scrap inspection program for monitoring the scrap contaminant level of furnace feed/charge materials, the plan must include provisions for the demonstration and implementation of the program in accordance with all applicable requirements in 40 CFR 63.1510(p), below. [40 CFR 63.1510(o)(7)]
   i. A scrap inspection program must include: [40 CFR 63.1510(p)]
      1) A proven method for collecting representative samples and measuring the oil and coatings content of scrap samples; [40 CFR 63.1510(p)(1)]
      2) A scrap inspector training program; [40 CFR 63.1510(p)(2)]
      3) An established correlation between visual inspection and physical measurement of oil and coatings content of scrap samples; [40 CFR 63.1510(p)(3)]
      4) Periodic physical measurements of oil and coatings content of randomly-selected scrap samples and comparison with visual inspection results; [40 CFR 63.1510(p)(4)]
      5) A system for assuring that only acceptable scrap is charged to an affected group 1 furnace; and [40 CFR 63.1510(p)(5)]
      6) Recordkeeping requirements to document conformance with plan requirements. [40 CFR 63.1510(p)(6)]

p. If a site-specific monitoring plan includes a calculation method for monitoring the scrap contaminant level of furnace feed/charge materials, the plan must include provisions for the demonstration and implementation of the program in accordance with all applicable requirements in 40 CFR 63.1510(q), below. [40 CFR 63.1510(o)(8)]
   i. The permittee of a group 1 furnace dedicated to processing a distinct type of furnace feed/charge composed of scrap with a uniform composition (such as rejected product from a manufacturing process for which the coating-to-scrap ratio can be documented) may include a program in the site-specific monitoring plan for determining, monitoring, and certifying the scrap contaminant level using a calculation method rather than a scrap inspection program. A scrap contaminant monitoring program using a calculation method must include: [40 CFR 63.1510(q)]

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1) Procedures for the characterization and documentation of the contaminant level of the scrap prior to the performance test. [40 CFR 63.1510(q)(1)]
2) Limitations on the furnace feed/charge to scrap of the same composition as that used in the performance test. If the performance test was conducted with a mixture of scrap and clean charge, limitations on the proportion of scrap in the furnace feed/charge to no greater than the proportion used during the performance test. [40 CFR 63.1510(q)(2)]
3) Operating, monitoring, recordkeeping, and reporting requirements to ensure that no scrap with a contaminant level higher than that used in the performance test is charged to the furnace. [40 CFR 63.1510(q)(3)]

q. Except as provided in 40 CFR 63.1510(u), the permittee must calculate and record the 3-day, 24-hour rolling average emissions of PM, HCl, and HF for each secondary aluminum processing unit on a daily basis. To calculate the 3-day, 24-hour rolling average, the permittee must: [40 CFR 63.1510(t)]
   i. Calculate and record the total weight of material charged to each emission unit in the secondary aluminum processing unit for each 24-hour day of operation using the feed/charge weight information required in 40 CFR 63.1510(e). If the permittee chooses to comply on the basis of weight of aluminum produced by the emission unit, rather than weight of material charged to the emission unit, all performance test emissions results and all calculations must be conducted on the aluminum production weight basis. [40 CFR 63.1510(t)(1)]
   ii. Multiply the total feed/charge weight to the emission unit, or the weight of aluminum produced by the emission unit, for each emission unit for the 24-hour period by the emission rate (in lb/ton of feed/charge) for that emission unit (as determined during the performance test) to provide emissions for each emission unit for the 24-hour period, in pounds. [40 CFR 63.1510(t)(2)]
      1) Where no performance test has been conducted, for a particular emission unit, because the permittee has, with the approval of the Division, chosen to determine the emission rate of an emission unit by testing a representative unit, in accordance with 40 CFR 63.1511(f), the permittee shall use the emission rate determined from the representative unit in the SAPU emission rate calculation required in 40 CFR 63.1510(t)(4). [40 CFR 63.1510(t)(2)(i)]
      2) If the permittee has not conducted performance tests for HCl and HF or for HCl for an in-line fluxer, in accordance with the provisions of 40 CFR 63.1512(e)(3) or (h)(2), the calculation required in 40 CFR 63.1510(t)(4) to determine SAPU-wide HCl and HF emissions shall be made under the assumption that all chlorine contained in reactive flux added to the emission unit is emitted as HCl and all fluorine contained in reactive flux added to the emission unit is emitted as HF. [40 CFR 63.1510(t)(2)(ii)]
   iii. Divide the total emissions for each SAPU for the 24-hour period by the total material charged to the SAPU, or the weight of aluminum produced by the SAPU over the 24-hour period to provide the daily emission rate for the SAPU. [40 CFR 63.1510(t)(3)]

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iv. Compute the 24-hour daily emission rate using the following equation: [40 CFR 63.1510(t)(4)]

$$E_{day} = \frac{\sum_{i=1}^{n}(T_i \times ER_i)}{\sum_{i=1}^{n} T_i}$$

Where:

E_{day} = The daily PM, HCl, and HF emission rate for the secondary aluminum processing unit for the 24-hour period;

T_i = The total amount of feed, or aluminum produced, for emission unit *i* for the 24-hour period (tons or Mg);

ER_i = The measured emission rate for emission unit *i* as determined in the performance test (lb/ton or µg/Mg of feed/charge); and

n = The number of emission units in the secondary aluminum processing unit.

v. Calculate and record the 3-day, 24-hour rolling average for each pollutant each day by summing the daily emission rates for each pollutant over the 3 most recent consecutive days and dividing by 3. The SAPU is in compliance with an applicable emission limit if the 3-day, 24-hour rolling average for each pollutant is no greater than the applicable SAPU emission limit determined in accordance with 40 CFR 63.1505(k)(1)-(3). [40 CFR 63.1510(t)(5)]

r. As an alternative to the procedures of 40 CFR 63.1510(t), the permittee may demonstrate, through performance tests, that each individual emission unit within the secondary aluminum production unit is in compliance with the applicable emission limits for the emission unit. [40 CFR 63.1510(u)]

s. If the permittee wishes to use an alternative monitoring method to demonstrate compliance with any emission standard in 40 CFR 63, Subpart RRR, other than those alternative monitoring methods which may be authorized pursuant to 40 CFR 63.1510(j)(5), the permittee may submit an application to the Administrator. Any such application will be processed according to the criteria and procedures set forth in 40 CFR 63.1510(w)(1) through (6). [40 CFR 63.1510(w)]

t. The permittee shall perform a qualitative visual observation of the opacity of emissions at each stack no less than weekly during operation of the unit. If visible emissions from the stacks are observed (not including condensed water in the plume), then an inspection of process/control equipment shall be initiated and corrective action taken. If visible emissions are present after the corrective action, the permittee shall determine the opacity using Reference Method 9. [401 KAR 52:020, Section 10]

u. The permittee shall monitor the following: [401 KAR 52:020, Section 10]
   i. Monthly hours of operation;
   ii. Monthly aluminum production;
   iii. Monthly fuel usage;

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

iv. Hourly pollutant emission rates, calculated monthly.

5. Specific Recordkeeping Requirements:

a. As required by 40 CFR 63.10(b), the permittee shall maintain files of all information (including all reports and notifications) required by the general provisions and 40 CFR 63, Subpart RRR. The permittee must retain each record for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The most recent 2 years of records must be retained at the facility. The remaining 3 years of records may be retained off site. [40 CFR 63.1517(a)]

b. In addition to the general records required by 40 CFR 63.10(b), the permittee must maintain records of: [40 CFR 63.1517(b)]
   i. For each group 1 furnace (with or without add-on air pollution control devices) or in-line fluxer, records of 15-minute block average weights of gaseous or liquid reactive flux injection, total reactive flux injection rate and calculations (including records of the identity, composition, and weight of each addition of gaseous, liquid or solid reactive flux), including records of any period the rate exceeds the compliant operating parameter value and corrective action taken. [40 CFR 63.1517(b)(5)]
   ii. For each continuous monitoring system, records required by 40 CFR 63.10(c). [40 CFR 63.1517(b)(6)]
   iii. For each affected source and emission unit subject to an emission standard in kg/Mg (lb/ton) of feed/charge, records of feed/charge (or throughput) weights for each operating cycle or time period used in the performance test. [40 CFR 63.1517(b)(7)]
   iv. Approved site-specific monitoring plan for a group 1 furnace without add-on air pollution control devices with records documenting conformance with the plan. [40 CFR 63.1517(b)(8)]
   v. Records of all charge materials for each group 1 melting/holding furnaces without air pollution control devices processing only clean charge. [40 CFR 63.1517(b)(9)]
   vi. Records of monthly inspections for proper unit labeling for each affected source and emission unit subject to labeling requirements. [40 CFR 63.1517(b)(13)]
   vii. Records of annual inspections of emission capture/collection and closed vent systems or, if the alternative to the annual flow rate measurements is used, records of differential pressure; fan RPM or fan motor amperage; static pressure measurements; or duct centerline velocity using a hotwire anemometer, ultrasonic flow meter, cross-duct pressure differential sensor, venturi pressure differential monitoring or orifice plate equipped with an associated thermocouple, as appropriate. [40 CFR 63.1517(b)(14)]
   viii. Records for any approved alternative monitoring or test procedure. [40 CFR 63.1517(b)(15)]
   ix. Current copy of all required plans, including any revisions, with records documenting conformance with the applicable plan, including: [40 CFR 63.1517(b)(16)]
      1) OM&M plan; and [40 CFR 63.1517(b)(16)(ii)]
      2) Site-specific secondary aluminum processing unit emission plan (if applicable). [40 CFR 63.1517(b)(16)(iii)]
   x. For each secondary aluminum processing unit, records of total charge weight, or if the

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permittee chooses to comply on the basis of aluminum production, total aluminum produced for each 24-hour period and calculations of 3-day, 24-hour rolling average emissions. [40 CFR 63.1517(b)(17)]

c. For any failure to meet an applicable standard, the permittee must maintain the following records; [40 CFR 63.1517(b)(18)]
   i. Records of the emission unit ID, monitor ID, pollutant or parameter monitored, beginning date and time of the event, end date and time of the event, cause of the deviation or exceedance and corrective action taken. [40 CFR 63.1517(b)(18)(i)]
   ii. Records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.1506(a)(5), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation. [40 CFR 63.1517(b)(18)(ii)]

d. For each period of startup or shutdown for which the permittee chooses to demonstrate compliance for an affected source, the permittee must comply with 40 CFR 63.1517(b)(19)(i) or (ii). [40 CFR 63.1517(b)(19)]
   i. To demonstrate compliance based on a feed/charge rate of zero, a flux rate of zero and the use of electricity, propane or natural gas as the sole sources of heating or the lack of heating, the permittee must submit a semiannual report in accordance with 40 CFR 63.1516(b)(2)(vii) or maintain the following records: [40 CFR 63.1517(b)(19)(i)]
      1) The date and time of each startup and shutdown; [40 CFR 63.1517(b)(19)(i)(A)]
      2) The quantities of feed/charge and flux introduced during each startup and shutdown; and [40 CFR 63.1517(b)(19)(i)(B)]
      3) The types of fuel used to heat the unit, or that no fuel was used, during startup and shutdown; or [40 CFR 63.1517(b)(19)(i)(C)]
   ii. To demonstrate compliance based on performance tests, the permittee must maintain the following records: [40 CFR 63.1517(b)(19)(ii)]
      1) The date and time of each startup and shutdown; [40 CFR 63.1517(b)(19)(ii)(A)]
      2) The measured emissions in lb/hr or µg/hr or ng/hr; [40 CFR 63.1517(b)(19)(ii)(B)]
      3) The measured feed/charge rate in tons/hr or Mg/hr from the most recent performance test associated with a production rate greater than zero, or the rated capacity of the affected source if no prior performance test data is available; and[40 CFR 63.1517(b)(19)(ii)(C)]
      4) An explanation to support that such conditions are considered representative startup and shutdown operations. [40 CFR 63.1517(b)(19)(ii)(D)]

e. If the permittee chooses to change furnace operating modes, the following records must be maintained: [40 CFR 63.1517(b)(20)]
   i. The date and time of each change in furnace operating mode, and [40 CFR 63.1517(b)(20)(i)]
   ii. The nature of the change in operating mode (for example, group 1 uncontrolled furnace processing clean charge to group 2). [40 CFR 63.1517(b)(20)(ii)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

f. For each emission unit listed above, the permittee shall maintain records of the following: [401 KAR 52:020, Section 10]
   i. Monthly hours of operation;
   ii. Monthly and 12-month rolling material processed;
   iii. Hourly pollutant emission rates, calculated monthly;
   iv. The qualitative visual observations required by **4. Specific Monitoring Requirements (t),** including the date, time, initials of observer, whether any emissions were observed (yes/no), any Method 9 readings taken, and any corrective action taken including results due to observed emissions;
   v. Preventative maintenance and/or equipment inspections performed;
   vi. Parameters used to determine fluxing rate;
   vii. Weight measurement device calibrations.

6. Specific Reporting Requirements:

a. The permittee must prepare and implement for each new or existing affected source and emission unit, a written OM&M plan. The permittee must submit the OM&M plan to the Division no later than the compliance date established by 40 CFR 63.1501. The plan must be accompanied by a written certification by the permittee that the OM&M plan satisfies all requirements of 40 CFR 63.1510 and is otherwise consistent with the requirements of 40 CFR 63, Subpart RRR. [40 CFR 63.1510(b)]

b. The permittee shall comply with all of the provisions of the OM&M plan as submitted to the Division, unless and until the plan is revised in accordance with the following procedures. [40 CFR 63.1510(b)]
   i. If the Division determines at any time after receipt of the OM&M plan that any revisions of the plan are necessary to satisfy the requirements of 40 CFR 63.1510 or 40 CFR 63, Subpart RRR, the permittee must promptly make all necessary revisions and resubmit the revised plan.
   ii. If the permittee determines that any other revisions of the OM&M plan are necessary, such revisions will not become effective until the permittee submits a description of the changes and a revised plan incorporating them to the Division.

c. Each plan must contain the following information: [40 CFR 63.1510(b)]
   i. Process and control device parameters to be monitored to determine compliance, along with established operating levels or ranges, as applicable, for each process and control device. [40 CFR 63.1510(b)(1)]
   ii. A monitoring schedule for each affected source and emission unit. [40 CFR 63.1510(b)(2)]
   iii. Procedures for the proper operation and maintenance of each process unit and add-on control device used to meet the applicable emission limits or standards in 40 CFR 63.1505. [40 CFR 63.1510(b)(3)]
   iv. Procedures for the proper operation and maintenance of monitoring devices or systems used to determine compliance, including: [40 CFR 63.1510(b)(4)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

1) Calibration and certification of accuracy of each monitoring device, at least once every 6 months, according to the manufacturer's instructions; and [40 CFR 63.1510(b)(4)(i)]
2) Procedures for the quality control and quality assurance of continuous emission or opacity monitoring systems as required by the general provisions in 40 CFR 63, Subpart A. [40 CFR 63.1510(b)(4)(ii)]

v. Procedures for monitoring process parameters, and if applicable, the procedure to be used for determining charge/feed (or throughput) weight if a measurement device is not used. [40 CFR 63.1510(b)(5)]
vi. Corrective actions to be taken when process or operating parameters deviate from the value or range established in 40 CFR 63.1510(b)(1), including: [40 CFR 63.1510(b)(6)]
   1) Procedures to determine and record the cause of any deviation or excursion, and the time the deviation or excursion began and ended; and [40 CFR 63.1510(b)(6)(i)]
   2) Procedures for recording the corrective action taken, the time corrective action was initiated, and the time/date corrective action was completed. [40 CFR 63.1510(b)(6)(ii)]
vii. A maintenance schedule for each process that is consistent with the manufacturer's instructions and recommendations for routine and long-term maintenance. [40 CFR 63.1510(b)(7)]
viii. Documentation of the work practice and pollution prevention measures used to achieve compliance with the applicable emission limits and a site-specific monitoring plan as required in 40 CFR 63.1510(o) for each group 1 furnace not equipped with an add-on air pollution control device. [40 CFR 63.1510(b)(8)]
ix. Procedures to be followed when changing furnace classifications under the provisions of 40 CFR 63.1514. [40 CFR 63.1510(b)(9)]

d. For a secondary aluminum processing unit at a facility, the permittee must include, within the OM&M plan prepared in accordance with 40 CFR 63.1510(b), the following information: [40 CFR 63.1510(s)(1)]
   i. The identification of each emission unit in the secondary aluminum processing unit; [40 CFR 63.1510(s)(1)(i)]
   ii. The specific control technology or pollution prevention measure to be used for each emission unit in the secondary aluminum processing unit and the date of its installation or application; [40 CFR 63.1510(s)(1)(ii)]
   iii. The emission limit calculated for each secondary aluminum processing unit and performance test results with supporting calculations demonstrating initial compliance with each applicable emission limit; [40 CFR 63.1510(s)(1)(iii)]
   iv. Information and data demonstrating compliance for each emission unit with all applicable design, equipment, work practice or operational standards of 40 CFR 63, Subpart RRR; and [40 CFR 63.1510(s)(1)(iv)]
   v. The monitoring requirements applicable to each emission unit in a secondary aluminum processing unit and the monitoring procedures for daily calculation of the 3-day, 24-hour rolling average using the procedure in 40 CFR 63.1510(t). [40 CFR 63.1510(s)(1)(v)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

e. The SAPU compliance procedures within the OM&M plan may not contain any of the following provisions: [40 CFR 63.1510(s)(2)]
   i. Any averaging among emissions of differing pollutants; [40 CFR 63.1510(s)(2)(i)]
   ii. The inclusion of any affected sources other than emission units in a secondary aluminum processing unit; [40 CFR 63.1510(s)(2)(ii)]
   iii. The inclusion of any emission unit while it is shutdown; or [40 CFR 63.1510(s)(2)(iii)]
   iv. The inclusion of any periods of startup or shutdown in emission calculations. [40 CFR 63.1510(s)(2)(iv)]

f. To revise the SAPU compliance provisions within the OM&M plan prior to the end of the permit term, the permittee must submit a request to the Division containing the information required by 40 CFR 63.1510(s)(1) and obtain approval of the Division prior to implementing any revisions. [40 CFR 63.1510(s)(3)]

g. The permittee must submit semiannual reports according to the requirements in 40 CFR 63.10(e)(3) and **SECTION F.5**. Except, the permittee must submit the semiannual reports within 60 days after the end of each 6-month period instead of within 30 days after the calendar half as specified in 40 CFR 63.10(e)(3)(v). When no deviations of parameters have occurred, the permittee must submit a report stating that no excess emissions occurred during the reporting period. [40 CFR 63.1516(b)]

h. A report must be submitted if any of these conditions occur during a 6-month reporting period: [40 CFR 63.1516(b)(1)]
   i. An excursion of a compliant process or operating parameter value or range (e.g., lime injection rate or screw feeder setting, total reactive chlorine flux injection rate, definition of acceptable scrap, or other approved operating parameter). [40 CFR 63.1516(b)(1)(iv)]
   ii. An affected source (including an emission unit in a secondary aluminum processing unit) was not operated according to the requirements of 40 CFR 63, Subpart RRR. [40 CFR 63.1516(b)(i)(vi)]
   iii. A deviation from the 3-day, 24-hour rolling average emission limit for a secondary aluminum processing unit. [40 CFR 63.1516(b)(vii)]

i. Each report must include each of these certifications, as applicable: [40 CFR 63.1516(b)(2)]
   i. For each group 1 melting/holding furnace without add-on air pollution control devices and using pollution prevention measures that processes only clean charge material: “Each group 1 furnace without add-on air pollution control devices subject to emission limits in 40 CFR 63.1505(i)(2) processed only clean charge during this reporting period.” [40 CFR 63.1516(b)(2)(iv)]
   ii. For each affected source choosing to demonstrate compliance during periods of startup and shutdown in accordance with 40 CFR 63.1513(f)(1): “During each startup and shutdown, no flux and no feed/charge were added to the emission unit, and electricity,

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

propane or natural gas were used as the sole source of heat or the emission unit was not heated." [40 CFR 63.1516(b)(2)(vii)]

j. The permittee must submit the results of any performance test conducted during the reporting period, including one complete report documenting test methods and procedures, process operation, and monitoring parameter ranges or values for each test method used for a particular type of emission point tested. [40 CFR 63.1516(b)(3)]
   i. Within 60 days after the date of completing each performance test (as defined in 40 CFR 63.2) required by 40 CFR 63, Subpart RRR, the permittee must submit the results of the performance tests, including any associated fuel analyses, following the procedure specified in either 40 CFR 63.1516(b)(3)(i)(A) or (B). [40 CFR 63.1516(b)(3)(i)]

k. A malfunction report that is required under 40 CFR 63.1516(d) shall be submitted simultaneously with the semiannual excess emissions/summary report required by 40 CFR 63.1516(b). [40 CFR 63.1516(b)(4)]

l. For the purpose of annual certifications of compliance required by 40 CFR part 70 or 71, the permittee must certify continuing compliance based upon, but not limited to, the following conditions: [40 CFR 63.1516(c)]
   i. Any period of excess emissions, as defined in 40 CFR 63.1516(b)(1), that occurred during the year were reported as required by 40 CFR 63, Subpart RRR; and [40 CFR 63.1516(c)(1)]
   ii. All monitoring, recordkeeping, and reporting requirements were met during the year. [40 CFR 63.1516(c)(2)]

m. If there was a malfunction during the reporting period, the permittee must submit a report that includes the emission unit ID, monitor ID, pollutant or parameter monitored, beginning date and time of the event, end date and time of the event, cause of the deviation or exceedance and corrective action taken for each malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limitation to be exceeded. The report must include a list of the affected source or equipment, an estimate of the quantity of each regulated pollutant emitted over any emission limit, and a description of the method used to estimate the emissions, including, but not limited to, product-loss calculations, mass balance calculations, measurements when available, or engineering judgment based on known process parameters. The report must also include a description of actions taken by the permittee during a malfunction of an affected source to minimize emissions in accordance with 40 CFR 63.1506(a)(5). [40 CFR 63.1516(d)]

n. All reports required by 40 CFR 63, Subpart RRR not subject to the requirements in 40 CFR 63.1516(b) must be sent to the Administrator at the appropriate address listed in 40 CFR 63.13. If acceptable to both the Administrator and the permittee, these reports may be submitted on electronic media. The Administrator retains the right to require submittal of reports subject to 40 CFR 63.1516(b) in paper format. [40 CFR 63.1516(e)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

o. Refer to **SECTION F**.

7. Specific Control Equipment Operating Conditions:
None.

8. Alternate Operating Scenario:
The permittee may choose to operate the holding furnace in either Group 1 (uncontrolled) or Group 2 mode, as defined in 40 CFR 63.1503. For provisions that apply during operating mode changes and after the change is complete, refer to **SECTION H.**

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

SUBJECT ITEM 8 REQUIREMENTS: Roads

EU	Equip. Desig.	Cons. Date	Description	Controls	Capacity (VMT/yr)
Emission Group XI: Miscellaneous Emission Sources					
Z1	(EP)	1972	Haul Roads (Paved & Unpaved)	Water; Reasonable Precautions	35,128

APPLICABLE REGULATIONS:
401 KAR 63:010, *Fugitive emissions*

1. **Operating Limitations:**
   a. The permittee shall not cause, suffer, or allow any material to be handled, processed, transported, or stored; a building or its appurtenances to be constructed, altered, repaired, or demolished, or a road to be used without taking reasonable precaution to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, when applicable, but not be limited to the following: [401 KAR 63:010, Section 3(1)]
      i. Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land; [401 KAR 63:010, Section 3(1)(a)]
      ii. Application and maintenance of asphalt, oil, water, or suitable chemicals on roads, materials stockpiles, and other surfaces which can create airborne dusts; [401 KAR 63:010, Section 3(1)(b)]
      iii. Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials, or the use of water sprays or other measures to suppress the dust emissions during handling. Adequate containment methods shall be employed during sandblasting or other similar operations; [401 KAR 63:010, Section 3(1)(c)]
      iv. Covering, at all times when in motion, open bodied trucks transporting materials likely to become airborne; [401 KAR 63:010, Section 3(1)(d)]
      v. The maintenance of paved roadways in a clean condition; [401 KAR 63:010, Section 3(1)(e)]
      vi. The prompt removal of earth or other material from a paved street which earth or other material has been transported thereto by trucking or earth moving equipment or erosion by water. [401 KAR 63:010, Section 3(1)(f)]

   b. In addition to the requirements of 401 KAR 63:010, Section 3, the following shall apply: [401 KAR 63:010, Section 4]
      i. At all times when in motion, open bodied trucks, operating outside company property, transporting materials likely to become airborne shall be covered. [401 KAR 63:010, Section 4(1)]
      ii. The provisions of 401 KAR 63:010, Section 3(1) and (2) shall not be applicable to temporary blasting or construction operations. [401 KAR 63:010, Section 4(3)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

iii. The permittee shall not allow earth or other material being transported by truck or earth moving equipment to be deposited onto a paved street or roadway. [401 KAR 63:010, Section 4(4)]

2. **Emission Limitations:**

a. The permittee shall not cause or permit the discharge of visible fugitive dust emissions beyond the lot line of the property on which the emissions originate, as determined by Reference Method 22 of Appendix A in 40 CFR 60, for:. [401 KAR 63:010, Section 3(2)]

i. More than five (5) minutes of emission time during any sixty (60) minute observation period; or

~~i.~~ii. More than twenty (20) minutes of emission time during any twenty-four (24) hour period.

Commented [PS7]: Update permit provision to reflect updates promulgated to 401 KAR 63:010 in June 2020.

~~a.~~b. When dust, fumes, gases, mist, odorous matter, vapors, or any combination thereof escape from a building or equipment in such a manner and amount as to cause a nuisance or to violate any administrative regulation, the secretary may order that the building or equipment in which processing, handling and storage are done be tightly closed and ventilated in such a way that all air and gases and air or gas-borne material leaving the building or equipment are treated by removal or destruction of air contaminants before discharge to the open air. [401 KAR 63:010, Section 3(3)]

3. **Testing Requirements:**
Pursuant to 401 KAR 50:045, Section 1, performance testing using the Reference Methods specified in 401 KAR 50:015 shall be conducted as required by the Division.

4. **Specific Monitoring Requirements:**
The permittee shall monitor the time, date, and type of precaution taken to prevent particulate matter from becoming airborne. Refer to **SECTION F.** [401 KAR 52:020, Section 10]

5. **Specific Recordkeeping Requirements:**
The permittee shall maintain records of the precautions taken to prevent particulate matter from becoming airborne. Refer to **SECTION F.** [401 KAR 52:020, Section 10]

6. **Specific Reporting Requirements:**
Refer to **SECTION F**.

7. **Specific Control Equipment Operating Conditions:**
None

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

SUBJECT ITEM 9 REQUIREMENTS: Homogenizing Furnaces

EP	Equip. Desig.	Cons. Date	Description	Controls	Fuel	Capacity (MMBtu/hr)
Emission Group X: Casthouse Operations						
H1	(1I)	3/1990	Homogenizing Furnace #1	None	Natural Gas	13.5
H2	(2I)	3/1990	Homogenizing Furnace #2	None	Natural Gas	13.5
H3	(3I)	3/1990	Homogenizing Furnace #3	None	Natural Gas	13.5
H4	(I3I)	12/21/2000	Homogenizing Furnace #4	None	Natural Gas	14.0

The homogenizing furnaces meet the definition of metal process furnaces and units designed to burn Gas 1 fuels as defined in 40 CFR 63.7575.

APPLICABLE REGULATIONS:
401 KAR 59:010, *New process operations*
401 KAR 63:002, Section 2(4)(iiii), 40 C.F.R. 63.7480 ~~to~~ through 63.7575, Tables 1 ~~to~~ through 13 (Subpart DDDDD), *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters*

1. **Operating Limitations:**
   a. The permittee must meet each emission limit and work practice standard in Table 3 to 40 CFR 63, Subpart DDDDD that applies to the boiler or process heater, for each boiler or process heater at the source. [40 CFR 63.7500(a)(1)]

   b. At all times, the permittee shall operate and maintain any affected source (as defined in 40 CFR 63.7490), including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [40 CFR 63.7500(a)(3)]

   c. Boilers and process heaters in the units designed to burn gas 1 fuels subcategory are not subject to the emission limits in Tables 1 and 2 or 11 through ~~13~~ 15 to 40 CFR 63, Subpart DDDDD, or the operating limits in Table 4 to 40 CFR 63, Subpart DDDDD. [40 CFR 63.7500(e)]

   d. The permittee shall conduct an annual tune-up of each process heater to demonstrate continuous compliance as specified in 40 CFR 63.7540(a)(10)(i) through (vi). The

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

permittee shall conduct the tune-up while burning the type of fuel that provided the majority of the heat input to the boiler or process heater over the 12 months prior to the tune-up. [40 CFR 63.7540(a)(10) and 40 CFR 63, Subpart DDDDD, Table 3(3)]

i. As applicable, inspect the burner, and clean or replace any components of the burner as necessary (the permittee may perform the burner inspection any time prior to the tune-up or delay the burner inspection until the next scheduled unit shutdown). At units where entry into a piece of process equipment or into a storage vessel is required to complete the tune-up inspections, inspections are required only during planned entries into the storage vessel or process equipment; [40 CFR 63.7540(a)(10)(i)]

ii. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available; [40 CFR 63.7540(a)(10)(ii)]

iii. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (the permittee may delay the inspection until the next scheduled unit shutdown). [40 CFR 63.7540(a)(10)(iii)]

iv. Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any NO_X requirement to which the unit is subject; [40 CFR 63.7540(a)(10)(iv)]

v. Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer; and [40 CFR 63.7540(a)(10)(v)]

vi. Maintain on-site and submit, if requested by the Administrator, a report containing the information in 40 CFR 63.7540(a)(10)(vi)(A) through (C), [40 CFR 63.7540(a)(10)(vi)]

1) The concentrations of CO in the effluent stream in parts per million by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler or process heater; [40 CFR 63.7540(a)(10)(vi)(A)]

2) A description of any corrective actions taken as a part of the tune-up; [40 CFR 63.7540(a)(10)(vi)(B)]

e. If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup. [40 CFR 63.7540(a)(13)]

2. Emission Limitations:

a. The permittee shall not cause, suffer, allow or permit any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than twenty (20) percent opacity. [401 KAR 59:010, Section 3(1)(a)]

b. For emissions from a control device or stack the permittee shall not cause, suffer, allow or permit the emission into the open air of particulate matter from any affected facility which

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

is in excess of the quantity specified in 401 KAR 59:010, Appendix A: [401 KAR 59:010, Section 3(2)]

i. For process weights < 0.5 tons/hour: 2.34 lbs/hr

ii. For process weights ≤ 30 tons/hour: $E = 3.59P^{0.62}$

Where

E = rate of emission in lb/hr; and

P = process weight rate in tons/hr.

Compliance Demonstration:

The permittee is assumed to be in compliance with the particulate matter and opacity standards when burning natural gas.

3. **Testing Requirements:**

Pursuant to 401 KAR 59:005, Section 2(2) and 401 KAR 50:045, Section 1, performance testing using the reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division.

4. **Specific Monitoring Requirements:**

a. For each emission unit listed above, the permittee shall monitor annual natural gas usage. [401 KAR 52:020, Section 10]

b. Refer to **SECTION F.**

5. **Specific Recordkeeping Requirements:**

a. The permittee shall keep records according to 40 CFR 63.7555(a)(1) and (2). [40 CFR 63.7555(a)]

i. A copy of each notification and report that is submitted to comply with 40 CFR 63, Subpart DDDDD, including all documentation supporting any Initial Notification or Notification of Compliance Status or semiannual compliance report that is submitted, according to the requirements in 40 CFR 63.10(b)(2)(xiv). [40 CFR 63.7555(a)(1)]

ii. Records of performance tests, fuel analyses, or other compliance demonstrations and performance evaluations as required in 40 CFR 63.10(b)(2)(viii). [40 CFR 63.7555(a)(2)]

b. For each emission unit listed above, the permittee shall maintain records of annual natural gas usage. [401 KAR 52:020, Section 10]

c. Refer to **SECTION F.**

6. **Specific Reporting Requirements:**

a. The permittee shall report each instance in which the permittee did not meet each emission limit and operating limit in Tables 1 through 4 or 11 through ~~13~~ 15 to 40 CFR 63, Subpart DDDDD that applies. These instances are deviations from the emission limits or operating

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

limits, respectively, in 40 CFR 63, Subpart DDDDD. These deviations must be reported according to the requirements in 40 CFR 63.7550. [40 CFR 63.7540(b)]

b. The permittee shall submit each report in Table 9 to 40 CFR 63, Subpart DDDDD that applies. [40 CFR 63.7550(a)]

c. The permittee shall submit each report, according to 40 CFR 63.7550(h), by the date in Table 9 to 40 CFR 63, Subpart DDDDD and according to the requirements in 40 CFR 63.7550(b)(1) through (4). For the emission units listed above, the permittee may submit only an annual compliance report, as applicable, as specified in 40 CFR 63.7550(b)(1) through (4), instead of a semi-annual compliance report. [40 CFR 63.7550(b)]
   i. The first annual compliance report must cover the period beginning on the compliance date that is specified for each boiler or process heater in 40 CFR 63.7495 and ending on December 31 within 1 year after the compliance date that is specified for the source in 40 CFR 63.7495. [40 CFR 63.7550(b)(1)]
   ii. The first annual compliance report must be postmarked or submitted no later than January 31. [40 CFR 63.7550(b)(2)]
   iii. Each subsequent annual compliance report must cover the applicable 1-year period from January 1 to December 31. [40 CFR 63.7550(b)(3)]
   iv. Each subsequent annual compliance report must be postmarked or submitted no later than January 31. [40 CFR 63.7550(b)(4)]
   v. The permittee may submit the first and subsequent compliance reports according to the dates the Division has established in **SECTION F** instead of according to the dates in 40 CFR 63.7550(b)(1) through (4). [40 CFR 63.7550(b)(5)]

d. A compliance report must contain the following information depending on how the facility chooses to comply with the limits set in 40 CFR 63, Subpart DDDDD. [40 CFR 63.7550(c)]
   i. If the facility is subject to the requirements of a tune up the permittee shall submit a compliance report with the information in 40 CFR 63.7550(c)(5)(i) through (iii), (xiv) and (xvii). [40 CFR 63.7550(c)(1)]
   ii. Company and Facility name and address. [40 CFR 63.7550(c)(5)(i)]
   iii. Process unit information, emissions limitations, and operating parameter limitations. [40 CFR 63.7550(c)(5)(ii)]
   iv. Date of report and beginning and ending dates of the reporting period. [40 CFR 63.7550(c)(5)(iii)]
   v. Include the date of the most recent tune-up for each unit subject to only the requirement to conduct an annual tune-up according to 40 CFR 63.7540(a)(10). Include the date of the most recent burner inspection if it was not done annually and was delayed until the next scheduled or unscheduled unit shutdown. [40 CFR 63.7550(c)(5)(xiv)]
   vi. Statement by a responsible official with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report. [40 CFR 63.7550(c)(5)(xvii)]

e. For each deviation from an emission limit or operating limit in 40 CFR 63, Subpart DDDDD that occurs at an individual boiler or process heater, or from the work practice

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

standards for periods of startup and shutdown, the compliance report must additionally contain the information required in 40 CFR 63.7550(d)(1) through (3). [40 CFR 63.7550(d)]

i. A description of the deviation and which emission limit, operating limit, or work practice standard from which the permittee deviated. [40 CFR 63.7550(d)(1)]

ii. Information on the number, duration, and cause of deviations (including unknown cause), as applicable, and the corrective action taken. [40 CFR 63.7550(d)(2)]

f. The permittee shall submit the reports according to the procedures specified in 40 CFR 63.7550(h)(1) through (3). [40 CFR 63.7550(h)]

g. Refer to **SECTION F.**

7. Specific Control Equipment Operating Conditions:

None.

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

SUBJECT ITEM 10 REQUIREMENTS: New Emergency Stationary RICE ≤ 500HP

EU	Equip. Desig.	Cons. Date	Description	Controls	Fuel	Capacity
Emission Group XII: Stationary Engines						
Z5	(Z5)	9/5/2012	Building 001 Emergency Engine	None	Natural Gas	32 HP
Z6	(Z6)	9/19/2012	Rock House Emergency Engine	None	Natural Gas	48 HP
Z8	(Z8)	2/2015	Building 044 Emergency Engine	None	Natural Gas	30 HP
Z9	(Z9)	2021	001 IT Back-up Emergency Generator	None	Natural Gas	32 HP

APPLICABLE REGULATIONS:

401 KAR 60:005, Section 2(2)(eeee), 40 C.F.R. 60.4230 ~~to~~ through 60.4248, Tables 1 ~~to~~ through 4 (Subpart JJJJ), *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*

401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 ~~to~~ through 63.6675, Tables 1a ~~to~~ through 8, and Appendix A (Subpart ZZZZ), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

Note: D.C. Circuit Court [*Delaware v. EPA*, 785 F. 3d 1 (D.C. Cir. 2015)] has vacated the provisions in 40 CFR 63, Subpart ZZZZ and 40 CFR 60, Subpart JJJJ that contain the 100-hour exemption for operation of emergency engines for purposes of emergency demand response under 40 CFR 63.6640(f)(2)(ii)-(iii) and 40 CFR 60.4243(d)(2)(ii)-(iii). The D.C. Circuit Court issued the mandate for the vacatur on May 4, 2016.

1. **Operating Limitations:**
   a. The permittee shall install a non-resettable hour meter upon startup of each emergency engine. [40 CFR 60.4237(c)]

   b. The permittee shall operate the emergency stationary ICE according to the requirements in 40 CFR 60.4243(d)(1) through (3). In order for the engine to be considered an emergency stationary ICE under 40 CFR 60, Subpart JJJJ, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for 50 hours per year, as described in 40 CFR 60.4243(d)(1) through (3), is prohibited. If the permittee does not operate the engine according to the requirements in 40 CFR 60.4243(d)(1) through (3), the engine will not be considered an emergency engine under 40 CFR 60, Subpart JJJJ and must meet all requirements for non-emergency engines. [40 CFR 60.4243(d)]
      i. There is no time limit on the use of emergency stationary ICE in emergency situations. [40 CFR 60.4243(d)(1)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

ii. The permittee may operate the emergency stationary ICE for ~~any combination of~~ the purpose~~s~~ specified in 40 CFR 60.4243(d)(2)(i) ~~through (iii)~~ for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by 40 CFR 60.4243(d)(3) counts as part of the 100 hours per calendar year allowed by 40 CFR 60.4243(d)(2). [40 CFR 60.4243(d)(2)]

1) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The permittee may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the permittee maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year. [40 CFR 60.4243(d)(2)(i)]

iii. Emergency stationary ICE may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing ~~and emergency demand response~~ provided in 40 CFR 60.4243(d)(2). Except as provided in 40 CFR 60.4243(d)(3)(i), the 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity. The 50 hours per year for non-emergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met: [40 CFR 60.4243(d)(3)(i)]

1) The engine is dispatched by the local balancing authority or local transmission and distribution system operator; [40 CFR 60.4243(d)(3)(i)(A)]
2) The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region. [40 CFR 60.4243(d)(3)(i)(B)]
3) The dispatch follows reliability, emergency operation or similar protocols that follow specific NERC, regional, state, public utility commission or local standards or guidelines. [40 CFR 60.4243(d)(3)(i)(C)]
4) The power is provided only to the facility itself or to support the local transmission and distribution system. [40 CFR 60.4243(d)(3)(i)(D)]
5) The permittee identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the engine owner or operator. [40 CFR 60.4243(d)(3)(i)(E)]

c. The permittee may operate the engines using propane for a maximum of 100 hours per year as an alternative fuel solely during emergency operations, but must keep records of such use. If propane is used for more than 100 hours per year in an engine that is not certified to

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

the emission standards when using propane, the permittee is required to conduct a performance test to demonstrate compliance with the emission standards of 40 CFR 60.4233. [40 CFR 60.4243(e)]

2. Emission Limitations:

a. The permittee shall meet the following emission standards in Table 1 to 40 CFR 60, Subpart JJJJ for each emergency stationary SI ICE listed above: [40 CFR 60.4233(d)]

Pollutant	Emission Standard g/HP-hr
NOx + HC	10
CO	387

b. For each engine, the permittee shall operate and maintain stationary SI ICE that achieve the emission standards as required in 40 CFR 60.4233 over the entire life of the engine. [40 CFR 60.4234]

c. The permittee shall meet the requirements of 40 CFR 63, Subpart ZZZZ by meeting the requirements of 40 CFR 60, Subpart JJJJ. [40 CFR 63.6590(c)(6)]

Compliance Demonstration:

1. The permittee shall demonstrate compliance with the emission standards in 40 CFR 60.4233(d) by purchasing an engine certified according to the procedures in 40 CFR 60, Subpart JJJJ, for the same model year and demonstrating compliance according to one of the methods specified in 40 CFR 60.4243(a). [40 CFR 60.4243(b)(1)]
2. The permittee shall operate and maintain the certified stationary SI internal combustion engine and control device according to the manufacturer's emission-related written instructions, and the permittee shall keep records of conducted maintenance to demonstrate compliance. [40 CFR 60.4243(a)(1)]
3. If the permittee adjusts engine settings according to and consistent with the manufacturer's instructions, the stationary SI internal combustion engine will not be considered out of compliance. [40 CFR 60.4243(a)(1)]

3. Testing Requirements:

a. If the permittee does not operate and maintain the certified stationary SI internal combustion engine and control device according to the manufacturer's written emission-related instructions, the permittee is required to perform initial performance testing as indicated in 40 CFR 60.4243, but is not required to conduct subsequent performance testing unless the stationary engine ~~is rebuilt or~~ undergoes rebuild, major repair or maintenance. ~~A rebuilt stationary SI ICE means an engine that has been rebuilt as that term is defined in 40 CFR 94.11(a).~~ [40 CFR 60.4243(f)]

a. Engine rebuilding means to overhaul an engine or to otherwise perform extensive service on the engine (or on a portion of the engine or engine system).

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

For the purpose of this paragraph (f), perform extensive service means to disassemble the engine (or portion of the engine or engine system), inspect and/or replace many of the parts, and reassemble the engine (or portion of the engine or engine system) in such a manner that significantly increases the service life of the resultant engine.

b. Pursuant to 401 KAR 50:045, Section 1, performance testing using the reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division.

4. Specific Monitoring Requirements:

a. The permittee shall keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The permittee shall document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation. [40 CFR 60.4245(b)]

b. Refer to **SECTION F.**

5. Specific Recordkeeping Requirements:

a. The permittee shall keep records of the information in 40 CFR 60.4245(a)(1) through (4). [40 CFR 60.4245(a)]
   i. All notifications submitted to comply with 40 CFR 60, Subpart JJJJ and all documentation supporting any notification. [40 CFR 60.4245(a)(1)]
   ii. Maintenance conducted on the engine. [40 CFR 60.4245(a)(2)]
   iii. Documentation from the manufacturer that the engine is certified to meet the emission standards and information as required in 40 CFR parts 90, 1048, 1054, and 1060, as applicable. [40 CFR 60.4245(a)(3)]

b. The permittee shall maintain records of the hours of operation that each engine uses propane as an alternative fuel during emergency situations. [401 KAR 52:020, Section 10]

c. Refer to **SECTION F.**

6. Specific Reporting Requirements:

Refer to **SECTION F**.

7. Specific Control Equipment Operating Conditions:

None.

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

SUBJECT ITEM 11 REQUIREMENTS: Existing Emergency Stationary RICE ≤ 500HP

EU	Equip. Desig.	Cons. Date	Description	Controls	Fuel	Capacity
Emission Group XII: Stationary Engines						
Z2	(Z2)	2002	Caterpillar Emergency Generator	None	Natural Gas	308 HP
Z4	(Z4)	1973	Detroit Diesel Fire Pump Engine	None	Natural Gas	85 HP

APPLICABLE REGULATIONS:

401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 ~~to~~ through 63.6675, Tables 1a ~~to~~ through 8, and Appendix A (Subpart ZZZZ), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

Note: D.C. Circuit Court [*Delaware v. EPA*, 785 F. 3d 1 (D.C. Cir. 2015)] has vacated the provisions in 40 CFR 63, Subpart ZZZZ that contain the 100-hour exemption for operation of emergency engines for purposes of emergency demand response under 40 CFR 63.6640(f)(2)(ii)-(iii). The D.C. Circuit Court issued the mandate for the vacatur on May 4, 2016.

NON-APPLICABLE REGULATIONS:

401 KAR 60:005, Section 2(2)(dddd), 40 C.F.R. 60.4200 to 60.4219, Tables 1 to 8 (Subpart IIII), *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*. (Note: This regulation will become applicable should Z4 be modified or reconstructed in the future as defined under the Federal Regulation)

401 KAR 60:005, Section 2(2)(eeee), 40 C.F.R. 60.4230 to 60.4248, Tables 1 to 4 (Subpart JJJJ), *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*. (Note: This regulation will become applicable should Z2 be modified or reconstructed in the future as defined under the Federal Regulation)

1. **Operating Limitations:**
   a. The permittee shall be in compliance with the emission limitations, operating limitations, and other requirements in 40 CFR 63, Subpart ZZZZ that apply at all times. [40 CFR 63.6602; 40 CFR 63.6605(a)]

   b. At all times the permittee shall operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [40 CFR 63.6605(b)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

c. The permittee shall either operate and maintain the engine according to the manufacturer's emission-related operation and maintenance instructions; or develop and follow a custom maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. [40 CFR 63.6625(e)(2), 40 CFR 63.6640(a)]

d. The permittee shall install a non-resettable hour meter if one is not already installed. [40 CFR 63.6625(f)]

e. The permittee shall minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the emission standards applicable to all times other than startup in 40 CFR 63, Subpart ZZZZ, Tables 1a, 2a, 2c, and 2d apply. [40 CFR 63.6625(h); 40 CFR 63, Subpart ZZZZ, Table 2c, Item 1]

f. The permittee shall operate the emergency stationary RICE according to the requirements in 40 CFR 63.6640(f)(1) through (4). In order for the engine to be considered an emergency stationary RICE under 40 CFR 63, Subpart ZZZZ, any operation other than emergency operation, maintenance and testing, ~~emergency demand response,~~ and operation in non-emergency situations for 50 hours per year, as described in 40 CFR 63.6640(f)(1) through (4), is prohibited. If the permittee does not operate the engine according to the requirements in 40 CFR 63.6640(f)(1) through (4), the engine will not be considered an emergency engine under 40 CFR 63, Subpart ZZZZ and must meet all requirements for non-emergency engines. [40 CFR 63.6640(f)]
   i. There is no time limit on the use of emergency stationary RICE in emergency situations. [40 CFR 63.6640(f)(1)]
   ii. The permittee may operate the emergency stationary RICE for ~~any combination of~~ the purpose~~s~~ specified in 40 CFR 63.6640(f)(2)(i) ~~through (iii)~~ for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by 40 CFR 63.6640(f)(3) and (4) counts as part of the 100 hours per calendar year allowed by 40 CFR 63.6640(f)(2). [40 CFR 63.6640(f)(2)]
      1) Emergency stationary RICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The permittee may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the permittee maintains records indicating that federal, state, or local standards require maintenance and testing of emergency RICE beyond 100 hours per calendar year. [40 CFR 63.6640(f)(2)(i)]
   iii. Emergency stationary RICE located at area sources of HAP may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing ~~and emergency demand response~~ provided in 40 CFR

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

63.6640(f)(2). Except as provided in 40 CFR 63.6640(f)(4)(i) and (ii), the 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity. [40 CFR 63.6640(f)(4)]

1) The 50 hours per year for non-emergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met: [40 CFR 63.6640(f)(4)(ii)]
   A. The engine is dispatched by the local balancing authority or local transmission and distribution system operator. [40 CFR 63.6640(f)(4)(ii)(A)]
   B. The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region. [40 CFR 63.6640(f)(4)(ii)(B)]
   C. The dispatch follows reliability, emergency operation or similar protocols that follow specific NERC, regional, state, public utility commission or local standards or guidelines. [40 CFR 63.6640(f)(4)(ii)(C)]
   D. The power is provided only to the facility itself or to support the local transmission and distribution system. [40 CFR 63.6640(f)(4)(ii)(D)]
   E. The permittee identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the engine owner or operator. [40 CFR 63.6640(f)(4)(ii)(E)]

g. As stated in 40 CFR 63.6600, 63.6602, and 63.6640, the permittee shall comply with the following requirements: [40 CFR 63, Subpart ZZZZ, Table 2c]
   i. For Z2 and Z4: Change oil and filter every 500 hours of operation or annually, whichever comes first. [40 CFR 63, Subpart ZZZZ, Table 2c, Items 1.a. and 6.a.]
   ii. For Z4: Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; [40 CFR 63, Subpart ZZZZ, Table 2c, Item 1.b.]
   iii. For Z2: Inspect spark plugs every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; [40 CFR 63, Subpart ZZZZ, Table 2c, Item 6.b.]
   iv. For Z2 and Z4: Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary. [40 CFR 63, Subpart ZZZZ, Table 2c, Items 1.c. and 6.c.]

h. If an emergency engine is operating during an emergency and it is not possible to shut down the engine in order to perform the work practice requirements on the schedule required in Table 2c of 40 CFR 63, Subpart ZZZZ, or if performing the work practice on the required schedule would otherwise pose an unacceptable risk under federal, state, or local law, the work practice can be delayed until the emergency is over or the unacceptable risk under federal, state, or local law has abated. The work practice should be performed

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

as soon as practicable after the emergency has ended or the unacceptable risk under federal, state, or local law has abated. Sources must report any failure to perform the work practice on the schedule required and the federal, state or local law under which the risk was deemed unacceptable. [40 CFR 63, Subpart ZZZZ, Table 2c, Footnote 1]

i. Sources have the option to utilize an oil analysis program as described in 40 CFR 63.6625(i) or (j) in order to extend the specified oil change requirement in Table 2c of 40 CFR 63, Subpart ZZZZ. [40 CFR 63, Subpart ZZZZ, Table 2c, Footnote 2]

2. Emission Limitations:
None

3. Testing Requirements:
Pursuant to 401 KAR 50:045, Section 1, performance testing using the reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division.

4. Specific Monitoring Requirements:

a. The permittee shall keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. [40 CFR 63.6625(f)]

b. Refer to **SECTION F.**

5. Specific Recordkeeping Requirements:

a. The permittee shall keep the records described in 40 CFR 63.6655(a)(1) through (a)(5). [40 CFR 63.6655(a)]
   i. A copy of each notification and report that was submitted to comply with 40 CFR 63 Subpart ZZZZ, including all documentation supporting any Initial Notification or Notification of Compliance Status that was submitted, according to the requirement in 40 CFR 63.10(b)(2)(xiv). [40 CFR 63.6655(a)(1)]
   ii. Records of the occurrence and duration of each malfunction of operation (*i.e.,* process equipment) or the air pollution control and monitoring equipment. [40 CFR 63.6655(a)(2)]
   iii. Records of performance tests and performance evaluations as required in 40 CFR 63.10(b)(2)(viii). [40 CFR 63.6655(a)(3)]
   iv. Records of all required maintenance performed on the air pollution control and monitoring equipment. [40 CFR 63.6655(a)(4)]
   v. Records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.6605(b), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation. [40 CFR 63.6655(a)(5)]

b. The permittee shall keep the records required in Table 6 of 40 CFR 63, Subpart ZZZZ to show continuous compliance with each emission or operating limitation that applies. [40 CFR 63.6655(d)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

c. The permittee shall keep records of the maintenance conducted on the stationary RICE in order to demonstrate that the permittee operated and maintained the stationary RICE and after-treatment control device (if any) according to the permittee's own maintenance plan. [40 CFR 63.6655(e)]

d. The permittee shall keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The permittee shall document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation. If the engines are used for the purpose~~s~~ specified in 40 CFR 63.6640(f)(~~2)(ii) or (iii) or 40 CFR 63.6640(f)(~~4)(ii), the permittee shall keep records of the notification of the emergency situation, and the date, start time, and end time of engine operation for these purposes. [40 CFR 63.6655(f)].

e. Refer to **SECTION F.**

6. Specific Reporting Requirements:

a. The permittee shall report each instance in which each emission limitation or operating limitation in Tables 1a and 1b, Tables 2a and 2b, Table 2c, and Table 2d to 40 CFR 63, Subpart ZZZZ that apply were not met. These instances are deviations from the emission and operating limitations in 40 CFR 63, Subpart ZZZZ. These deviations must be reported according to the requirements in 40 CFR 63.6650. [40 CFR 63.6640(b)]

b. Refer to **SECTION F**.

7. Specific Control Equipment Operating Conditions:

None.

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

SUBJECT ITEM 12 REQUIREMENTS: Emergency Propane Fired Generators ≤ 500HP, Constructed on or After June 12, 2006

EU	Equip. Desig.	Cons. Date	Description	Controls	Fuel	Capacity
Emission Group XII: Stationary Engines						
Z3	(Z3)	11/2008	Cummins Emergency Generator	None	Propane	66 HP
Z7	(Z7)	2007	Lift Station Emergency Generator	None	Propane	30 HP

APPLICABLE REGULATIONS:

401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 ~~to~~ through 63.6675, Tables 1a ~~to~~ through 8, and Appendix A (Subpart ZZZZ), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

Note: D.C. Circuit Court [*Delaware v. EPA*, 785 F. 3d 1 (D.C. Cir. 2015)] has vacated the provisions in 40 CFR 63, Subpart ZZZZ that contain the 100-hour exemption for operation of emergency engines for purposes of emergency demand response under 40 CFR 63.6640(f)(2)(ii)-(iii). The D.C. Circuit Court issued the mandate for the vacatur on May 4, 2016.

NON-APPLICABLE REGULATIONS:

401 KAR 60:005, Section 2(2)(eeee), 40 C.F.R. 60.4230 to 60.4248, Tables 1 to 4 (Subpart JJJJ), *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*. These engines were constructed after June 12, 2006, however, they were manufactured prior to January 1, 2009, and are therefore exempt from this regulation. [40 CFR 60.4230(a)(4)(iv)] (Note: This regulation will become applicable should either of these engines be modified or reconstructed in the future as defined under the Federal Regulation)

1. **Operating Limitations:**
   To meet the definition of an emergency engine, the permittee shall not operate the engines listed above more than 100 hours/year in non-emergency situations.

2. **Emission Limitations:**
   None.

3. **Testing Requirements:**
   Pursuant to 401 KAR 50:045, Section 1, performance testing using the reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division.

4. **Specific Monitoring Requirements:**
   a. The permittee shall monitor hours of operation and fuel usage for each unit. [401 KAR 52:020, Section 10]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

SUBJECT ITEM 14 REQUIREMENTS: Pitch Storage Tanks

EP	Equip. Desig.	Cons. Date	Description	Controls	Material	Combined Capacity
Emission Group III: Green Carbon Wet						
U5	(EO72, EO73)	7/28/1977	Pitch Storage Tanks	DL-DC; Carbon Adsorber	Coal Tar	29.50 tons/hr*; 225,000 gallons total storage capacity

*Loading rate.

APPLICABLE REGULATIONS:

401 KAR 63:002, Section 2(4)(bb), 40 C.F.R. 63.840 ~~to~~ through 63.855, Tables 1 ~~to~~ through 4, and Appendix A (Subpart LL), *National Emission Standards for Hazardous Air Pollutants for Primary Aluminum Reduction Plants,* applicable with respect to each pitch storage tank associated with primary aluminum production and located at a major source as defined in 40 CFR 63.2.

1. **Operating Limitations:**
   a. At all times, the permittee shall operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records and inspection of the source. [40 CFR 63.843(f)]

   b. The permittee shall operate according to the monitoring plan submitted to the Division according to **4. Specific Monitoring Requirements (b).**

2. **Emission Limitations:**
   Each pitch storage tank shall be equipped with an emission control system designed and operated to reduce inlet emissions of POM by 95 percent or greater. [40 CFR 63.843(d)]

   Compliance Demonstration:
   Refer to **2. Testing Requirements.**

3. **Testing Requirements:**
   a. If a performance test is chosen as the method of demonstrating compliance with the emission limits in 40 CFR 63.843(d), the permittee shall prepare a site-specific test plan prior to the initial performance test according to the requirements of 40 CFR 63.7(c). The test plan shall include procedures for conducting the initial performance test and for subsequent performance tests required in 40 CFR 63.848 for emission monitoring. In addition to the information required by 40 CFR 63.7, the test plan shall include: [40 CFR 63.847(b)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

number of exceedances, no more than one exceedance shall be attributed in any given 24-hour period. [40 CFR 63.848(i)]

d. Refer to **SECTION F.**

Commented [PS8]: Add New Section B for Subject Item 15: Bath Screener Operation (Emission Unit K10-A) covered by the August 24, 2022 Section 502(b)(10) notification. Refer to applicable requirements noted on the DEP7007V form included with that notification.

Commented [PS9]: Add New Section B for Subject Item 16: Powerscreen Diesel Engine (Emission Unit K10-B) covered by the August 24, 2022 Section 502(b)(10) notification. Refer to applicable requirements noted on the DEP7007V form included with that notification.

SECTION C - INSIGNIFICANT ACTIVITIES

The following listed activities have been determined to be insignificant activities for this source pursuant to 401 KAR 52:020, Section 6. Although these activities are designated as insignificant the permittee must comply with the applicable regulation. Process and emission control equipment at each insignificant activity subject to an opacity standard shall be inspected monthly and a qualitative visible emissions evaluation made. Results of the inspection, evaluation, and any corrective action shall be recorded in a log.

Description	Generally Applicable Regulation
1. Anode Cover Storage T34 (DC), T35 (DC)	401 KAR 59:010
2. Chip Handling System (5I)	None
3. Electrostatic Stub Handling (EK)	401 KAR 59:010
4. Maintenance Area 046 – Wood/Refractory Saw (AI)	401 KAR 61:020
5. Gasoline Storage Tank – 2,000 gal	None
6. Diesel Storage Tank – 6,000 gal	None
7. A446 Day Tank Vent Filter	401 KAR 59:010
8. Flex-Kleen Dust Collector	401 KAR 59:010
9. Raw Material Lab Dust Collector	401 KAR 59:010
10. Parts Washer (non-VOC solution)	None
11. Potable Welders for Maintenance	401 KAR 59:010 401 KAR 63:020
12. Used Oil Tank #1 – 5,000 gal	None
13. Used Oil Tank #2 – 5,000 gal	None
14. Anode Bar Ink Stamping Station	None
15. Small Form Oven #1 (2.24 MMBtu/hr)	401 KAR 59:010 401 KAR 63:020
16. Small Form Oven #2 (2.24 MMBtu/hr)	401 KAR 59:010 401 KAR 63:020
17. Small Form Oven #3 (2.24 MMBtu/hr)	401 KAR 59:010 401 KAR 63:020
18. Oversized Anode Butt Crushing Operations	401 KAR 63:010
19. Burn-Off Anode Butt Crushing Operations	401 KAR 63:010
20. Five Crucible Pre-Heater Stations (<1 MMBtu/hr each)	401 KAR 63:020
21. Building 136 Auto Sow Casting System, With 4 Pre-Heaters (0.5 MMBtu/hr each)	401 KAR 63:020
22. Parts Washers #1 & #2 (non-VOC solution)	None
23. Anode Rod Brush System	401 KAR 59:010
~~23.~~24. Portable Crusher Operation (30 tph capacity)	401 KAR 63:010

Commented [PS10]: Refer to August 29, 2022 Section 502(b)(10) notification and the February 27, 2023 approval letter from the Division.

SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS (CONTINUED)

exceeds the Kentucky Ambient Air Quality Standard for TF, will require additional air dispersion modeling be completed with the revision application. Continued compliance for TF is demonstrated if the model shows compliance with the primary standards for gaseous fluorides.

6. ~~The permittee shall, within 1 year of the final issuance of permit V-19-010, relocate the ambient air monitor required by 401 KAR 61:165 and **SECTION B, Subject Item 4, 1. Operating Limitations (c).** The monitor shall be located at the location proposed in the plan for relocation submitted to the Division on December 8, 2016 (Across from the DRR SO_2 monitoring location). Refer to **SECTION I** for the relocation schedule and steps.~~

Commented [PS11]: This one-time task was completed during the permit term and can be removed from the renewal permit.

Appendix A

COMPLIANCE ASSURANCE MONITORING (CAM) PLANS 40 CFR 64

1. CAM Plan for Potlines 1-3 – PM/PM_{10}/$PM_{2.5}$

1.1 Emission Units and Control Device Description

Emission Unit Name:	**Potlines 1-3**
KyEIS Equipment ID:	EQPT0000000014; EQPT0000000015; EQPT0000000016
KyEIS Source ID:	**E1; E3; E5**
KyEIS Process ID:	2; 2; 2
Control Device:	Dry Alumina Scrubbers (161S A-398, 161N A-398, 162S A-398, 162N A-398, 163S A-398, 163N A-398)

1.2 PM/PM_{10}/$PM_{2.5}$ CAM Plan

1.2.1 Applicable Regulations, PM/PM_{10}/$PM_{2.5}$ Emission Rates and Current Monitoring

Potlines 1-3 (E1, E3, E5)	
Pollutant:	PM/PM_{10}/$PM_{2.5}$
Regulation:	401 KAR 51:017 (BACT)
Emission Limit:	PM from the Potline 1-3 roof monitors and A-398 scrubber system stacks are limited to **4.88 lb/ton** PM_{10} from the Potline 1-3 roof monitors and A-398 scrubber system stacks are limited to **2.1 lbs/ton** $PM_{2.5}$ from the Potline 1-3 roof monitors and A-398 scrubber system stacks are limited to **2.1 lbs/ton**
Pre-Controlled Emissions:	PM (Filterable) at inlet of A-398 scrubbers (total for two systems on each potline): 355 tpy PM_{10} at inlet of A-398 scrubbers (total for two systems on each potline): 621 tpy $PM_{2.5}$ at inlet of A-398 scrubbers (total for two systems on each potline): 549 tpy (based on estimated 99% control efficiency)
Controlled Emissions:	PM (Filterable) at outlet of A-398 scrubbers (total for two systems on each potline): 0.81 lb/hr; **3.55 tpy** PM_{10} at outlet of A-398 scrubbers (total for two systems on each potline): 1.42 lb/hr; **6.21 tpy** $PM_{2.5}$ at outlet of A-398 scrubbers (total for two systems on each potline): 1.25 lb/hr; **5.49 tpy** Controlled PM, PM_{10}, and $PM_{2.5}$ emissions from Potlines 1-3 are based on the results from a March 2015 stack test. The lb/ton emission factors derived from this test are multiplied by the maximum capacity of each potline to define the controlled emissions value listed above.
CAM Designation:	Small PSEU for PM/PM_{10}/$PM_{2.5}$
Current PM/PM_{10}/$PM_{2.5}$ Monitoring Requirements:	• Conduct FPM/CPM/PM_{10}/$PM_{2.5}$ stack test annually on Potline 3 (considered representative of all three potlines). • Perform a qualitative visual observation of equipment and emissions from the stack on a daily basis during equipment operation and maintain a log of the observation. • Perform visual opacity readings on the stack using Reference Method 9 if visible emissions are observed during the daily observations. • Continuously monitor the alumina flow, inlet air flow rate, and pressure drop across the alumina bed and baghouse.

Potlines 1-3 (E1, E3, E5)
• Monthly hours of operation. • Monthly totals of aluminum production. • Production-based emission rates. • Weight measurement device calibrations. • Ambient air monitoring results.

1.2.2 Monitoring Methods for PM/PM_{10}/$PM_{2.5}$

The proposed monitoring methods that provide on-going assurance of compliance with the permitted PM/PM_{10}/$PM_{2.5}$ limits and monitoring performance criteria for the indicators selected are detailed in Table 1-1. In accordance with 40 CFR 64.4(b), the rationale and justification for the monitoring method and indicator ranges are provided in the subsequent sections.

Table 1-1. $PM/PM_{10}/PM_{2.5}$ Monitoring Methods for Potlines 1-3

General Criteria		
Indicator	**Dry Alumina Scrubber Baghouse Differential Pressure**	**Visible emissions from the Dry Alumina Scrubber stack.**
Measurement Approach	The differential pressure across each dry alumina baghouse module is measured by Rosemount Model 1151DP3552B2 transmitters connected to each module on the dirty side and to the discharge plenum on the clean side.	A qualified observer will conduct a visual observation twice daily (at least 4 hours apart) when weather conditions allow using Method 22.
Indicator Range	**1 to 10 inches water** An excursion is defined as a 2-hour average differential pressure reading outside the indicator range. An excursion will trigger an investigation of the occurrence, corrective action, and a reporting requirement.	**Visible emissions seen during a visual observation.**
Means of Identifying Excursion	The continuous monitoring system provides an alarm notification to operators if the differential pressure reading falls outside the indicator range.	Direct viewing of the stacks by a qualified observer.
Corrective Actions	In response to an excursion, appropriate personnel will troubleshoot the dry alumina scrubber baghouse and conduct repairs or maintenance as deemed necessary. Corrective actions will be documented in the plant's maintenance tracking system.	In response to an excursion (i.e., presence of visible emissions), personnel will troubleshoot the problematic baghouse system and conduct repairs or maintenance as deemed necessary. Corrective action will be initiated within 1 hour of visible emission inspections that indicate abnormal operations. Corrective actions will be documented in the plant's maintenance tracking system.
Performance Criteria		
Data Representativeness	The pressure transmitters have a minimum accuracy of ± 0.075%.	It is assumed that the baghouses are functioning properly if there are no visible emissions from the respective stacks.
Verification of Operational Status	The differential pressure reading is displayed on the operator's control screen. The system continuously monitors the pressure and alarms if it falls outside the indicator range.	Observer will verify that Potlines 1-3 and the dry alumina scrubber systems are operational before conducting the visual evaluation of the stacks.
QA/QC Practices and Criteria	Preventative maintenance inspections are conducted monthly that include cleaning and checking of the monitoring instruments.	The baghouse modules will be maintained and operated in accordance with good air pollution control practices. Staff assigned to conduct visual observations will be provided training on Method 22 procedures to follow.

Monitoring Frequency	**Continuously** The differential pressure across each of the baghouse modules is monitored continuously and at least one data point is electronically saved every 15 minutes when the system is in operation.	**Twice Daily** Visual Observations will be conducted twice daily (at least 4 hours apart).
Data Collection Procedure	15-minute instantaneous readings are recorded. The programmable logic controller (PLC) then calculates and records the rolling 2-hour average value.	Trained staff will conduct qualitative visual observations of the opacity of emissions from the dry alumina scrubber system stacks on all three Potlines following Method 22 and maintain a log of the observations. The log shall note whether any air emissions were visible from a stack.
Averaging Period	2 hours	Instantaneous determination from visual observation.
QIP Threshold	Century will develop a quality improvement plan (QIP) if there are more than 883 excursions of the differential pressure indicator for any given A-398 scrubber system in a semi-annual reporting period. This corresponds to an excursion frequency of less than 5% of total data values collected in a semiannual period (184 days/period x 24 hr/day x 4 readings/hour).	Century will develop a quality improvement plan (QIP) if there are more than 18 excursions (i.e., visible emissions recorded) during a semi-annual reporting period for any set of A-398 scrubber system stacks. This would be the equivalent of an excursion taking place for roughly 5% of the observation events (184 days x 2 readings/day).
Recordkeeping	• Electronic archives of differential pressure 2-hr average readings. • Causes and corrective actions taken associated with any excursions, noted in the maintenance log.	• Archives of visual observation logs. • Causes and corrective actions taken associated with any excursions, noted in the maintenance log.
Reporting	Excursions will be summarized in Title V semiannual monitoring reports.	Excursions will be summarized in Title V semiannual monitoring reports.

1.2.3 Monitoring Method Justification– Alumina Scrubber Baghouse Differential Pressure

Rationale for Selection of Performance Indicator
PM control is provided by the dry alumina scrubber baghouse material and filter cake. Operation of the baghouse modules above the low end of the differential pressure range provides indication that there are no holes/tears, which would directly lead to reduced PM control. Operation below the high end of the differential pressure range provides indication that the baghouse is functioning normally and not constraining total air flow.

Rationale for Selection of Indicator Range
As indicated in Section 1.2.1, the emissions tested from Potline 3 in March 2015 were 28% of the limit for PM, 89% of the limit for PM_{10}, and 76% of the limit for $PM_{2.5}$ and thus there is a sufficient compliance margin. During the testing days, the daily average differential pressure values across all six baghouse modules averaged 4.83 in-H_2O and ranged from a low of 3.64 to a high of 5.63 in-H_2O. Century's review of differential pressure data shows that over a longer operating period, the differential pressure has a wider range. A lower threshold value of 1 in-H_2O is representative of pressures registered with new clean bags. The higher threshold value is a set point for triggering the baghouse cleaning cycle. Setting the trigger value too low results in over frequent cleaning cycles, which can prematurely wear out the bags. Conversely, setting the trigger value high could also result in decreased bag filter life due to high material load and pressure. Century has consulted with the current supplier of bag filters for the A-398 systems, and they have confirmed that the filters being supplied maintain their collection efficiency at differential pressures of 10 in-H_2O. Thus, this value has been set as the cleaning cycle trigger threshold for all the A-398 baghouse systems. Accordingly, a differential pressure range of 1 to 10 in-H_2O, over which the baghouse modules operate and function normally, is proposed as the indicator range.

1.2.4 Monitoring Method Justification– Visible Emissions Observations

Rationale for Selection of Performance Indicator
Visible emissions at the stacks for each of the A-398 scrubber systems on the Potlines would be directly related to particulate matter emissions. Opacity readings are commonly utilized as surrogate indicators of particulate matter emissions. When the baghouse modules associated with the dry alumina scrubber reactors are operating normally, there should be no routine visible emissions. An increase in opacity or changes in VE observations would indicate process changes, changes in baghouse efficiency, or possible leaks. Thus, observations confirming no visible emissions provide assurance that the baghouse is properly functioning. Further, monitoring visible emissions is required by 40 CFR 63.848(g) and thus, pursuant to 40 CFR 64.4(b), this method is presumptively acceptable for purposes of CAM.

Rationale for Selection of Indicator Range
Any visible emissions from the stack would indicate a possible problem with the operation of the baghouse modules and thus an emission rate of particulate matter that could potentially exceed the specified emission limit. Conversely, observation of no visible emissions provides evidence that the scrubber/baghouse system is functioning normally and thus assurance of compliance with the emission limit.

2. CAM Plan for Anode Bake Furnace – PM/PM$_{10}$

2.1 *Emission Units and Control Device Description*

Emission Unit Name:	**Anode Bake Furnace**
KyEIS Equipment ID:	COMB0000000006
KyEIS Source ID:	**N2**
KyEIS Process ID:	1
Control Device:	**Dry Alumina Scrubber (A-446)**

2.2 *PM/PM$_{10}$ CAM Plan*

2.2.1 *Applicable Regulations, PM/PM$_{10}$ Emission Rates and Current Monitoring*

Anode Bake Furnace (N2)	
Pollutant:	PM/PM$_{10}$
Regulation:	401 KAR 59:010 (New Process Operations); Self-imposed limit to preclude 401 KAR 51:017 applicability
Emission Limit:	PM is limited to less than $3.59 \times P_j^{0.62}$ lb/hr where P_j is tons of green anode processed per hour. Visible emissions are limited to less than 20% opacity on a six-minute average basis. At the maximum rated capacity (17.74 tons/hr of green anode), the equivalent mass emission limit is **21.35 lb/hr**. PM/PM$_{10}$ is limited to **5.14 lb/hr** (3-hour average) as a PSD avoidance limit.
Pre-Controlled Emissions:	PM: 511 tpy PM$_{10}$: 212 tpy (based on estimated 99% control efficiency)
Controlled Emissions:	PM: 1.54 lb/hr; **6.77 tpy** PM$_{10}$: 0.86 lb/hr; **3.78 tpy** Post-controlled PM and PM$_{10}$ emissions from the Anode Bake Furnace are based on the results from a September 10, 2015 stack test. These factors are consistent with the information provided on the 7007N form in the 2017 Title V Permit renewal application.
CAM Designation:	Small PSEU for PM/PM$_{10}$
Current PM/PM$_{10}$ Monitoring Requirements:	• Conduct a PM/PM$_{10}$ stack test once per permit term. • Perform a qualitative visual observation of equipment and emissions from the stack on a daily basis while the equipment is operating and maintain a log of the observation. • Perform visual opacity readings on the stack using Reference Method 9 if visible emissions are observed during the daily observation. • Operate, calibrate, and maintain a continuous monitoring system for the control equipment pursuant to the approved PMACT parametric monitoring plan. • Monthly material processed rates and hours of operation.

2.2.2 *Monitoring Methods for PM/PM$_{10}$*

The proposed monitoring methods that provide on-going assurance of compliance with the permitted PM/PM$_{10}$ emission limit and monitoring performance criteria for the indicators selected are detailed in Table 2-1. In accordance with 40 CFR 64.4(b), the rationale and justification for the monitoring method and indicator ranges are provided in the subsequent sections.

Table 2-1. PM/PM_{10} Monitoring Methods for Anode Bake Furnace

General Criteria		
Indicator	**Dry Scrubber Baghouse Differential Pressure**	**Visible emissions from the Dry Scrubber stack.**
Measurement Approach	The differential pressure across each dry alumina baghouse module is measured by Rosemount Model 1151DP3552B2 transmitters connected to each module on the dirty side and to the discharge plenum on the clean side.	A qualified observer will conduct a visual observation twice daily (at least 4 hours apart) when weather conditions allow using Method 22.
Indicator Range	**0.5 to 6 inches water** An excursion is defined as a 2-hour average differential pressure reading outside the indicator range. An excursion will trigger an investigation of the occurrence, corrective action, and a reporting requirement.	**Visible emissions seen during a visual observation.**
Means of Identifying Excursion	The continuous monitoring system provides an alarm notification to operators if the differential pressure reading falls outside the indicator range.	Direct viewing of the stack by a qualified observer.
Corrective Actions	In response to an excursion, appropriate personnel will troubleshoot the dry alumina scrubber baghouse and conduct repairs or maintenance as deemed necessary. Corrective actions will be documented in the plant's maintenance tracking system.	In response to an excursion (i.e., presence of visible emissions), personnel will troubleshoot the baghouse system and conduct repairs or maintenance as deemed necessary. Corrective action will be initiated within 1 hour of visible emission inspections that indicate abnormal operations. Corrective actions will be documented in the plant's maintenance tracking system.
Performance Criteria		
Data Representativeness	The pressure transmitters have a minimum accuracy of ± 0.075%.	It is assumed that the baghouse is functioning properly if there are no visible emissions from the stack.
Verification of Operational Status	The differential pressure reading is displayed on the operator's control screen. The system continuously monitors the pressure and alarms if it falls outside the indicator range.	Observer will verify that the anode bake furnace and the dry scrubber system are operational before conducting the visual evaluation of the stack.
QA/QC Practices and Criteria	Preventative maintenance inspections are conducted monthly that include cleaning and checking of the monitoring instruments.	The baghouse modules will be maintained and operated in accordance with good air pollution control practices. Staff assigned to conduct visual observations will be provided training on Method 22 procedures to follow.

Monitoring Frequency	**Continuously** The differential pressure across each of the baghouse modules is monitored continuously and at least one data point is electronically saved every 15 minutes when the system is in operation.	**Twice Daily** Visual Observations will be conducted twice daily (at least 4 hours apart).
Data Collection Procedure	15-minute instantaneous readings are recorded. The programmable logic controller (PLC) then calculates and records the rolling 2-hour average value.	Trained staff will conduct a qualitative visual observation of the opacity of emissions from the Anode Bake Furnace dry scrubber stacks following Method 22 and maintain a log of the observations. The log shall note whether any air emissions were visible from the stack.
Averaging Period	2 hours	Instantaneous determination from visual observation.
QIP Threshold	Century will develop a quality improvement plan (QIP) if there are more than 883 excursions of the differential pressure indicator in a semi-annual reporting period for any of the three A-446 scrubber reactors. This corresponds to an excursion frequency of less than 5% of total data values collected in a semiannual period (184 days/period x 24 hr/day x 4 readings/hour).	Century will develop a quality improvement plan (QIP) if there are more than 18 excursions (i.e., visible emissions recorded) during a semi-annual reporting period. This would be the equivalent of an excursion taking place for roughly 5% of the observation events (184 days x 2 readings/day).
Recordkeeping	• Electronic archives of differential pressure 2-hr average readings. • Causes and corrective actions taken associated with any excursions, noted in the maintenance log.	• Archives of visual observation logs. • Causes and corrective actions taken associated with any excursions, noted in the maintenance log.
Reporting	Excursions will be summarized in Title V semiannual monitoring reports.	Excursions will be summarized in Title V semiannual monitoring reports.

2.2.3 Monitoring Method Justification– Baghouse Differential Pressure

Rationale for Selection of Performance Indicator
PM control is provided by the dry alumina scrubber baghouse material and filter cake. Operation of the baghouse modules above the low end of the differential pressure range provides indication that there are no holes/tears, which would directly lead to reduced PM control. Operation below the high end of the differential pressure range provides indication that the baghouse is functioning normally and not constraining total air flow.

Rationale for Selection of Indicator Range
The performance test conducted prior to the ~~renewal permit and~~ development of this CAM plan for PM/PM_{10} was conducted on September 10, 2015. As indicated in Section 2.2.1, the tested emissions were 33% of the limit for PM and 18% of the limit for PM_{10}, thus there is a sufficient compliance margin. During the testing day, the daily average differential pressure values across all the baghouse modules averaged 1.84 in-H_2O and ranged from a low of 1.50 to a high of 2.23 in-H_2O. Century's review of differential pressure data from January 2015 through December 2016, shows that over a longer operating period, the differential pressure has a wider range of approximately 0.5 to 6 in-H_2O. This wider range, during which the baghouse modules were operating and functioning normally, is proposed as the indicator range.

2.2.4 Monitoring Method Justification– Visible Emissions Observations

Rationale for Selection of Performance Indicator
Visible emissions at the dry scrubber stacks would be directly related to particulate matter emissions. Opacity readings are commonly utilized as surrogate indicators of particulate matter emissions. When the baghouse modules associated with the dry alumina scrubber is operating normally, there should be no routine visible emissions. An increase in opacity or changes in VE observations would indicate process changes, changes in baghouse efficiency, or possible leaks. Thus, observations confirming no visible emissions provide assurance that the baghouse is properly functioning. Further, monitoring visible emissions is required by 40 CFR 63.848(g) and thus, pursuant to 40 CFR 64.4(b), this method is presumptively acceptable for purposes of CAM.

Rationale for Selection of Indicator Range
Although the presence of visible emissions does not in itself constitute a violation of the PM/PM_{10} emission limit or 20% opacity standard, any visible emissions from the stack would indicate a possible problem with the operation of the baghouse modules and thus an emission rate of particulate matter that could potentially exceed the specified emission limit. Conversely, observation of no visible emissions provides evidence that the scrubber/baghouse system is functioning normally and thus assurance of compliance with the emission limit.

3. CAM Plan for Material Handling and Transfer (Existing Sources)

A CAM Plan for PM for the material handling emission units subject to a PM standard under 401 KAR 61:020 for Existing Sources is provided in this section.

3.1 Emission Units and Control Device Descriptions

Emission Unit Name:	**Material Transfer Rail Car (T5)**
KyEIS Equipment ID:	EQPT0000000009
KyEIS Source ID:	**C1**
KyEIS Process ID:	**1**
Control Device:	**Railcar Station Dust Collector (140Y-DC)**

Emission Unit C1 encompasses the material transfer operations at the railcar unloading station. Particulate matter emissions generated from these unloading operations are controlled using a baghouse. The current system was installed in 1972. Air is drawn through the baghouse system at a rate of approximately 6,800 acfm and is then vented to the atmosphere through a 2.3 foot diameter stack.

Emission Unit Name:	**Coke Crushing (E6)**
KyEIS Equipment ID:	EQPT0000000029
KyEIS Source ID:	**K7**
KyEIS Process ID:	**1**
Control Device:	**Coke Hammermill Dust Collector (CCD-2-DC)**

Emission Unit K7 encompasses coke crushing operations as shown on Figure 3 ~~in~~ of ~~Appendix C of the renewal application~~submitted process flow diagrams. Particulate matter emissions generated from these crushing operations are controlled using a baghouse. The current system was installed in 1972. Air is drawn through the baghouse system at a rate of approximately 7,088 acfm and is then vented to the atmosphere through a 1.3 foot diameter stack.

Emission Unit Name:	**Coke Ball Mill (E7)**
KyEIS Equipment ID:	EQPT0000000030
KyEIS Source ID:	**L1**
KyEIS Process ID:	**1**
Control Device:	**Coke Ball Mill Dust Collector (CF-13-DC)**

Emission Unit L1 encompasses the coke ball mill process as shown on Figure 3 ~~in Appendix C of the renewal application~~of submitted process flow diagrams. Particulate matter emissions generated from these grinding operations are controlled using a baghouse. The current system was installed in 1972. Air is drawn through the baghouse system at a rate of approximately 5,000 acfm and is then vented to the atmosphere through a 1.3 foot diameter stack.

Emission Unit Name:	**Coke Fines Handling (E8)**
KyEIS Equipment ID:	EQPT0000000031
KyEIS Source ID:	**L3**
KyEIS Process ID:	**1**
Control Device:	**Coke Fines Handling Dust Collector (CFD-2-DC)**

Emission Unit L3 encompasses the coke fines handling process as shown on Figure 3 ~~in Appendix C of the renewal application~~of submitted process flow diagrams. Particulate matter emissions generated from these material handling operations are controlled using a baghouse. The current system was installed in 1972. Air is drawn through the baghouse system at a rate of approximately 7,088 acfm and is then vented to the atmosphere through a 1.3 foot diameter stack.

Emission Unit Name:	**Anode Butt Cleaning (E2)**
KyEIS Equipment ID:	EQPT0000000024
KyEIS Source ID:	**J2**
KyEIS Process ID:	**1**
Control Device:	**South Wheelabrator Dust Collector (SW-DC)**

Emission Unit J2 encompasses the anode butt cleaning process as shown on Figure 6 ~~in Appendix C of the renewal application~~of submitted process flow diagrams. Particulate matter emissions generated from these shot blasting operations are controlled using a baghouse. The current system was installed in 1972. Air is drawn through the baghouse system at a rate of approximately 4,938 acfm and is then vented to the atmosphere through a 1.3 foot diameter stack.

Emission Unit Name:	**Butt Impactor (E5)**
KyEIS Equipment ID:	EQPT0000000028
KyEIS Source ID:	**K5**
KyEIS Process ID:	**1**
Control Device:	**Butts Impactor Dust Collector (BD-6-DC)**

Emission Unit K5 encompasses the anode butt impactor process as shown on Figure 6 ~~in Appendix C of the renewal application~~of submitted process flow diagrams. Particulate matter emissions generated from these impactor operations are controlled using a baghouse. The current system was installed in 1972. Air is drawn through the baghouse system at a rate of approximately 12,000 acfm and is then vented to the atmosphere through a 1.6 foot diameter stack.

Emission Unit Name:	**Bath Crush/Crucible Cleaning [P1(23)]**
KyEIS Equipment ID:	EQPT0000000026
KyEIS Source ID:	**K1**
KyEIS Process ID:	**1**
Control Device:	**RB10 Crusher Dust Collector (RB10-DC)**

Emission Unit K1 encompasses the bath crush/crucible cleaning process as shown on Figure 6 ~~in Appendix C of the renewal application~~of submitted process flow diagrams. Particulate matter emissions generated from these cleaning operations are controlled using a baghouse. The current system was installed in 1972. Air is drawn through the baghouse system at a rate of approximately 23,866 acfm baghouse and is then vented to the atmosphere through a 3.69 foot diameter stack.

Emission Unit Name:	**Bath Transfer to Storage Processing (5P)**
KyEIS Equipment ID:	EQPT0000000046
KyEIS Source ID:	**U1**
KyEIS Process ID:	**1**
Control Device:	**Bath Salvage Dust Collector (104H-BS-DC)**

Emission Unit U1 encompasses the bath transfer to storage processing operation as shown on Figure 6 ~~in Appendix C of the renewal application~~of submitted process flow diagrams. Particulate matter emissions generated from these material handling operations are controlled using a baghouse. The current system was installed in 1972. Air is drawn through the baghouse system at a rate of approximately 51,064 acfm and is then vented to the atmosphere through an 8.69 foot diameter stack.

Emission Unit Name:	**Anode Rod Cleaning (EG)**
KyEIS Equipment ID:	EQPT0000000041
KyEIS Source ID:	**Q4**
KyEIS Process ID:	**1**
Control Device:	**North Wheelabrator Dust Collector (NW-DC)**

Emission Unit Q4 encompasses the anode rod cleaning process (North Wheelabrator). Particulate matter emissions generated from these shot blasting operations are controlled using a baghouse. The current system was installed in 1972. Air is drawn through the baghouse system at a rate of approximately 6,000 acfm and is then vented to the atmosphere through a 1.5 foot diameter stack.

Emission Unit Name:	**Ingot Casting Dross Loading (I9)**
KyEIS Equipment ID:	EQPT0000000022
KyEIS Source ID:	**G8**
KyEIS Process ID:	**1**
Control Device:	**Dross Loading East & West Baghouse (DL-DC)**

Emission Unit G8 encompasses the ingot casting dross loading process as shown on Figure 9 ~~in Appendix C of the renewal application~~of submitted process flow diagrams. Particulate matter emissions generated from these loading operations are controlled using a baghouse. The current system was installed in 1972. Air is drawn through the baghouse system at a rate of approximately 45,000 acfm baghouse and is then vented to the atmosphere through a 5.5 foot diameter stack.

3.2 PM CAM Plan

3.2.1 Applicable Regulations, PM Emission Rates, and Current Monitoring

All Units Identified in Section 3.1	
Pollutant:	PM
Regulation:	401 KAR 61:020 (Existing Process Operations)
Emission Limit:	PM is limited to less than $(4.1 \times P_j^{0.67})$ lb/hr where P_j is tons of material processed per hour (assuming a process rate less than 30 tons/hr). PM is limited to less than $((55.0 \times P_j^{0.11}) - 40)$ lb/hr where P_j is tons of material processed per hour (assuming a process rate greater than 30 tons/hr). Visible emissions are limited to less than 40% opacity on a six-minute average basis.
Pre-Controlled Emissions:	Except as noted on the 7007N form with the 2017 Title V permit renewal application for Emission Units K1 and U1 in the bath salvage area, pre-controlled PM emissions have not been measured directly. For emission inventory purposes, they have historically been estimated based on an assumed 99% control efficiency for the baghouse and the exit loading.
Controlled Emissions:	Except as noted on the 7007N form with the 2017 Title V permit renewal application for Emission Units K1 and U1 in the bath salvage area, post-controlled PM emissions have not been measured in a site-specific stack test. For emission inventory purposes, they have historically been estimated based on an exit grain loading factor of 0.01 grains per dry standard cubic foot, unless otherwise indicated below.
CAM Designation:	Small PSEU for PM
Current PM Monitoring Requirements:	• Monitor hourly pollutant emission rates. • Perform qualitative visual observation of the stack weekly (except for Q4, which is daily) and perform a Method 9 opacity reading annually. • Perform qualitative visual observation of the stack during periods of baghouse malfunction and perform a Method 9 opacity reading if visible emissions are observed during the period of baghouse malfunction.

Material Transfer Rail Car (C1)	
Emission Limit:	At the maximum rated capacity (75.0 tons/hr), the equivalent mass emission limit is **48.4 lb/hr**.
Pre-Controlled Emissions:	PM: 57.3 lb/hr; 251.0 tpy (estimated using an emission factor of 0.764 lb/ton based on a 0.01 gr/dscf exit loading and 99% control efficiency)
Controlled Emissions:	PM: 0.57 lb/hr; 2.51 tpy (estimated) At the calculated emission rate, potential emissions are less than **2%** of the allowable rate.

Coke Crushing (K7)	
Emission Limit:	At the maximum rated capacity (24.0 tons/hr), the equivalent mass emission limit is **34.5 lb/hr**.
Pre-Controlled Emissions:	PM: 59.7 lb/hr; 261.6 tpy (estimated using an emission factor of 2.48 lb/ton based on a 0.01 gr/dscf exit loading and 99% control efficiency)
Controlled Emissions:	PM: 0.60 lb/hr; 2.62 tpy (estimated) At the calculated emission rate, potential emissions are less than **2%** of the allowable rate.

Coke Ball Mill (L1)	
Emission Limit:	At the maximum rated capacity (18.3 tons/hr), the equivalent mass emission limit is **28.8 lb/hr**.
Pre-Controlled Emissions:	PM: 37.2 lb/hr; 162.8 tpy (estimated using an emission factor of 2.03 lb/ton based on a 0.01 gr/dscf exit loading and 99% control efficiency)
Controlled Emissions:	PM: 0.37 lb/hr; 1.63 tpy (estimated) At the calculated emission rate, potential emissions are less than **2%** of the allowable rate.

Coke Fines Handling (L3)	
Emission Limit:	At the maximum rated capacity (20.0 tons/hr), the equivalent mass emission limit is **30.5 lb/hr**.
Pre-Controlled Emissions:	PM: 59.7 lb/hr; 261.6 tpy (estimated using an emission factor of 2.98 lb/ton based on a 0.01 gr/dscf exit loading and 99% control efficiency)
Controlled Emissions:	PM: 0.60 lb/hr; 2.62 tpy (estimated) At the calculated emission rate, potential emissions are less than **2%** of the allowable rate.

Anode Butt Cleaning (J2)	
Emission Limit:	At the maximum rated capacity (2.6 tons/hr), the equivalent mass emission limit is **7.8 lb/hr**.
Pre-Controlled Emissions:	PM: 101.1 lb/hr; 442.93 tpy (estimated using an emission factor of 39.0 lb/ton based on a 0.01 gr/dscf exit loading and 99% control efficiency)
Controlled Emissions:	PM: 1.01 lb/hr; 4.43 tpy (estimated) At the calculated emission rate, potential emissions are **13%** of the allowable rate.

Butt Impactor (K5)	
Emission Limit:	At the maximum rated capacity (30 tons/hr), the equivalent mass emission limit is **40.0 lb/hr**.
Pre-Controlled Emissions:	PM: 41.6 lb/hr; 182.27 tpy (estimated using an emission factor of 1.39 lb/ton based on a 0.01 gr/dscf exit loading and 99% control efficiency)
Controlled Emissions:	PM: 0.42 lb/hr; 1.82 tpy (estimated) At the calculated emission rate, potential emissions are less than **2%** of the allowable rate.

Bath Crush/Crucible Cleaning (K1)	
Emission Limit:	The emission limit is **0.02 gr/scf** (3.76 lb/hr).
Pre-Controlled Emissions:	PM: 1,134.62 lb/hr; 4,969.67 tpy (estimated using an emission factor of 28.37 lb/ton, the average from 2008-2012 stack tests)
Controlled Emissions:	PM: 1.38 lb/hr; 6.05 tpy (estimated using a control efficiency of 99.88%) At the calculated emission rate, potential emissions are less than **37%** of the allowable rate.

Bath Transfer to Storage Processing (U1)	
Emission Limit:	The emission limit is **0.02 gr/scf** (8.57 lb/hr).
Pre-Controlled Emissions:	PM: 203.76 lb/hr; 892.47 tpy (estimated using an emission factor of 5.09 lb/ton, the average from 2008-2012 stack tests)
Controlled Emissions:	PM: 1.76 lb/hr; 7.72 tpy (estimated using a control efficiency of 99.14%) At the calculated emission rate, potential emissions are less than **21%** of the allowable rate.

Anode Rod Cleaning (Q4)	
Emission Limit:	At the maximum rated capacity (17.6 tons/hr), the equivalent mass emission limit is **28.0 lb/hr**.
Pre-Controlled Emissions:	PM: 50.6 lb/hr; 221.5 tpy (estimated using an emission factor of 2.87 lb/ton based on a 0.01 gr/dscf exit loading and 99% control efficiency)
Controlled Emissions:	PM: 0.51 lb/hr; 2.21 tpy (estimated) At the calculated emission rate, potential emissions are less than **1%** of the allowable rate.

Ingot Casting Dross Loading (G8)	
Emission Limit:	At the maximum rated capacity (9.8 tons/hr), the equivalent mass emission limit is **18.85 lb/hr**.
Pre-Controlled Emissions:	PM: 379.24 lb/hr; 1,661.11 tpy (estimated using an emission factor of 38.9 lb/ton based on a 0.01 gr/dscf exit loading and 99% control efficiency)
Controlled Emissions:	PM: 3.79 lb/hr; 16.61 tpy (estimated) At the calculated emission rate, potential emissions are **20%** of the allowable rate.

3.2.2 Monitoring Methods for PM

The proposed monitoring methods that provide on-going assurance of compliance with the permitted PM limits and monitoring performance criteria for the indicators selected are detailed in Table 3-1. In accordance with 40 CFR 64.4(b), the rationale and justification for the monitoring methods and indicator ranges are provided in the subsequent sections.

Table 3-1. PM Monitoring Methods

General Criteria	
Indicator	**Visible emissions from the baghouse stack.**
Measurement Approach	A qualified observer will conduct a visual observation daily when the unit is operating and when weather conditions allow.
Indicator Range	**Visible emissions seen during a visual observation.**
Means of Identifying Excursion	Direct viewing of the stack by a qualified observer.
Corrective Actions	In response to an excursion (i.e., presence of visible emissions), a certified opacity reader will conduct a Method 9 observation to measure the opacity. Personnel will troubleshoot the emission unit and baghouse system and conduct repairs or maintenance as deemed necessary in the most expedient manner possible. Corrective actions will be documented in the plant's maintenance tracking system.
Performance Criteria	
Data Representativeness	It is assumed that the baghouse is functioning properly and thus the emissions unit is in compliance with the PM limit if there are no visible emissions from the stack and if the baghouse is operated and properly maintained.
Verification of Operational Status	Observer will verify the emission unit operations are operational before conducting the visual evaluation of the stack.
QA/QC Practices and Criteria	The baghouse and emission unit equipment will be maintained and operated in accordance with good air pollution control practices. Staff assigned to conduct visual observations will be provided training on procedures to follow at least once a year.
Monitoring Frequency	Visual observations will be conducted at least once daily during daylight hours, weather permitting.
Data Collection Procedure	Trained staff will conduct a qualitative visual observation of the opacity of emissions from the stack serving each baghouse and maintain a log of the observations. The log shall note whether any air emissions (except for water vapor) were visible from the stack. If performed, the results from each Method 9 reading shall also be recorded.
Averaging Period	Instantaneous determination from visual observation.
QIP Threshold	Century will develop a quality improvement plan (QIP) if there are more than nine excursions (i.e., visible emissions recorded) during a semi-annual reporting period. This would be the equivalent of an excursion taking place for roughly 5% of the observation events.
Recordkeeping	• Archives of visual observation logs. • Causes and corrective actions taken associated with any excursions, noted in the maintenance log. • Training records for personnel conducting visual observations.
Reporting	Excursions will be summarized in Title V semiannual monitoring reports.

3.2.3 Monitoring Method Justification– Visible Emissions Observations

Rationale for Selection of Performance Indicator
The visible emissions are directly related to the particulate matter emissions from the stack. Opacity readings are commonly utilized as surrogate indicators of particulate matter emissions. When the baghouses controlling the emission unit operations identified in this section are operating normally, there should be no routine visible emissions. Thus, observations confirming no visible emissions provide assurance that the baghouse is properly functioning.

Rationale for Selection of Indicator Range
Although the presence of visible emissions does not in itself constitute a violation of the PM emission limit or 40% opacity standard, it may indicate that corrective action should be initiated so that any possible exceedance of the particulate standard can be prevented. The excursion threshold of any visible emissions was selected based on operating experience. A visible plume, although not necessarily in excess of the 40% opacity standard, would be present if emissions were in excess of the allowable rate. Thus, a more prescriptive or exact method of monitoring emissions is not necessary. Conversely, observation of no visible emissions provides evidence that the baghouse system is functioning normally and thus assurance of compliance with the emission limit.

4. CAM Plan for Material Handling and Transfer (New Sources)

A CAM Plan for PM for the material handling emission units subject to a PM standard under 401 KAR 59:010 for New Sources is provided in this section.

4.1 Emission Units and Control Device Description

Emission Unit Name:	**Anode Saw Dust Collector (EQ1)**
KyEIS Equipment ID:	EQPT0000000053
KyEIS Source ID:	**U4**
KyEIS Process ID:	**1**
Control Device:	**Anode Saw Dust Collector (270AS-DC)**

Emission Unit U4 encompasses the anode saw dust collector process as shown on Figure 5 ~~in Appendix C of the renewal application.~~ of submitted process flow diagrams. Particulate matter emissions generated from these operations are controlled using a baghouse. The current system was installed in 2004. Air is drawn through the baghouse system at a rate of approximately 8,541 acfm and is then vented to the atmosphere through a 2 foot diameter stack.

Emission Unit Name:	**Central Anode Butts Cleaning (EJ)**
KyEIS Equipment ID:	EQPT0000000052
KyEIS Source ID:	**U3**
KyEIS Process ID:	**1**
Control Device:	**Butts Cleaning Station Dust Collector (CB-DC)**

Emission Unit U3 encompasses the central anode butts cleaning process (North Wheelabrator) as shown on Figure 6 of submitted process flow diagrams.~~in Appendix C of the renewal application~~. Particulate matter emissions generated from these shot blasting operations are controlled using a baghouse. The current system was installed in 1990. Air is drawn through the baghouse system at a rate of approximately 16,011 acfm and is then vented to the atmosphere through a 2.75 foot diameter stack.

Emission Unit Name:	**Butt Stripping/Crushing (E3)**
KyEIS Equipment ID:	EQPT0000000025
KyEIS Source ID:	**J3**
KyEIS Process ID:	**1**
Control Device:	**Butt Stripping Dust Collector (232H-DC)**

Emission Unit J3 encompasses the butt stripping/crushing process as shown on Figure 6 of submitted process flow diagrams . ~~in Appendix C of the renewal application.~~ Particulate matter emissions generated from these crushing operations are controlled using a baghouse. The current system was installed in 1977. Air is drawn through the baghouse system at a rate of approximately 19,000 acfm and is then vented to the atmosphere through a 2.3 foot diameter stack.

Emission Unit Name:	**Butt Dust Collector (E4)**
KyEIS Equipment ID:	EQPT0000000027
KyEIS Source ID:	**K3**
KyEIS Process ID:	**1**
Control Device:	**254A Butts System Dust Collector (254A-DC)**

Emission Unit K3 encompasses the butt dust collector process as shown on Figure 6 of submitted process flow diagrams. ~~in Appendix C of the renewal application.~~ Particulate matter emissions generated from these operations are controlled using a baghouse. The current system was installed in 1979. Air is drawn through the baghouse system at a rate of approximately 8,686 acfm and is then vented to the atmosphere through a 1.6 foot diameter stack.

Emission Unit Name:	**Transloading Spent Potliner & Sandblasting Operations**
KyEIS Equipment ID:	EQPT0000000017
KyEIS Source ID:	**E6**
KyEIS Process ID:	**1**
Control Device:	**Potliner Sandblasting Dust Collector (138AW-DC)**

Emission Unit E6 encompasses the transloading spent potliner and sandblasting operations as shown on Figure 8 ~~in~~ of submitted process flow diagrams.~~Appendix C of the renewal application~~. This system uses an air wall filter system (138AW-DC) to control PM emissions from transloading spent potliner and shot blasting pot shells. The air wall filter system, which was installed in 1995, contains three separate units. Air is drawn through the air wall system at a total rate of approximately 30,000 acfm (10,000 acfm per air wall filter). The exhaust from each air wall filter is then vented through individual filter vents to the interior of Building 138.

4.2 PM CAM Plan

4.2.1 Applicable Regulations, PM Emission Rates, and Current Monitoring

All Units Identified in Section 4.1	
Pollutant:	PM
Regulation:	401 KAR 59:010 (New Process Operations)
Emission Limit:	PM is limited to less than ($3.59 \times P_j^{0.62}$) lb/hr where P_j is tons of material processed per hour (assuming a process rate less than 30 tons/hr). PM is limited to less than ($17.3 \times P_j^{0.16}$) lb/hr where P_j is tons of material processed per hour (assuming a process rate greater than 30 tons/hr). Visible emissions are limited to less than 20% opacity on a six-minute average basis.
Pre-Controlled Emissions:	Pre-controlled PM emissions have not been measured directly. For emission inventory purposes, they have historically been estimated based on an assumed 99% control efficiency for the baghouse and the exit loading, unless otherwise indicated below.
Controlled Emissions:	Post-controlled PM emissions have not been measured in a site-specific stack test. For emission inventory purposes, they have historically been estimated based on an exit grain loading factor of 0.01 grains per dry standard cubic foot, unless otherwise indicated below.
CAM Designation:	Small PSEU for PM
Current PM Monitoring Requirements:	• Monitor hourly pollutant emission rates. • Perform qualitative visual observation of the stack weekly (except for E6, which is daily) and perform a Method 9 opacity reading annually. • Perform qualitative visual observation of the stack during periods of baghouse malfunction and perform a Method 9 opacity reading if visible emissions are observed during the period of baghouse malfunction.

Anode Saw Dust Collector (U4)	
Emission Limit:	At the maximum rated capacity (20.5 tons/hr), the equivalent mass emission limit is **23.4 lb/hr**.
Pre-Controlled Emissions:	PM: 71.98 lb/hr; 315.28 tpy (estimated using an emission factor of 3.51 lb/ton based on a 0.01 gr/dscf exit loading and 99% control efficiency)
Controlled Emissions:	PM: 0.72 lb/hr; 3.15 tpy (estimated) At the calculated emission rate, potential emissions are **3%** of the allowable rate.

Central Anode Butts Cleaning (U3)	
Emission Limit:	At the maximum rated capacity (9.1 tons/hr), the equivalent mass emission limit is **14.2 lb/hr**.
Pre-Controlled Emissions:	PM: 134.94 lb/hr; 591.02 tpy (estimated using an emission factor of 14.78 lb/ton based on a 0.01 gr/dscf exit loading and 99% control efficiency)
Controlled Emissions:	PM: 1.35 lb/hr; 5.91 tpy (estimated) At the calculated emission rate, potential emissions are less than **1%** of the allowable rate.

Butt Stripping/Crushing (J3)	
Emission Limit:	At the maximum rated capacity (15.8 tons/hr), the equivalent mass emission limit is **19.83 lb/hr**.
Pre-Controlled Emissions:	PM: 160.13 lb/hr; 701.36 tpy (estimated using an emission factor of 10.17 lb/ton based on a 0.01 gr/dscf exit loading and 99% control efficiency)
Controlled Emissions:	PM: 1.60 lb/hr; 7.01 tpy (estimated) At the calculated emission rate, potential emissions are **8%** of the allowable rate.

Butt Dust Collector (K3)	
Emission Limit:	At the maximum rated capacity (30.0 tons/hr), the equivalent mass emission limit is **29.8 lb/hr**.
Pre-Controlled Emissions:	PM: 73.20 lb/hr; 320.63 tpy (estimated using an emission factor of 2.44 lb/ton based on a 0.01 gr/dscf exit loading and 99% control efficiency)
Controlled Emissions:	PM: 0.73 lb/hr; 3.21 tpy (estimated) At the calculated emission rate, potential emissions are less than **3%** of the allowable rate.

Transloading Spent Potliner & Sandblasting Operations (E6)	
Emission Limit:	At the maximum rated capacity (20.6 tons/hr), the equivalent mass emission limit is **23.4 lb/hr**.
Pre-Controlled Emissions:	PM: 251.90 lb/hr; 1,103.30 tpy (estimated using an emission factor of 12.22 lb/ton based on a 0.01 gr/dscf exit loading and 99% control efficiency)
Controlled Emissions:	PM: 2.52 lb/hr; 11.03 tpy (estimated) At the calculated emission rate, potential emissions are less than **11%** of the allowable rate.

4.2.2 *Monitoring Methods for PM*

The proposed monitoring methods that provide on-going assurance of compliance with the permitted PM limit and monitoring performance criteria for the indicators selected are detailed in Table 4-1. In accordance with 40 CFR 64.4(b), the rationale and justification for the monitoring methods and indicator ranges are provided in the subsequent sections.

Table 4-1. PM Monitoring Methods

General Criteria	
Indicator	**Visible emissions from the baghouse stack.**
Measurement Approach	A qualified observer will conduct a visual observation daily when the unit is operating and when weather conditions allow.
Indicator Range	**Visible emissions seen during a visual observation.**
Means of Identifying Excursion	Direct viewing of the stack by a qualified observer.
Corrective Actions	In response to an excursion, an inspection (i.e., presence of visible emissions), a certified opacity reader will conduct a Method 9 observation to measure the opacity. Personnel will troubleshoot the emission unit and baghouse system and conduct repairs or maintenance as deemed necessary in the most expedient manner possible. Corrective actions will be documented in the plant's maintenance tracking system.
Performance Criteria	
Data Representativeness	It is assumed that the baghouse is functioning properly and thus the emissions unit is in compliance with the PM limit if there are no visible emissions from the stack and if the baghouse is operated and properly maintained.
Verification of Operational Status	Observer will verify the emission unit operations are operational before conducting the visual evaluation of the stack.
QA/QC Practices and Criteria	The baghouse and emission unit equipment will be maintained and operated in accordance with good air pollution control practices. Staff assigned to conduct visual observations will be provided training on procedures to follow at least once a year.
Monitoring Frequency	Visual observations will be conducted at least once daily during daylight hours, weather permitting.
Data Collection Procedure	Trained staff will conduct a qualitative visual observation of the opacity of emissions from the stack serving each baghouse and maintain a log of the observations. The log shall note whether any air emissions (except for water vapor) were visible from the stack. If performed, the results from each Method 9 reading shall also be recorded.
Averaging Period	Instantaneous determination from visual observation.
QIP Threshold	Century will develop a quality improvement plan (QIP) if there are more than nine excursions (i.e., visible emissions recorded) during a semi-annual reporting period. This would be the equivalent of an excursion taking place for roughly 5% of the observation events.
Recordkeeping	• Archives of visual observation logs. • Causes and corrective actions taken associated with any excursions, noted in the maintenance log. • Training records for personnel conducting visual observations.
Reporting	Excursions will be summarized in Title V semiannual monitoring reports.

4.2.3 Monitoring Method Justification– Visible Emissions Observations

Rationale for Selection of Performance Indicator
The visible emissions are directly related to the particulate matter emissions from the stack. Opacity readings are commonly utilized as surrogate indicators of particulate matter emissions. When the baghouses controlling the emission unit operations identified in this section are operating normally, there should be no routine visible emissions. Thus, observations confirming no visible emissions provide assurance that the baghouse is properly functioning.

Rationale for Selection of Indicator Range
Although the presence of visible emissions does not in itself constitute a violation of the PM emission limit or 20% opacity standard, it may indicate that corrective action should be initiated so that any possible exceedance of the particulate standard can be prevented. The excursion threshold of any visible emissions was selected based on operating experience. A visible plume, although not necessarily in excess of the 20% opacity standard, would be present if emissions were in excess of the allowable rate. Thus, a more prescriptive or exact method of monitoring emissions is not necessary. Conversely, observation of no visible emissions provides evidence that the baghouse system is functioning normally and thus assurance of compliance with the emission limit.

ATTACHMENT 5

New 001 IT Backup Generator Emission Calculations, Engine Specifications Sheet, Statement of Exhaust Emissions, and Certificate of Conformity

1. Emissions Associated with Generac RG022 Generator Engine

1.1 Generator Power and Fuel Consumption Data

> Pertinent data on engine power and fuel usage taken from the technical data sheet and Statement of Exhaust Emissions for the Generac RG022 generator.

Mechanical Power in bhp (100% load):	32.0	bhp		
Generator Output in kW (100% load):	22.0	kW		
Calculated Fuel Consumption Rate in MMscf/hr (100% load):	3.40E-04	MMscf/hr	14.27	lb/hr
Annual Operating Hours:	500	hrs		
Heat Content of Natural Gas (HHV, average):	1,020	Btu/scf		

1.2 Source Classification Code

> Emissions are tied to the SCC code for natural gas fueled engines listed below.

SCC:	20200202
SCC Description:	Internal Combustion Engines, Industrial (2-02), Natural Gas (2-02-002), Reciprocating (2-02-002-02)
SCC Units:	Million Cubic Feet Natural Gas Burned

1.3 Rich/Lean Burn Engine Determination

Emissions for natural gas/propane-fired engines are directly linked to the air-to-fuel ratio and as such, emission factors in AP-42 are delineated into separate tables for rich and lean burn engines. The air-to-fuel ratio is calculated below to determine which of these emission factor sets are more appropriate.

	Value	Units	Basis
Combustion Air in cfh:	4,080	cfh	Manufacturer Specification Sheet
Density of Air in lb/cf:	0.076	lb/cf	At sea level at 15 C (60 F)
Fuel consumption rate in cfh (100% load):	339.6	cfh	Manufacturer Specification Sheet
Density of Natural Gas in lb/cf:	0.042	lb/cf	AP-42 Appendix A, Misc. Data and Conversion Factors
Operating Air-to-Fuel Ratio (AFR):	21.73	--	= (4,080 cfh * 0.076 lb/cf) / (339.6 cfh * 0.042 lb/cf)
Stoichiometric AFR:	14.50	--	John B. Heywood: "Internal Combustion Engine Fundamentals page 915", 1988
AFR Ratio:	1.50	--	= (21.73 / 339.63)

> According to 40 CFR 60.4248, rich-burn engines are defined as any four-stroke spark ignited engine where the operating air/fuel ratio divided by the stoichiometric air/fuel ratio at full load conditions is less than or equal to 1.1. Lean-burn engines are defined as any two-stroke or four-stroke spark ignited engine that does not meet the definition of a rich burn engine. Therefore, the engine is classified as a lean-burn engine when combusting natural gas fuel and the emission factors for AP-42 Table 3.2-2 apply.

1.4 Emission Calculation Methodology and Emission Factors

> Emission factors are from the Statement of Exhaust Emissions as well as AP-42 Section 3.2 (7/2000) Table 3.2-2 Uncontrolled Emission Factors for 4-Stroke Lean-Burn Engines. Over-estimating PM emissions by assuming PM is equal to PM10/PM2.5. Conservatively over-estimating VOC emissions by assuming THC is equal to VOC and conservatively over-estimating PM by assuming PM is equal to PM10/PM2.5.

1.4.1 NOX

Emission factor for NOX:	2.15	g/BHP-hr	Statement of Exhaust Emissions
NOX emission factor in terms of SCC units:	446.60	lb/MMscf	= 2.150 g/BHP-hr * 32.0 BHP / 3.40E-04 MMscf/hr / 453.6 g/lb

1.4.2 CO

Emission factor for CO:	101.28	g/BHP-hr	Statement of Exhaust Emissions
CO emission factor in terms of SCC units:	21038.12	lb/MMscf	= 101.280 g/BHP-hr * 32.0 BHP / 3.40E-04 MMscf/hr / 453.6 g/lb

1.4.3 VOC

Emission factor for VOC:	2.34	g/BHP-hr	Statement of Exhaust Emissions
VOC emission factor in terms of SCC units:	486.07	lb/MMscf	= 2.34 g/BHP-hr * 32.0 BHP / 3.40E-04 MMscf/hr / 453.6 g/lb

1.4.4 PM/PM10/PM2.5

Emission factor for PM:	9.99E-03	lb/MMBtu	AP-42 Table 3.2-2, 07/2000
PM emission factor in terms of SCC units:	10.19	lb/MMscf	= 9.99E-03 lb/MMBtu * 1020.0 MMBtu/MMscf

1.4.5 SO2

Emission factor for SO2:	5.88E-04	lb/MMBtu	AP-42 Table 3.2-2, 07/2000
SO2 emission factor in terms of SCC units:	0.600	lb/MMscf	= 5.88E-04 lb/MMBtu * 1020.0 MMBtu/MMscf

1.4.5 Hazardous Air Pollutants

> HAP emission factors are from AP-42, Section 3.2 Table 3.2-2 Uncontrolled Emission Factors for 4-Stroke Lean-Burn Engines.

	CAS #	Emission Factor (lb/MMBtu)	Emission Factor (lb/MMscf)	Emission Factor Basis
1,1,2,2-Tetrachloroethane	79-34-5	4.00E-05	4.08E-02	AP-42 Table 3.2-2, 07/2000
1,1,2-Trichloroethane	79-00-5	3.18E-05	3.24E-02	AP-42 Table 3.2-2, 07/2000
1,3-Butadiene	106-99-0	2.67E-04	0.27	AP-42 Table 3.2-2, 07/2000
1,3-Dichloropropene	542-75-6	2.64E-05	2.69E-02	AP-42 Table 3.2-2, 07/2000
2-Methylnaphthalene	91-57-6	3.32E-05	3.39E-02	AP-42 Table 3.2-2, 07/2000
2,2,4-Trimethylpentane	540-84-1	2.50E-04	0.26	AP-42 Table 3.2-2, 07/2000
Acenaphthene	83-32-9	1.25E-06	1.28E-03	AP-42 Table 3.2-2, 07/2000
Acenaphthylene	208-96-8	5.53E-06	5.64E-03	AP-42 Table 3.2-2, 07/2000
Acetaldehyde	75-07-0	8.36E-03	8.53	AP-42 Table 3.2-2, 07/2000
Acrolein	107-02-8	5.14E-03	5.24	AP-42 Table 3.2-2, 07/2000
Benzene	71-43-2	4.40E-04	0.45	AP-42 Table 3.2-2, 07/2000
Benzo(b)fluoranthene	205-99-2	1.66E-07	1.69E-04	AP-42 Table 3.2-2, 07/2000
Benzo(e)pyrene	50-32-8	4.15E-07	4.23E-04	AP-42 Table 3.2-2, 07/2000
Benzo(g,h,i)perylene	191-24-2	4.14E-07	4.22E-04	AP-42 Table 3.2-2, 07/2000
Biphenyl	92-52-4	2.12E-04	0.22	AP-42 Table 3.2-2, 07/2000
Carbon Tetrachloride	56-23-5	3.67E-05	3.74E-02	AP-42 Table 3.2-2, 07/2000
Chlorobenzene	108-90-7	3.04E-05	3.10E-02	AP-42 Table 3.2-2, 07/2000
Chloroform	67-66-3	2.85E-05	2.91E-02	AP-42 Table 3.2-2, 07/2000
Chrysene	218-01-9	6.93E-07	7.07E-04	AP-42 Table 3.2-2, 07/2000
Ethylbenzene	100-41-4	3.97E-05	4.05E-02	AP-42 Table 3.2-2, 07/2000
Ethylene Dibromide	106-93-4	4.43E-05	4.52E-02	AP-42 Table 3.2-2, 07/2000
Fluoranthene	206-44-0	1.11E-06	1.13E-03	AP-42 Table 3.2-2, 07/2000
Fluorene	86-73-7	5.67E-06	5.78E-03	AP-42 Table 3.2-2, 07/2000
Formaldehyde	50-00-0	0.0528	53.86	AP-42 Table 3.2-2, 07/2000
Methanol	67-56-1	2.50E-03	2.55	AP-42 Table 3.2-2, 07/2000
Methylene Chloride	75-09-2	2.00E-05	2.04E-02	AP-42 Table 3.2-2, 07/2000
n-Hexane	110-54-3	1.11E-03	1.13	AP-42 Table 3.2-2, 07/2000
Naphthalene	91-20-3	7.44E-05	7.59E-02	AP-42 Table 3.2-2, 07/2000
PAH	na	2.69E-05	2.74E-02	AP-42 Table 3.2-2, 07/2000
Phenanthrene	85-01-8	1.04E-05	1.06E-02	AP-42 Table 3.2-2, 07/2000
Phenol	108-95-2	2.40E-05	2.45E-02	AP-42 Table 3.2-2, 07/2000
Pyrene	129-00-0	1.36E-06	1.39E-03	AP-42 Table 3.2-2, 07/2000
Styrene	100-42-5	2.36E-05	2.41E-02	AP-42 Table 3.2-2, 07/2000
Toluene	108-88-3	4.08E-04	0.42	AP-42 Table 3.2-2, 07/2000
Vinyl Chloride	75-01-4	1.49E-05	1.52E-02	AP-42 Table 3.2-2, 07/2000
Xylene	1330-20-7	1.84E-04	0.19	AP-42 Table 3.2-2, 07/2000
Total HAP			73.64	Sum of individual HAP

1.4.5 Select Pollutants from Natural Gas-Fired Engines

> Ammonia emission factor is from South Coast Air Quality Management District (SCAQMD) Reporting Procedures for AB2588 Facilities for Reporting Their Quadrennial Air Toxics Emissions Inventory from 12/2016, and lead is from AP-42 Section 1.4 Table 1.4-2.

Pollutant	CAS #	HAP?	Emission Factor (lb/MMBtu)	Emission Factor (lb/MMscf)	Emission Factor Basis
Ammonia	7664-41-7	N	0.02	18.00	SCAQMD Document, 12/2016
Lead	7439-92-1	Y	4.90E-07	5.00E-04	AP-42 Table 1.4-2

1.4.6 GHG Emission Factors

> CO2, CH4 and N2O emissions for natural gas combustion are estimated using the natural gas emission factors published in 40 CFR 98, Subpart C, Table C-1 and C-2.

Global Warming Potentials of GHGs per 40 CFR 98 Subpart A, Table A-1.

CO2	1
CH4	25
N2O	298

CO2 Emission Factor	53.06	kg CO2/MMBtu	40 CFR 98, Subpart C, Table C-1; Natural Gas (weighted U.S. average)
CH4 Emission Factor	1.0E-03	kg CH4/MMBtu	40 CFR 98, Subpart C, Table C-2; Natural Gas
N2O Emission Factor	1.0E-04	kg N2O/MMBtu	40 CFR 98, Subpart C, Table C-2; Natural Gas

Pollutant	Emission Factor (kg/MMBtu)	Equivalent Factor (lb/MMscf)
CO2	53.06	119,317
CH4	1.00E-03	2.25
N2O	1.00E-04	0.22
CO2e	53.11	119,440

1.5 Summary of Engine Potential Emissions

Pollutant	Emission Factor (lb/MMscf)	Basis	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
NOX	446.60	Statement of Exhaust Emissions	0.15	0.04
CO	21,038.12	Statement of Exhaust Emissions	7.15	1.79
VOC	486.07	Statement of Exhaust Emissions	1.65E-01	4.13E-02
PM/PM10/PM2.5	10.19	AP-42 Table 3.2-2, 07/2000	0.003	8.65E-04
SO2	0.600	AP-42 Table 3.2-2, 07/2000	2.04E-04	5.09E-05
Formaldehyde	53.86	AP-42 Table 3.2-2, 07/2000	1.83E-02	4.57E-03
Ammonia	18.00	SCAQMD Document, 12/2016	6.11E-03	1.53E-03
Lead	5.00E-04	AP-42 Table 1.4-2	1.70E-07	4.25E-08
Total HAP	73.64	Sum of individual HAP	2.50E-02	6.25E-03
CO2	119,317	40 CFR 98, Subpart C, Table C-1	40.52	10.13
CH4	2.25	40 CFR 98, Subpart C, Table C-2	7.64E-04	1.91E-04
N2O	0.22	40 CFR 98, Subpart C, Table C-2	7.64E-05	1.91E-05
CO2e	119,440	40 CFR 98, Subpart C	40.56	10.14

[redacted]

Protector® QS Series

GENERAC®

PROTECTOR® QS SERIES

Standby Generators

Liquid-Cooled Gaseous Engine

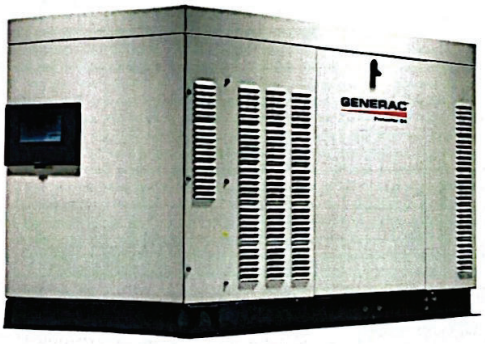
INCLUDES:

- Two-Line LCD Multilingual Digital Evolution™ Controller (English/Spanish/French/ Portuguese) with external viewing window for easy indication of generator status and breaker position.
- True Power™ Electrical Technology
- Isochronous Electronic Governor
- Sound Attenuated Enclosure
- Closed Coolant Recovery System
- Smart Battery Charger
- UV/Ozone Resistant Hoses
- ±1% Voltage Regulation
- Natural Gas or LP Operation
- 5 Year Limited Warranty
- UL 2200 Listed
- SwRi® listed (NFPA37, clause 4.1.4.1.2) Generator can be installed a minimum 18" distance from combustible wall*

*Only if located away from doors, windows, and fresh air intakes, and unless otherwise directed by local codes. Please review install guide for more details.

Standby Power Rating

Model RG022 (Aluminum - Bisque) - 22 kW 60 Hz
Model RG027 (Aluminum - Bisque) - 27 kW 60 Hz
Model RG032 (Aluminum - Bisque) - 32 kW 60 Hz
Model RG038 (Aluminum - Bisque) - 38 kW 60 Hz



c ETL US LISTED

USA ENGINEERED & BUILT* *Assembled in the USA using domestic and foreign parts

QUIET TEST

Meets EPA Emission Regulations
22 & 27 kW are CA/MA emissions compliant
32 & 38 kW not for sale in CA / MA

FEATURES

- **INNOVATIVE DESIGN & PROTOTYPE TESTING** are key components of GENERAC'S success in "IMPROVING POWER BY DESIGN." But it doesn't stop there. Total commitment to component testing, reliability testing, environmental testing, destruction and life testing, plus testing to applicable CSA, NEMA, EGSA, and other standards, allows you to choose GENERAC POWER SYSTEMS with the confidence that these systems will provide superior performance.
- **TEST CRITERIA:**
  - ✓ **PROTOTYPE TESTED**
  - ✓ **SYSTEM TORSIONAL TESTED**
  - ✓ **NEMA MG1-22 EVALUATION**
  - ✓ **MOTOR STARTING ABILITY**
- **SOLID-STATE, FREQUENCY COMPENSATED VOLTAGE REGULATION.** This state-of-the-art power maximizing regulation system is standard on all Generac models. It provides optimized FAST RESPONSE to changing load conditions and MAXIMUM MOTOR STARTING CAPABILITY by electronically torque-matching the surge loads to the engine. Digital voltage regulation at ±1%.
- **SINGLE SOURCE SERVICE RESPONSE** from Generac's extensive dealer network provides parts and service know-how for the entire unit, from the engine to the smallest electronic component.
- **GENERAC TRANSFER SWITCHES.** Long life and reliability are synonymous with GENERAC POWER SYSTEMS. One reason for this confidence is the GENERAC product line is offered with its own transfer systems and controls for total system compatibility.

GENERAC®

ISO 9001:2008

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GENERAC

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application & engineering data

GENERATOR SPECIFICATIONS

Type	Synchronous
Rotor Insulation Class	H (22 & 27 kW) or F (32 & 38 kW)
Stator Insulation Class	H
Telephone Interference Factor (TIF)	<50
Alternator Output Leads 1-Phase	4 wire
Alternator Output Leads 3-Phase	6 wire
Bearings	Sealed Ball
Coupling	Flexible Disc
Excitation System	Direct

VOLTAGE REGULATION

Type	Electronic
Sensing	Single Phase
Regulation	± 1%

GOVERNOR SPECIFICATIONS

Type	Electronic
Frequency Regulation	Isochronous
Steady State Regulation	± 0.25%

ELECTRICAL SYSTEM

Battery Charge Alternator	12 Volt 30 Amp
Static Battery Charger	2.5 Amp
Recommended Battery (battery not included)	Group 26 (22, 27, 32 & 38 kW)
System Voltage	12 Volts

GENERATOR FEATURES

Revolving field heavy duty generator
Directly connected to the engine
Operating temperature rise 120 °C above a 40 °C ambient
Class H insulation is NEMA rated
Class F insulation is NEMA rated
All models fully prototyped tested

ENCLOSURE FEATURES

Aluminum weather protective enclosure	Ensures protection against mother nature. Electrostatically applied textured epoxy paint for added durability.
Enclosed critical grade muffler	Quiet, critical grade muffler is mounted inside the unit to prevent injuries.
Small, compact, attractive	Makes for an easy, eye appealing installation.
SAE	Sound attenuated enclosure ensures quiet operation.

ENGINE SPECIFICATIONS: 22, 27, 32 & 38 kW

Make	Generac
Model	In-line
Cylinders	4
Displacement (Liters)	2.4
Bore (in/mm)	3.41/86.5
Stroke (in/mm)	3.94/100
Compression Ratio	9.5:1
Intake Air System	Naturally Aspirated (22 & 27 kW) or Turbocharged/Aftercooled (32 & 38 kW)
Lifter Type	Hydraulic

ENGINE LUBRICATION SYSTEM

Oil Pump Type	Gear
Oil Filter Type	Full flow spin-on cartridge
Crankcase Capacity (qt/l)	4/3.8 (22, 27, 32 & 38 kW)

ENGINE COOLING SYSTEM

Type	Closed
Water Pump	Belt driven
Fan Speed (rpm)	1980 - 22 & 27 kW 1500 - 32 & 38 kW
Fan Diameter (in/mm)	18.1/459.7 (22 & 27 kW) or 22/558.8 (32 & 38 kW)
Fan Mode	Pusher (22 & 27 kW) or Puller (32 & 38 kW)

FUEL SYSTEM

Fuel Type	Natural gas, propane vapor
Carburetor	Down Draft
Secondary Fuel Regulator	Standard
Fuel Shut Off Solenoid	Standard
Operating Fuel Pressure	5-14" water column/9-26 mm HG
LP Fuel Pressure	11- 14" Water Column
NG Fuel Pressure	5 - 14" Water Column

(All ratings in accordance with BS5514, ISO3046, ISO8528, SAE J1349 and DIN6271)

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operating data

GENERATOR OUTPUT VOLTAGE/kW - 60 Hz

		kW LPG	Amp LPG	kW Nat. Gas	Amp Nat. Gas	CB Size (Both)
RG022	120/240 V, 1Ø, 1.0 pf	22	92	22	92	100
	120/208 V, 3Ø, 0.8 pf	22	76	22	76	80
	120/240 V, 3Ø, 0.8 pf	22	66	22	66	80
RG027	120/240 V, 1Ø, 1.0 pf	27	113	25	104	125
	120/208 V, 3Ø, 0.8 pf	27	94	25	87	100
	120/240 V, 3Ø, 0.8 pf	27	81	25	75	90
RG032	120/240 V, 1Ø, 1.0 pf	32	133	32	133	150
	120/208 V, 3Ø, 0.8 pf	32	111	32	111	125
	120/240 V, 3Ø, 0.8 pf	32	96	32	96	100
	277/480 V, 3Ø, 0.8 pf	32	48	32	48	60
RG038	120/240 V, 1Ø, 1.0 pf	38	158	38	158	175
	120/208 V, 3Ø, 0.8 pf	38	132	38	132	150
	120/240 V, 3Ø, 0.8 pf	38	114	38	114	125
	277/480 V, 3Ø, 0.8 pf	38	57	38	57	60

SURGE CAPACITY IN AMPS

		Voltage Dip @ < .4 pf	
		15%	30%
RG022	120/240 V, 1Ø	55	135
	120/208 V, 3Ø	40	92
	120/240 V, 3Ø	35	80
RG027	120/240 V, 1Ø	62	170
	120/208 V, 3Ø	70	120
	120/240 V, 3Ø	61	103
RG032	120/240 V, 1Ø	75	180
	120/208 V, 3Ø	87	210
	120/240 V, 3Ø	75	182
	277/480 V, 3Ø	36	87
RG038	120/240 V, 1Ø	75	180
	120/208 V, 3Ø	87	210
	120/240 V, 3Ø	75	182
	277/480 V, 3Ø	36	87

ENGINE FUEL CONSUMPTION

		Natural Gas			Propane	
		(ft^3/hr)	(m^3/hr)	(gal/hr)	(ft^3/hr)	(l/hr)
RG022	Exercise cycle	42	1.2	0.44	16	1.7
	25% of rated load	100	2.8	1.1	40	4.2
	50% of rated load	190	5.4	2.1	75	7.8
	75% of rated load	255	7.2	2.8	101	10.5
	100% of rated load	316	9	3.4	125	13
RG027	Exercise cycle	42	1.2	0.44	16	1.7
	25% of rated load	108	3.1	1.2	43	4.5
	50% of rated load	197	5.6	2.1	78	8.1
	75% of rated load	287	8.2	3.1	114	11.8
	100%of rated load	359	10.2	3.9	143	14.8
RG032	Exercise cycle	79	2.2	0.8	30	3.2
	25% of rated load	144	4.1	1.7	60	6.3
	50% of rated load	226	6.4	2.7	97	10.3
	75% of rated load	298	6.4	3.7	132	13.9
	100% of rated load	375	10.6	4.6	166	17.5
RG038	Exercise cycle	83	2.3	0.9	31	3.2
	25% of rated load	162	4.6	1.7	62	6.6
	50% of rated load	255	7.2	2.9	103	10.8
	75% of rated load	345	9.8	4	142	15
	100% of rated load	437	12.4	5.2	185	19

Note: **Fuel pipe must be sized for full load.**

For Btu content, multiply ft^3/hr x 2520 (LP) or ft^3/hr x 1000 (NG)

For megajoule content, multiply m^3/hr x 93.15 (LP) or m^3/hr x 37.26 (NG)

Refer to "Emissions Data Sheets" for maximum fuel flow for EPA and SCAQMD permitting purposes.

STANDBY RATING: Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-3046-1. Design and specifications are subject to change without notice.

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GENERAC

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operating data

ENGINE COOLING

	22 kW	27 kW	32 & 38 kW
Air flow (inlet air including alternator and combustion air in cfm/cmm)	2400/68	2400/68	2200/62.3
System coolant capacity (gal/liters)	2.5/9.5	2.5/9.5	2.5/9.5
Heat rejection to coolant (BTU per hr/MJ per hr)	99,000/104.5	105,000/110.8	145,000/153
Maximum operation air temperature on radiator (°C/°F)	60/150		
Maximum ambient temperature (°C/°F)	50/140		

COMBUSTION REQUIREMENTS

Flow at rated power (cfm/cmm)	68/1.9	68/1.9	106/3

SOUND EMISSIONS

Sound output in dB(A) at 23 ft (7 m) with generator in exercise mode*	61	61	58
Sound output in dB(A) at 23 ft (7 m) with generator operating at normal load*	70	70	64

EXHAUST

Exhaust flow at rated output (cfm/cmm)	165/4.7	180/5.1	300/8.5
Exhaust temperature at muffler outlet (°C/°F)	482/900	538/1000	579/1075

ENGINE PARAMETERS

Rated Synchronous rpm	1800

POWER ADJUSTMENT FOR AMBIENT CONDITIONS

Temperature Deration ..... 3% for every 10 °C above 25 °C or 1.65% for every 10 °F above 77 °F
Altitude Deration (22 & 27 kW) ..... 1% for every 100 m above 183 m or 3% for every 1000 ft above 600 ft
Altitude Deration (32 & 38 kW) ..... 1% for every 100 m above 915 m or 3% for every 1000 ft above 3000 ft

CONTROLLER FEATURES

Two-Line Plain Text LCD Display ..... Simple user interface for ease of operation.
Mode Switch: Auto ..... Automatic Start on Utility failure. 7 day exerciser
Off ..... Stops unit. Power is removed. Control and charger still operate.
Manual ..... Start with starter control, unit stays on. If utility fails, transfer to load takes place.
Programmable start delay between 10-30 seconds ..... 10 sec standard
Engine Start Sequence ..... Cyclic cranking: 16 sec on, 7 rest (90 sec maximum duration)
Engine Warm-up ..... 5 sec
Engine Cool-Down ..... 1 min
Starter Lock-out ..... Starter cannot re-engage until 5 sec after engine has stopped.
Smart Battery Charger ..... Standard
Automatic Voltage Regulation with Over and Under Voltage Protection ..... Standard
Automatic Low Oil Pressure Shutdown ..... Standard
Overspeed Shutdown ..... Standard, 72 Hz
High Temperature Shutdown ..... Standard
Overcrank Protection ..... Standard
Safety Fused ..... Standard
Failure to Transfer Protection ..... Standard
Low Battery Protection ..... Standard
50 Event Run Log ..... Standard
Future Set Capable Exerciser ..... Standard
Incorrect Wiring Protection ..... Standard
Internal Fault Protection ..... Standard
Common External Fault Capability ..... Standard
Governor Failure Protection ..... Standard

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Model #	Product	Description
G0071690	Mobile Link® 4G LTE Cellular Accessory	Generac's Mobile Link allows you to check the status of your generator from anywhere that you have access to an Internet connection from a PC or with any smart device. You will even be notified when a change in the generator's status occurs via e-mail or text message. Note: Harness Adapter Kit required. Available in the U.S. only.
G006478-0	Kit, Adapter Mobile Link L/C (Required for QT and RG Series)	The Harness Adapter Kit is required to make liquid-cooled units compatible with Mobile Link®.
G005630-1 - 22, 27, 32 & 38 kW	Cold Weather Kit	If the temperature regularly falls below 32 °F (0 °C), install a cold weather kit to maintain optimal battery temperature. Kit consists of battery warmer with thermostat built into the wrap.
G005616-0 - 22, 27, 32 & 38 kW	Extreme Cold Weather Kit	Recommended where the temperature regularly falls below 32 °F (0 °C) for extended periods of time. For liquid cooled units only.
G005651-0	Base Plug Kit	Add base plugs to the base of the generator to keep out debris.
G005703-0 - Bisque	Paint Kit	If the generator enclosure is scratched or damaged, it is important to touch-up the paint to protect from future corrosion. The paint kit includes the necessary paint to properly maintain or touch-up a generator enclosure.
G005656-0 - 22 & 27 kW G005984-0 - 32 & 38 kW	Scheduled Maintenance Kit	The Liquid-Cooled Scheduled Maintenance Kits offer all the hardware necessary to perform complete maintenance on Generac liquid-cooled generators.
G006664-0	Local Wireless Monitor	Completely wireless and battery powered, Generac's wireless remote monitor provides you with instant status information without ever leaving the house.
G006665-0	Wireless Remote Extension Harness	Recommended for use with the Wireless Remote on units up to 60 kW, required for use on units 70 kW or greater.
G006873-0	Smart Management Module (50 Amps)	Smart Management Modules are used in conjunction with the Automatic Transfer Switch to increase its power management capabilities. It provides additional power management flexibility not found in any other power management system.
G007993-0	E-stop toggle switch for residential installs to NEC2017	E-stop allows for immediate fuel shutoff and generator shutdown in the event of an emergency.
G006510-0	E-Stop resettable switch for commercial installs to NEC2020	E-stop allows for immediate fuel shutoff and generator shutdown in the event of an emergency.
G007005-0	Wi-Fi LP Fuel Level Monitor	The Wi-Fi enabled LP fuel level monitor provides constant monitoring of the connected LP fuel tank. Monitoring the LP tank's fuel level is an important step in making sure your generator is ready to run during an unexpected power failure. Status alerts are available through a free application to notify when your LP tank is in need of a refill.

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GENERAC

22 & 27 kW

installation layout

Drawing #0K8624-C (1 of 2)

NOTES:

1. MINIMUM RECOMMENDED CONCRETE PAD SIZE: 1092 (43") WIDE X 1885 (74.2") LONG. REFERENCE INSTALLATION GUIDE SUPPLIED WITH UNIT FOR CONCRETE PAD GUIDELINES.
2. ALLOW SUFFICIENT ROOM ON ALL SIDES OF THE GENERATOR FOR MAINTENANCE AND SERVICING. THIS UNIT MUST BE INSTALLED IN ACCORDANCE WITH CURRENT APPLICABLE NFPA 37 AND NFPA 70 STANDARDS AS WELL AS ANY OTHER FEDERAL, STATE, AND LOCAL CODES.
3. CONTROL PANEL / CIRCUIT BREAKER INFORMATION:
   - SEE SPECIFICATION SHEET OR OWNERS MANUAL
   - ACCESSIBLE THROUGH CUSTOMER ACCESS ASSEMBLY DOOR ON REAR OF GENERATOR.
4. REMOVE THE REAR ENCLOSURE COVER PANEL TO ACCESS THE STUB-UP AREAS AS FOLLOWS:
   - HIGH VOLTAGE CONNECTION INCLUDING AC LOAD LEAD CONDUIT CONNECTION NEUTRAL CONNECTION, BATTERY CHARGER 120 VOLT AC (0.5 AMP MAX) CONNECTION.
   - LOW VOLTAGE CONNECTION INCLUDING TRANSFER SWITCH CONTROL WIRES.
5. CENTER OF GRAVITY AND WEIGHT MAY CHANGE DUE TO UNIT OPTIONS.
6. BOTTOM OF GENERATOR SET MUST BE ENCLOSED TO PREVENT PEST INTRUSION AND RECIRCULATION OF DISCHARGE AIR AND/OR IMPROPER COOLING AIR FLOW.
7. REFERENCE OWNERS MANUAL FOR LIFTING WARNINGS.
8. MOUNTING BOLTS OR STUDS TO MOUNTING SURFACE SHALL BE 5/8-11 GRADE 5 (USE STANDARD SAE TORQUE SPECS)
9. MUST ALLOW FREE FLOW OF INTAKE AIR, DISCHARGE AIR AND EXHAUST. SEE SPEC SHEET FOR MINIMUM AIR FLOW AND MAXIMUM RESTRICTION REQUIREMENTS.
10. GENERATOR MUST BE INSTALLED SUCH THAT FRESH COOLING AIR IS AVAILABLE AND THAT DISCHARGE AIR FROM RADIATOR IS NOT RECIRCULATED.
11. EXHAUST MUFFLER AND FAN BELT ENCLOSED WITHIN GENERATOR ENCLOSURE, REMOVE FRONT PANEL TO ACCESS.

SERVICE ITEM	2.4L
OIL FILL CAP	EITHER SIDE
OIL DIP STICK	RIGHT SIDE
OIL FILTER	RIGHT SIDE
OIL DRAIN HOSE	LEFT SIDE
RADIATOR DRAIN	LEFT SIDE
COOLANT RECOVERY BOTTLE	LEFT SIDE
RADIATOR FILL CAP	ROOF TOP
AIR CLEANER ELEMENT	LEFT SIDE
SPARK PLUGS	LEFT SIDE
MUFFLER	SEE NOTE 11
DRIVE BELT	EITHER SIDE
FAN BELT	SEE NOTE 11
BATTERY	LEFT SIDE

REFERENCE OWNERS MANUAL FOR PERIODIC REPLACEMENT PART LISTINGS.

ENGINE/KW KVA	ENCLOSURE MATERIAL	WEIGHT DATA: WEIGHT GENSET ONLY KG [LBS]	WEIGHT SHIPPING SKID KG [LBS]	SHIPPING WEIGHT KG [LBS]
2.4L 22KW (60HZ) SINGLE PHASE 17.4KVA (50HZ) THREE PHASE 22KVA (50HZ)	AL	410.5 [905]	30 [66]	440 [971]
2.4L 27KW (60HZ) SINGLE PHASE 21.6KVA (50HZ) THREE PHASE 27KVA (50HZ)	AL	426 [940]	30 [66]	456 [1006]

DIMENSIONS: MM [INCH]

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22 & 27 kW

installation layout

Drawing #0K8624-C (2 of 2)

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32 & 38 kW

GENERAC

installation layout

Drawing #0K9268-B (1 of 2)

SERVICE ITEM	2.4L
OIL FILL CAP	EITHER SIDE
OIL DIP STICK	RIGHT SIDE
OIL FILTER	RIGHT SIDE
OIL DRAIN HOSE	RIGHT SIDE
RADIATOR DRAIN HOSE	LEFT SIDE
COOLANT RECOVERY BOTTLE	LEFT SIDE
RADIATOR FILL CAP ACCESS	ROOF TOP
AIR CLEANER ELEMENT	RIGHT SIDE
SPARK PLUGS	LEFT SIDE
MUFFLER	SEE NOTE 11
DRIVE BELT	EITHER SIDE
FAN BELT	SEE NOTE 11
BATTERY	LEFT SIDE

REFERENCE OWNERS MANUAL FOR PERIODIC REPLACEMENT PART LISTINGS.

NOTES:

1. MINIMUM RECOMMENDED CONCRETE PAD SIZE: 1194 (47") WIDE X 2255 (88.8") LONG. REFERENCE INSTALLATION GUIDE SUPPLIED WITH UNIT FOR CONCRETE PAD GUIDELINES.
2. ALLOW SUFFICIENT ROOM ON ALL SIDES OF THE GENERATOR FOR MAINTENANCE AND SERVICING. THIS UNIT MUST BE INSTALLED IN ACCORDANCE WITH CURRENT APPLICABLE NFPA 37 AND NFPA 70 STANDARDS AS WELL AS ANY OTHER FEDERAL, STATE, AND LOCAL CODES.
3. CONTROL PANEL / CIRCUIT BREAKER INFORMATION:
   - SEE SPECIFICATION SHEET OR OWNERS MANUAL
   - ACCESSIBLE THROUGH CUSTOMER ACCESS ASSEMBLY DOOR ON REAR OF GENERATOR.
4. REMOVE THE REAR ENCLOSURE COVER PANEL TO ACCESS THE STUB-UP AREAS AS FOLLOWS:
   - HIGH VOLTAGE CONNECTION INCLUDING AC LOAD LEAD CONDUIT CONNECTION, NEUTRAL CONNECTION, AND BATTERY CHARGER 120 VOLT AC (0.5 AMP MAX) CONNECTION.
   - LOW VOLTAGE CONNECTION INCLUDING TRANSFER SWITCH CONTROL WIRES.
5. CENTER OF GRAVITY AND WEIGHT MAY CHANGE DUE TO UNIT OPTIONS.
6. BOTTOM OF GENERATOR SET MUST BE ENCLOSED TO PREVENT PEST INTRUSION AND RECIRCULATION OF DISCHARGE AIR AND/OR IMPROPER COOLING AIR FLOW.
7. REFERENCE OWNERS MANUAL FOR LIFTING WARNINGS.
8. MOUNTING BOLTS OR STUDS TO MOUNTING SURFACE SHALL BE 5/8-11 GRADE 5 (USE STANDARD SAE TORQUE SPECS)
9. MUST ALLOW FREE FLOW OF INTAKE AIR, DISCHARGE AIR AND EXHAUST. SEE SPEC SHEET FOR MINIMUM AIR FLOW AND MAXIMUM RESTRICTION REQUIREMENTS.
10. GENERATOR MUST BE INSTALLED SUCH THAT FRESH COOLING AIR IS AVAILABLE AND THAT DISCHARGE AIR FROM RADIATOR IS NOT RECIRCULATED.
11. EXHAUST MUFFLER AND FAN BELT ARE ENCLOSED WITHIN GENERATOR ENCLOSURE, REMOVE FRONT PANEL TO ACCESS.

WEIGHT DATA				
ENGINE/KW	ENCLOSURE MATERIAL	WEIGHT GENSET ONLY KG [LBS]	WEIGHT SHIPPING SKID KG [LBS]	SHIPPING WEIGHT KG [LBS]
2.4L 32KW	AL	556 [1225]	44 [98]	600 [1323]
2.4L 38KW	AL	560 [1235]	44 [98]	605 [1333]

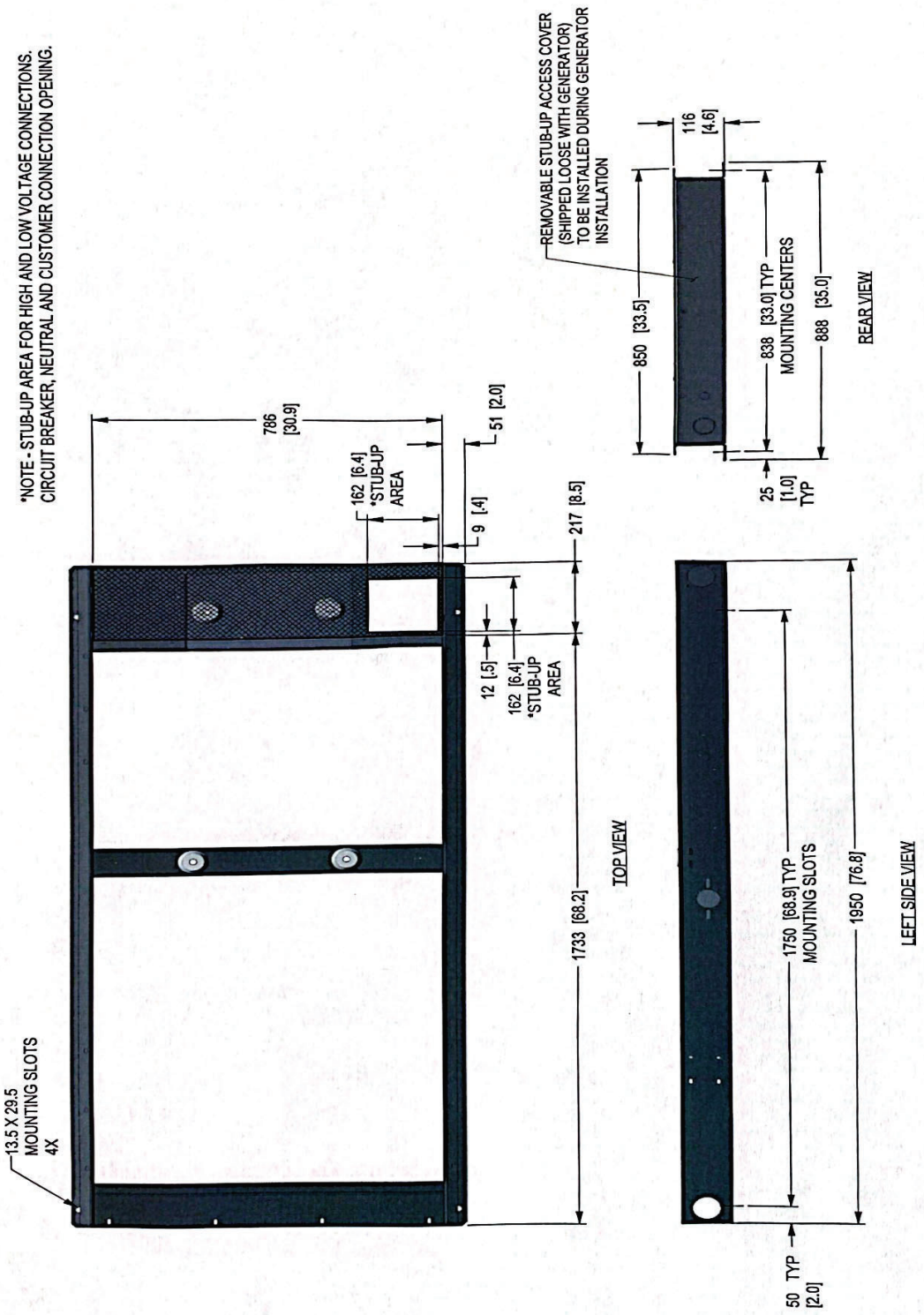
DIMENSIONS: MM [INCH]

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32 & 38 kW

installation layout

Drawing #0K9268-B (2 of 2)



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STATEMENT OF EXHAUST EMISSIONS
2021 Spark-Ignited Generators
QT and RG Series - NON-SCAQMD Certified, Stationary Emergency

	Model	Engine (L)	EPA Engine Family	Fuel	Catalyst Required	EPA Certification #	Grams/bhp-hr.				Rated RPM	BHP	Fuel Flow (lb/hr)
							THC	NMHC	NOx	CO			
Small Spark Ignited Engine (SSIE) Small Off-Road Engines (SORE)	RG022	2.4	MGNXB02.42NN	NG	No	MGNXB02.42NN-012	2.34	2.29	2.15	101.28	1,800	32	14.27
			MGNXB02.42NL	LPV		MGNXB02.42NL-013	1.54	N/A	3.76	95.37	1,800	36	15.31
	RG025	1.5	MGNXB01.52NN	NG		MGNXB01.52NN-008	2.87	0.12	1.57	133.43	3,600	47	20.36
			MGNXB01.52NL	LPV		MGNXB01.52NL-009	1.99	N/A	1.62	134.47	3,600	49	19.60
	RG027	2.4	MGNXB02.42NN	NG		MGNXB02.42NN-012	1.60	1.56	1.77	70.06	1,800	38	16.52
			MGNXB02.42NL	LPV		MGNXB02.42NL-013	1.43	N/A	4.38	86.18	1,800	43	17.59
	RG030	1.5	MGNXB01.52NN	NG		MGNXB01.52NN-008	2.87	0.12	1.57	133.43	3,600	47	20.36
			MGNXB01.52NL	LPV		MGNXB01.52NL-009	1.99	N/A	1.62	134.47	3,600	49	19.60
	RG032	2.4	MGNXB02.42NN	NG		MGNXB02.42NN-012	1.03	1.01	3.86	27.39	1,800	63	26.11
			MGNXB02.42NL	LPV		MGNXB02.42NL-013	0.75	N/A	3.02	69.69	1,800	51	19.64
	RG036	2.4	MGNXB02.42NN	NG		MGNXB02.42NN-012	1.03	1.01	3.86	27.39	1,800	63	26.11
			MGNXB02.42NL	LPV		MGNXB02.42NL-013	0.75	N/A	3.02	69.69	1,800	51	19.64
	RG038	2.4	MGNXB02.42NN	NG		MGNXB02.42NN-012	1.03	1.01	3.86	27.39	1,800	63	26.11
			MGNXB02.42NL	LPV		MGNXB02.42NL-013	0.75	N/A	3.02	69.69	1,800	51	19.64
	RG045	2.4	MGNXB02.42NN	NG		MGNXB02.42NN-012	1.56	1.53	3.94	75.70	3,600	81	34.87
			MGNXB02.42NL	LPV		MGNXB02.42NL-013	0.84	N/A	7.08	40.59	3,600	92	36.52
	RG048	4.5	MGNXB04.52NN	NG		MGNXB04.52NN-014	0.64	0.10	4.48	35.10	1,800	75	25.89
			MGNXB04.52NL	LPV		MGNXB04.52NL-016	0.84	N/A	5.27	64.25	1,800	76	29.51
	RG060, 80	4.5	MGNXB04.52NN	NG		MGNXB04.52NN-014	0.49	0.12	3.36	42.88	1,800	129	45.22
			MGNXB04.52NL	LPV		MGNXB04.52NL-016	0.47	N/A	3.27	59.64	1,800	129	48.96
	RG060	2.4	MGNXB02.42NN	NG		MGNXB02.42NN-012	0.83	0.81	3.21	69.11	3,600	107	43.84
			MGNXB02.42NL	LPV		MGNXB02.42NL-013	0.92	N/A	2.17	138.95	3,600	107	47.24

NG: Natural Gas
LPV: Liquid Propane Vapor

N/A: Non Applicable
Refer to Page 2 for Definitions and Advisory Notes

STATEMENT OF EXHAUST EMISSIONS
2021 Spark-Ignited Generators
QT and RG Series - NON-SCAQMD Certified, Stationary Emergency

2020 EPA SPARK-IGNITED EXHAUST EMISSIONS DATA

Effective since 2009, the EPA has implemented exhaust emissions regulations on stationary spark-ignited (gaseous) engine generators for emergency applications. All Generac spark-ignited gensets, including SG, MG, QTA, QT and RG series gensets that are built with engines manufactured in 2009 and later meet the requirements of 40CFR part 60 subpart JJJJ and are EPA certified. These generator sets are labeled as EPA Certified with decals affixed to the engines' valve covers.

The attached documents summarize the general information relevant to EPA certification on these generator sets. This information can be used for submittal data and for permitting purposes, if required. These documents include the following information:

EPA Engine Family
The EPA Engine Family is assigned by the Manufacturer under EPA guidelines for certification purposes and appears on the EPA certificate.

Catalyst Required
Indicates whether a three-way catalyst (TWC) and Air/Fuel Ratio control system are required on the generator set to meet EPA certification requirements. Generally, units rated 80kW and smaller do not require a TWC to meet EPA certification requirements. Please note that some units that do not require a TWC to meet EPA requirements do need one if the California SCAQMD option is selected. Please see "California SCAQMD" below for additional information on this option.

Combination Catalyst or Separate Catalyst
SG and MG series generator sets typically utilize a single combination catalyst/silencer as part of meeting EPA certification requirements. Many QT and RG series generator sets use the same engines as SG series units, but have different exhaust configurations that require the use of conventional silencers with additional separate catalysts installed.

EPA Certificate Number
Upon certification by the EPA, a Certificate Number is assigned by the EPA.

Emissions Actuals - Grams/bhp-hr
Actual exhaust emission data for Total Hydrocarbons (THC), Nitrogen Oxides (NOx) and Carbon Monoxide (CO) that were submitted to EPA and are official data of record for certification. This data can be used for permitting if necessary. Values are expressed in grams per brake horsepower-hour; to convert to grams/kW-hr, multiply by 1.341. Please see advisory notes below for further information.

California Units, SCAQMD CEP Number
A separate low-emissions option is available on many Generac gaseous-fueled generator sets to comply with the more stringent South Coast Air Quality Management District requirements that are recognized in certain areas in California. Gensets that include this option are also EPA Certified.

General Advisory Note to Dealers

The information provided here is proprietary to Generac and its' authorized dealers. This information may only be disseminated upon request, to regulatory governmental bodies for emissions permitting purposes or to specifying organizations as submittal data when expressly required by project specifications, and shall remain confidential and not open to public viewing. This information is not intended for compilation or sales purposes and may not be used as such, nor may it be reproduced without the expressed written permission of Generac Power Systems, Inc..

Advisory Notes on Emissions Actuals

- The stated values are actual exhaust emission test measurements obtained from units representative of the generator types and engines described.
- Values are official data of record as submitted to the EPA and SCAQMD for certification purposes. Testing was conducted in accordance with prevailing EPA protocols, which are typically accepted by SCAQMD and other regional authorities.
- No emission values provided are to be construed as guarantees of emissions levels for any given Generac generator unit.
- Generac Power Systems, Inc. reserves the right to revise this information without prior notice.
- Consult state and local regulatory agencies for specific permitting requirements.
- The emissions performance data supplied by the equipment manufacturer is only one element required toward completion of the permitting and installation process. State and local regulations may vary on a case-by-case basis and must be consulted by the permit applicant/equipment owner prior to equipment purchase or installation. The data supplied herein by Generac Power Systems, Inc. cannot be construed as a guarantee of installability of the generator set.
- The emission values provided are the result of multi-mode, weighted scale testing in accordance with EPA testing regulations, and may not be representative of any specific load point.
- The emission values provided are not to be construed as emission limits.

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Part No. A0001269086
Rev. A 11/24/20

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2021 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Generac Power Systems, Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: MGNXB02.42NN-012

Effective Date: 10/16/2020

Expiration Date: 12/31/2021

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 10/16/2020

Revision Date: N/A

Manufacturer: Generac Power Systems, Inc.
Engine Family: MGNXB02.42NN
Mobile/Stationary Certification Type: Stationary
Fuel : Natural Gas (CNG/LNG)
Emission Standards :
Part 90 Phase 1
HC + NOx (g/kW-hr) : 13.4
NMHC + NOx (g/kW-hr) : 13.4
CO (g/kW-hr) : 519.0
Emergency Use Only : Y

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR Part 60, 1065, 1068, and 60 (stationary only and combined stationary and mobile) and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new nonroad spark-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60. This certificate of conformity does not cover nonroad engines imported prior to the effective date of the certificate.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068.20 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover large nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

August 14, 2024

Ms. Michelle McCloskey
Permit Support Section Manager
Kentucky Division for Air Quality
300 Sower Blvd, 2nd Floor
Frankfort, KY 40601

RE: Title V Permit Revision Application to Establish New SO_2 Emission Limits Consistent with Values Used for SO_2 Nonattainment SIP Modeling Demonstration
Century Aluminum Sebree, LLC; (Source ID 21-101-00029; Agency Interest #1788)

Dear Ms. McCloskey:

Century Aluminum Sebree, LLC (Century) owns and operates a primary aluminum production facility in Robards, Kentucky near the town of Sebree (Sebree Plant). The facility is a major source under the Title V operating permit program and currently operates in accordance with Title V operating permit V-19-010 R2, issued by the Kentucky Division for Air Quality (Division). The existing permit expires on November 11, 2024.[1]

Consistent with discussions with the Division, Century is submitting this application to facilitate the issuance of a revision to the current Title V permit (i.e., prior to renewal) that establishes new federally enforceable conditions limiting SO_2 emissions as well as other requirements consistent with the emissions and stack configuration used in the State Implementation Plan (SIP) modeling demonstration analysis recently submitted on August 7, 2024.

1. Background and Purpose for Application

The U.S. Environmental Protection Agency (EPA) promulgated the current 1-hour SO_2 National Ambient Air Quality Standards (NAAQS) at 75 parts per billion (ppb) on June 22, 2010. Compliance with the 1-hour SO_2 NAAQS is determined based on monitor data using a three-year average of the 4th highest daily maximum concentration. Based on SO_2 concentration data measured at the ambient monitoring station located southwest of the Sebree Plant operations area during the 2017-2019 period, which exceeded the NAAQS, portions of Henderson and Webster Counties in Kentucky surrounding the Sebree Plant were designated as nonattainment with respect to the 1-hour SO_2 NAAQS effective on April 30, 2021.[2]

The nonattainment designation triggers the requirement for the Division to develop a revision to the Kentucky SIP to demonstrate that attainment with the 1-hour SO_2 will be achieved no later than 5 years after the effective date of the designation (i.e., by April 30, 2026). One component of the SIP is a modeling

[1] An application to renew the existing Title V permit was submitted to the Division on May 10, 2024 and is currently under review.

[2] Sebree SO_2 DRR Site, AQS Site ID: 21-101-1011.

Century Aluminum Sebree LLC
9404 State Route 2096
Robards, KY 42452
270.521.7811
270.521.7305 (F)

analysis demonstrating that the NAAQS will be attained following the application of a planned control strategy. On behalf of Century, Trinity Consultants prepared and submitted an air dispersion modeling report to the Division on August 7, 2024, documenting this SIP modeling analysis and demonstrating that attainment of the 1-hour SO_2 NAAQS in the Henderson-Webster County nonattainment area can be achieved following the implementation of the control strategy represented. This control strategy includes the planned construction and use of a new stack for the Anode Bake Furnace and the imposition of new lower limits on allowable SO_2 emissions from Sebree Plant emission units. The new emission limits being proposed for SO_2 will lower the allowable SO_2 emissions from the Anode Bake Furnace and Potlines by almost 1,000 tpy from 5,853 tpy to 4,946 tpy.[3]

The purpose of this permit revision application is to facilitate the establishment of new federally enforceable conditions establishing new limits on SO_2 emissions and governing the construction of the new Anode Bake Furnace stack, consistent with the representations used in the modeling demonstration report. There are no physical or operational changes being proposed to existing processes and emission units and the only construction activity addressed by this permit revision is the planned installation of the new Anode Bake Furnace stack and some new fencing on the western and southern property boundary.

2. Facility Operations Overview

Facility Location

The Sebree Plant is located on State Highway Junction 2096/2097, 3.8 miles (6.1 km) northeast of the city center of Sebree, Kentucky in Henderson County near the borders of McLean and Webster Counties. The Sebree Plant is surrounded by a large tract of controlled property in all directions. It is bounded on the east by the Green River and open farmland, on the west by the Edward T. Breathitt Pennyrile Parkway (I-69), light industry, and farmland/wooded areas, on the south by Big Rivers Electric Corporation, and on the north by wooded areas. Refer to maps showing the location of the facility and an aerial view of the main site operations in the Title V permit renewal application recently submitted to the Division on May 10, 2024.



Facility Operations Overview

At the Sebree Plant, Century produces primary aluminum through the electrolytic reduction of raw alumina (Al_2O_3) in vessels termed reduction cells or "pots". Century operates three nearly identical potlines at the Sebree Plant. Each potline is composed of two potrooms that each contain 64 reductions cells for a total of 128 cells per potline.

Each pot in the potrooms is constructed as a complete electrolytic circuit with anode, cathode, and electrolyte. The exterior of the pots consists of a rectangular steel shell lined with refractory thermal

[3] The emission rates cited are for the Anode Bake Furnace and Potlines operations only, but they make up of 99% of the facility SO_2 emissions. The total potential SO_2 emissions from all other sources, which primarily include natural gas-fired boilers, furnaces, heaters, and engines are roughly 0.9 tpy.

insulation. Raw material inputs to the pots include alumina, bath, carbon anodes, and various other additives to the aluminum production process such as aluminum fluoride. Within the pot is an inner lining of carbon (the cathode). Carbon anode blocks are placed just below the surface of a fluoride electrolyte (cryolite) to complete the reaction circuit. A current is applied to metal rods attached to the anode blocks, which passes thorough the molten bath (molten aluminum, cryolite, and alumina) and the carbon cathode lining, and then to the current collector bars. The molten aluminum formed in the reduction cells (as it is liberated from alumina with oxygen) settles between the anode and cathode where it accumulates. The oxygen liberated reacts with the carbon anode blocks forming carbon dioxide. The accumulated molten metal is siphoned from the pots into crucibles each day. The anode blocks, which are gradually consumed by the reaction in the pots, last a few weeks before they must be replaced with new anodes.

The emissions from the reduction cells in each potline are captured through hooding systems and are sent to two Alcoa A-398 alumina fluidized bed dry scrubbers, each of which has five reactors. Thus, for three potlines, there are a total of six alumina fluidized bed dry scrubbers with each one serving half of the pots on a potline. Any fugitive emissions not caught by the hooding system are vented through the roof of two potroom buildings comprising each potline.

To provide baked carbon anodes to the reduction cells, Century operates an anode paste mixing and forming operation and an anode bake furnace, in which the "green anodes" are baked. The green anodes are formed from petroleum coke, recycled spent anode material, and coal tar pitch, which serves as a binder. The formed anodes are compressed and placed within the bake furnace, where they are baked to remove volatiles, leaving a solid carbon block. The emissions from the paste mixing and anode forming units are vented to a common control device, a Procedair dry coke scrubber. The emissions from the anode bake furnace are sent to an Alcoa A-446 alumina fluidized bed scrubber.

The molten aluminum produced by the reduction cells from all three potlines is sent to the casthouse to be formed into billets and T-bars, along with other products. The casthouse utilizes natural gas-fired holding furnaces to condition molten aluminum and homogenizing furnaces to condition the aluminum billets.

Most of the major equipment and emission units at the Sebree Plant were constructed in 1972 and operations began in 1973. The original emission units included Potlines 1 and 2, an Anode Bake Furnace and other support operations. Potline 3 and a second Anode Bake Furnace (now out of service) began operation in 1979. In 2010, following the implementation of an amperage increase project, the production capacity of the plant was increased. The plant currently has a permitted capacity of 253,531 tons per year of aluminum from the potlines.

Emissions Profile and Source Classification

The majority of emissions from the Sebree Plant emanate from the A-398 dry scrubber system stacks on each potline, and from the A-446 dry scrubber stacks of the Anode Bake Furnace. There are also multiple baghouses and storage tank vent filter systems at the plant that minimize PM emissions from material handling operations, but emissions from these processes are relatively small in comparison.

Title V Source Classification

The Sebree Plant is a major source under the Title V operating permit program (401 KAR 52:020) since potential emissions of at least one regulated pollutant (e.g., SO_2) exceeds 100 tpy. The plant will remain a Title V major source following this permit action.

HAP Source Classification

The Sebree Plant is a major source of hazardous air pollutants (HAPs) because site-wide potential emissions of at least one individual HAP (e.g., HF) are greater than 10 tpy. The potential emissions of all HAPs combined are also greater than 25 tpy. The plant will remain a major HAP source following this permit action. Thus, this permit action does not trigger any HAP permitting requirements.

NSR Source Classification

The Sebree Plant is located in Henderson County, Kentucky, which has been designated by U.S. EPA as unclassified/attainment for all criteria pollutants except SO_2.[4] Therefore, with respect to the federal New Source Review (NSR) permitting program, the nonattainment SIP permitting program requirements are potentially relevant for projects involving increases in SO_2 emissions, and the Prevention of Significant Deterioration (PSD) program requirements are relevant for all other regulated NSR pollutants.

Kentucky has incorporated the requirements of the PSD permitting program into its SIP at 401 KAR 51:017.[5] These PSD regulations specifically define 28 industrial source categories for which the major source threshold is 100 tpy of any regulated pollutant.[6] The major source threshold for facilities not on this "List of 28" is 250 tpy. Since the facility industrial classification (production of primary aluminum) is included on the "List of 28" source categories, the major source threshold under the PSD program for the facility is 100 tpy of a regulated NSR pollutant.

Since the potential emissions of at least one regulated NSR pollutant currently exceeds 100 tpy, the Sebree Plant is classified as an existing major stationary source under the PSD program. It is also a major source under the nonattainment NSR program for SO_2 since potential emissions of SO_2 exceed 100 tpy. The plant has undergone three PSD permit actions in its lifespan, including the installation of Potline 3 in 1979, the refurbishment of the Anode Bake Furnace in 2008 (V-05-088 R1) and the amperage increase project in 2010 that raised the production capacity of Potlines 1-3 (V-05-088 R2).

This permit action does not involve physical or operational changes that will result in any emission increases. In contrast, the main objective is the establishment of new lower allowable SO_2 emission limits. Thus, this permit action does not trigger any NSR permitting requirements.

3. Planned Installation of New Anode Bake Furnace (ABF) Stack

The emissions from the Anode Bake Furnace (Emission Unit N2) at the Sebree Plant are pulled to an Alcoa A-446 alumina fluidized bed scrubber via induced draft fans. The A-446 consists of three alumina scrubber and baghouse modules operating in parallel that provide control for fluorides, particulate matter, and polycyclic organic matter (POM). The A-446 scrubber system is not designed to provide control for SO_2. As shown in Figure 1, each of the three scrubber modules exhausts out a dedicated stack situated on top of the adjacent scrubber modules. Each of the three adjacent existing stacks has a 70-ft release height and 4.2-ft exit diameters.

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[4] 401 KAR 51:010, Section 2.

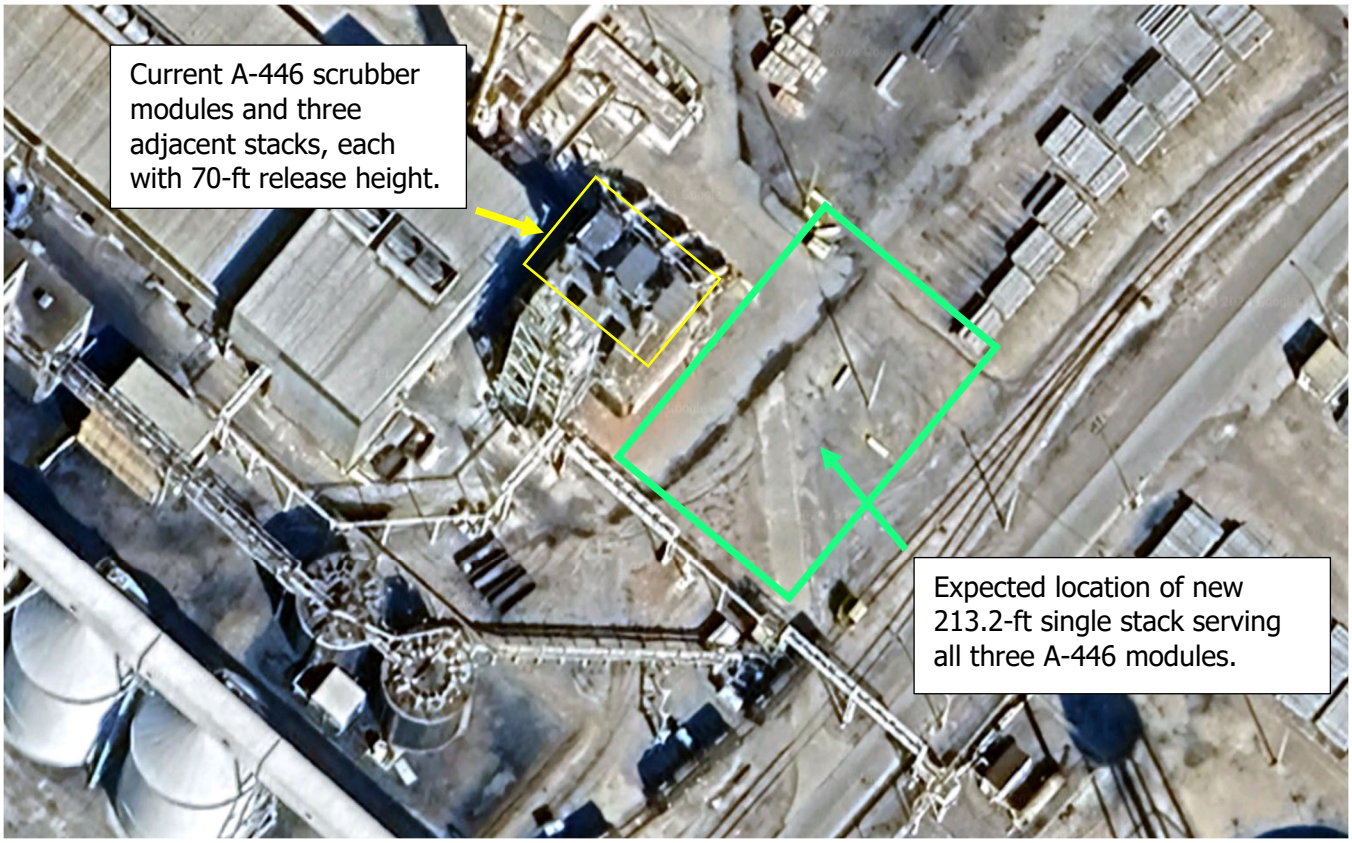
[5] 40 CFR 51.166(a)(1)

[6] 401 KAR 51:001, Section 1 (118)(a)(2)(a)

The air dispersion modeling analysis conducted for the SIP modeling demonstration reflects the planned installation of a new 213.2-ft tall stack for the Anode Bake Furnace.[7] The new stack is expected to have an exit diameter of approximately 8.5-ft. As shown in Figure 1, Century currently plans to locate the new stack approximately 20-30 meters southeast of the existing A-446 scrubber. The new stack will be constructed while the Anode Bake Furnace and A-446 alumina scrubber system remain in operation. Once the new stack is constructed, the tie-in duct work will be installed during an outage to re-route the exhausts from the three A-446 scrubber modules to the new stack.

Century has obtained a preliminary bid from a prospective stack vendor; however, the final engineering work for the new stack has not yet been completed. Based on information provided by the vendor, Century currently expects that it will take up to 12 months to finalize engineering, construct the stack, and complete the tie-in with the existing A-446 scrubber system. A draft suggested set of conditions governing the planned installation of the new stack is included in Section I of the Title V permit as shown in the markup document provided in Attachment 4 of this application for consideration by the Division.

Figure 1. Current and Planned Stacks for Anode Bake Furnace



[7] The new stack will conform to good engineering practice (GEP) stack height requirements. Additionally, as noted in Section 6.4 of EPA's Guidance for 1-Hour SO_2 Nonattainment SIP Submissions, April 23, 2014, installation of a new stack within GEP is not a prohibited dispersion technique so long as facility-wide allowable SO_2 emissions are less than 5,000 tpy. With the establishment of new proposed SO_2 emission limits via this permit action, the facility-wide potential SO_2 emissions for the Sebree Plant are 4,947 tpy (4,946 from the ABF and potlines and less than 1 tpy from all other emission units).

4. Planned Installation of New Fencing

As documented in the SO_2 Nonattainment SIP Modeling Report submitted to the Division on August 7, 2024, a permanent fence is currently in place on the western property boundary from Moss and Moss Road (an east-west road traversing the property) down to the main plant entrance. Century is planning to extend the permanent fence down along the remaining western property boundary and then east over to the Green River. This new fencing is being planned to more clearly establish the existing ambient air boundary for the facility. Century has obtained a bid for the new fencing from a prospective vendor and is working on scheduling the erection. The new extended fence sections are anticipated to be in place within the next 3 months.

A draft suggested set of conditions covering the planned installation of the new fence sections is included the Section I of the Title V permit as shown in the markup document provided in Attachment 4 of this application for consideration by the Division.

5. Proposed New SO_2 Emission Limits

Emission rates representative of future allowable SO_2 emission rates were used for all Century Sebree emission sources in the SO_2 Nonattainment SIP Modeling Report consistent with requirements specified in Section 6.1 of Appendix A to EPA's Nonattainment SIP Guidance.[8] As noted, the primary objective of this permit application is to establish the federally enforceable conditions in an amended Title V permit covering the newly proposed (and lower) SO_2 emission limits for the Anode Bake Furnace and Potlines.[9] This section of the application lays out the proposed values and form of the new SO_2 emission limits, consistent with what was represented in the SIP modeling analysis.

Existing Annual SO_2 Emission Limit

The existing Title V permit already includes a condition limiting the allowable SO_2 emissions from the Anode Bake Furnace and Potlines combined to 5,853 tpy on a 12-month rolling total basis. This limit was established as part of a PSD permit action completed on October 4, 2010 (V-05-088 R2), which covered the potline production capacity increase accomplished through the implementation of new higher amperage technology. The V-05-088 permit and all subsequent Title V permits since have mandated that Century utilize a sulfur mass balance calculation approach to quantify monthly SO_2 emissions from the ABF and potlines, and then to use these monthly values to quantify the 12-month rolling total SO_2 emissions for comparison against the limit. This approach yields accurate estimates of monthly emissions based on the known quantities of sulfur entering the process through the raw material streams.

Averaging Period for SO_2 Emission Limits

Century is proposing that the form of the new SO_2 emission limits needed to cap SO_2 emissions at levels represented in the SIP modeling analysis be established as monthly average hourly emission rates (lb/hr). Although the SO_2 NAAQS has a 1-hour averaging time, as noted in Section V.D.2 of the SO_2 Nonattainment SIP Guidance memorandum from EPA, use of emission limits with averaging times as long as 30 days is appropriate and would still be protective of the NAAQS under certain conditions. A consideration for the use of 30-day average limits is the normal variability of SO_2 emissions.

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[8] Guidance for 1-Hour SO_2 Nonattainment SIP Submissions, Memorandum from Stephen D. Page, Director, to Regional Air Division Directors, Regions 1-10, dated April 23, 2014.

[9] New SO_2 emission limits are not needed for other SO_2 emission sources at the plant (which make up less than 0.1% of total SO_2 emissions) because they each were modeled at their maximum unconstrained potential-to-emit values.

Because each Potline at the Sebree Plant has numerous pots (128 per potline) in continuous operation, even while each pot individually operates on a batch cycle, it is reasonable to treat each potline as a whole as operating in a continuous, steady-state manner. It is further reasonable to expect that the SO_2 emission rate from the potlines is relatively stable and that short-term variability in SO_2 emissions from the potlines is relatively low. In a similar vein, although the anodes within a given pit in the ABF are processed on a batch cycle, because there are multiple firing trains in operation continuously and so many pits moving stepwise through their respective baking cycle, this operating characteristic will dampen large swings in total SO_2 emission rates from the ABF. Also, it is statistically improbable that a peak 1-hour emission rate occurring from one of the dry alumina scrubber systems (i.e., two separate systems for each potline and one for the ABF) would coincide with a peak occurring in the same hour at another scrubber system at the plant. For all these reasons, regulating allowable SO_2 emission rates for the ABF and potlines via monthly average emission limits is appropriate.

As noted in EPA's SO_2 Nonattainment SIP Guidance, the agency normally expects that any SO_2 emission limit with an averaging time longer than 1 hour would need to reflect a downward adjustment to compensate for the loss of stringency inherent in applying a longer-term average limit. To assist with the application of the recommended adjustment approach, EPA provides example calculations to determine a suitable 30-day average limit in Appendix C of the Guidance. Consistent with this approach, in spite of the expected relatively steady-state nature of SO_2 emissions from the potlines and Anode Bake Furnace, the proposed monthly average SO_2 emission limits were adjusted upwards to yield higher 1-hour emission rates that were used in the SIP modeling analysis. Specifically, Century used the 30-day to 1-hour ratio of 0.79 specified for uncontrolled SO_2 sources in Appendix D of the SO_2 Nonattainment SIP Guidance to define the 1-hour emission rates that were modeled (i.e., emission rates used in the modeling analysis were 1.266 times the monthly average emission limit values proposed in this application).

Magnitude and Form of SO_2 Emission Limits

The existing Title V permit already has operating limits that cap the maximum sulfur content of the petroleum coke and pitch used in the making of anodes at 3% and 0.8%, respectively. The permit also sets the maximum production rate for the potlines at 253,531 tons per year and lists the current capacity of the Anode Bake Furnace at 155,402 tons per year of green anodes.[10] Given these production capacities and sulfur content limits, and taking into account average historical values for other key process variables such as the recipe for green anodes (coke, pitch, and recycled anode butts material), the packing coke make-up rate, the average baked anode:green anode weight ratio, and the potline anode consumption rate, a maximum expected SO_2 emission rate can be derived via a mass balance. This is the same mass balance calculation methodology (documented further below) being proposed as the compliance demonstration method. As documented in the sample derivation calculations provided in Attachment 2, the proposed new allowable SO_2 emission rate for the Anode Bake Furnace and Potlines combined is **1,129 lb/hr** (monthly average). This is based on an expected normal distribution of SO_2 emissions between the Anode Bake Furnace (158 lb/hr) and Potlines (971 lb/hr), as shown in Table 1. If this monthly average hourly emissions rate is extrapolated out for 8,760 hours per year, the proposed limit equates to a new limit on annual SO_2 emissions of 4,946 tpy. This is almost a 1,000 tpy reduction from the current SO_2 annual limit of 5,853 tpy.

Century acknowledges that the Division may prefer to also establish separate individual SO_2 emission limits on the Anode Bake Furnace and Potlines to account for the distribution of SO_2 emissions from these two sources used in the SIP modeling analysis. However, if this is done, it would be necessary to account for

[10] The green anode process capacity is expressed in the permit as 17.74 ton/hr (annual average). This is derived from the capacity of the refurbished Anode Bake Furnace set in the V-05-088 R1 permit action, 145,730 tons of baked anodes per year (or 16.64 ton/hr on an hourly average basis). At the time of that permit action, the average baked anode:green anode weight ratio was 93.786%; thus, the equivalent green anode maximum processing rate was set to 17.74 ton/hr (16.64 / 0.93786).

month-to-month variability in the distribution between the Anode Bake Furnace and Potlines. This monthly distribution variability can be caused by numerous process factors such as changes in green anode sulfur content, anode bake furnace performance, and potline anode consumption rates. Therefore, in addition to the proposed monthly average SO_2 emission limit on the Anode Bake Furnace and Potlines combined, which is based on a normal expected distribution of emissions between the two sources, in anticipation that the Division will choose to establish separate SO_2 emission limits on the Anode Bake Furnace and Potlines, Century is also proactively proposing separate individual emission limits at the expected source-specific maximums. Because of the mass balance governing SO_2 emissions, in months when the SO_2 emissions from the Anode Bake Furnace are higher, the SO_2 from the Potlines will necessarily be lower, and in months when the SO_2 emissions from the Potlines are higher, the SO_2 from the Anode Bake Furnace will necessarily be lower. This will also be enforced via the single combined monthly average emission limit set for the Anode Bake Furnace and Potlines combined.

The separate "Highest ABF" and "Highest Potline" source specific emission limits being proposed are listed in Table 1 along with the base normal combined emission limit. The emission rates for the Highest ABF and Highest Potline scenarios consider the changes in monthly distribution of SO_2 emissions measured via the mass balance during the past three years. In the SIP modeling analysis conducted, all three of the emission scenarios listed in Table 1 were separately modeled to show that attainment can be achieved under both the normal expected distribution profile and either extreme. Therefore, it is appropriate to establish the source-specific emission limits (if that approach is pursued by the Division) at the source-specific high values highlighted in green in Table 1.

Table 1. Proposed New Monthly Average SO_2 Emission Limits for Anode Bake Furnace and Potlines

Emissions Scenario[a]	ABF[b] (lb/hr)	Potlines[b] (lb/hr)	ABF + Potlines Combined[b] (lb/hr)	ABF + Potlines Combined[c] (tpy)
Base Expected Emissions	158	971	**1,129**	4,946
Highest ABF Scenario	**237**	892	1,129	4,946
Highest Potlines Scenario	111	**1,018**	1,129	4,946

a. All three emission scenarios were modeled in the SO_2 Nonattainment SIP Modeling Demonstration analysis. As documented in the report for that anaysis, the emission rates modeled were inflated above the monthly average values listed by a factor of 1.266 to account for the 1-hour form of the SO_2 NAAQS
b. All lb/hr emission rates listed are monthly average values. Proposed emission limits are highlighted in green.
c. The annual emission values are shown for reference only. These values are the equivalent annual emission rates if monthly average hourly emissions occur all 8,760 hours in a year.

A draft suggested set of new emission limit conditions encompassing the emission limits highlighted in Table 1 is included the Section D, Condition 3 of the Title V permit as shown in the markup document provided in Attachment 4 of this application for consideration by the Division.

Proposed Compliance Demonstration Method

Century understands that an appropriate suite of testing, monitoring, and recordkeeping provisions will need to be in place in the Title V permit to make the new SO_2 emission limits federally enforceable. Use of continuous emission monitoring systems (CEMS) is one method that can be appropriate in certain contexts considering the short-term form of the SO_2 NAAQS. However, Century asserts that a mass balance approach combined with periodic validation stack testing continues to be the most accurate, suitable, and practically feasible methodology for demonstrating compliance with the new proposed SO_2 emission limits. Due to the multi-stack configuration of the potline A-398s and the long roof vents on each potroom building,

there is no practical or economically feasible way to deploy CEMS as the compliance method. Additionally, even if not for the numerous stacks involved, the severe operating environment in the potlines could potentially lead to ongoing performance and maintenance challenges that would make it difficult for CEMS to reliably provide accurate SO_2 data. In contrast, the mass balance provides an accurate basis for defining emissions since there are few inputs and these inputs are well characterized. Essentially all the sulfur coming into the plant through the raw materials is assumed to be emitted, and those inputs to the plant can be accurately quantified. The primary inputs consist of process rates and sulfur content data.[11] In its SO_2 Nonattainment SIP Guidance document, EPA acknowledges that some types of sources with longer-term emission limits (e.g., monthly averages) may be suitably regulated without the use of CEMS when SO_2 emissions are a direct function of process rates and sulfur content data and those sulfur content measurements are of a sufficient frequency and accuracy to effectively characterize SO_2 emissions. This is precisely the situation for the Sebree Plant SO_2 emission sources.

The compliance demonstration method language for the existing annual SO_2 emission limit in the Title V permit states that compliance shall be determined using the "Alcan SO_2 Calculation Engine". This was the terminology originally used for the mass balance methodology employed by the Sebree Plant to calculate SO_2 emissions for emission inventory and compliance purposes. However, the permit does not specify the details on how the calculation should be performed. With the establishment of new lower limits driven by the SIP attainment plan, and given that the new limits will now be set on a monthly average rather than an annual basis, with likely source-specific emission limits in addition to the combined limit, Century anticipates that the Division will be looking to better define the specifics of the mass balance calculations. In that context, to enhance the enforceability of the mass balance approach, Century is proactively proposing that a new Appendix B be added to the Title V permit that clearly delineates the inputs and mass balance calculations that will be conducted monthly moving forward to demonstrate compliance with the emission limits. A draft of the proposed new Appendix B is included in Attachment 3 of this application for consideration and review by the Division, should the agency desire to add more specificity to the permit. In conjunction with the inclusion of this new Appendix B, Century is also proposing to enhance the existing sulfur content sampling, monitoring, and recordkeeping requirements in the Title V permit as the sulfur content data is a primary input to the mass balance calculations. The reworded and enhanced sampling conditions are included Section B, Condition 3i and 5g of the Title V permit as shown in the markup document provided in Attachment 4 of this application.

To support and validate the ongoing SO_2 emission calculations that will be performed using the mass balance approach described, Century anticipates that the Division will also want to set up some degree of and frequency of emissions testing for SO_2 to periodically validate the emissions data from the mass balance. The existing Title V permit already includes provisions that require once-per-term testing of a representative potline A-398 scrubber system and a separate annual test of a representative potline roof monitor. Consistent with the representations made in the Title V Permit renewal application submitted on May 10, 2024, Century is requesting a revision to the permit language governing this testing in Conditions 3.r.i and 3.r.ii in Section B (Subject Item 4 Requirements: Existing Potlines) to better clarify the SO_2 testing requirements of the potline primary and secondary emissions.[12] The suggested edits for the SO_2 testing are to extend the once-per-permit-term requirement currently in place for the potline A-398 scrubber system

[11] The sulfur content in samples of petroleum coke and anode material are measured daily by trained and qualified personnel in an on-site laboratory that operates under an ISO 9001:2015 certified quality management system. The current sampling method used is ASTM Method D6376.

[12] Although not specifically relevant to the current permit action, to remain consistent with changes represented in the renewal application, the permit markup also shows suggested edits for CO testing to clarify that once per permit term testing is only required of a representative potline stack and roof monitor. This is how the permit condition has historically been interpreted and applied and the edits to the permit language are only intended to make this clearer.

stacks to the roof vents as well. The potline roof vents contribute only a tiny fraction to total plant SO_2 emissions. Century already invests significant resources to sample sulfur content of the raw materials needed to quantify total SO_2 emissions from the facility accurately on a mass balance basis. Therefore, Century contends that a once per permit term test for the roof vents (along with the A-398 scrubbers) is sufficient for validating the SO_2 emissions data available from the mass balance.

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This application report and included attachments constitute a complete Title V significant revision application for the Sebree Plant with items required under 401 KAR 52:020, Section 16(2). In addition to this application letter, a DEP7007AI Administrative Information form is provided in Attachment 1 to facilitate the Division's processing of the application. Other DEP7007 series forms that would normally be required for applications involving physical or operational changes are not relevant to the purpose of this application.

A markup of relevant sections of the current Title V permit with permit condition changes Century believes are appropriate to the objectives of this permit action is provided in Attachment 4. These new and revised permit conditions are provided only as suggestions to help facilitate processing and review of the application and Century acknowledges the Division's responsibility and authority to draft the amended permit.

If Division staff have any immediate questions or need information as part of the agency's review and processing of this application, they can contact our consultant, Mr. Paul J. Smith, P.E., of Trinity Consultants at (859) 341-8100 x1802, psmith@trinityconsultants.com, or me at 270-521-6215, christopher.goddard@centuryaluminum.com. Given the need to coordinate the activities of this permit action with the Division's SO_2 Nonattainment SIP efforts, Century is suggesting that a meeting be arranged immediately following this submittal to facilitate discussions and decisions on the key matters to be addressed through the permit revision. We will follow up with Permit Review Branch staff in this regard.

Sincerely,

Chris Goddard

Chris Goddard
Environmental Manager

Attachments

cc: Mr. Michael Kennedy, P.E., KDAQ
Ms. Amy Tempus-Doom, P.E., KDAQ
Mr. Paul J. Smith, P.E., Trinity Consultants

ATTACHMENT 1

DEP7007 Application Forms

Division for Air Quality

300 Sower Boulevard

Frankfort, KY 40601

(502) 564-3999

DEP7007AI

Administrative Information

___ Section AI.1: Source Information

___ Section AI.2: Applicant Information

___ Section AI.3: Owner Information

___ Section AI.4: Type of Application

___ Section AI.5: Other Required Information

___ Section AI.6: Signature Block

___ Section AI.7: Notes, Comments, and Explanations

Additional Documentation

___ Additional Documentation attached

Source Name: Century Aluminum Sebree, LLC

KY EIS (AFS) #: 21- 101-00029

Permit #: V-19-010 R2

Agency Interest (AI) ID: 1788

Date: 8/12/2024

Section AI.1: Source Information

Physical Location Address:	**Street:**	9404 State Route 2096				
	City:	Robards	**County:**	Henderson	**Zip Code:**	42452
Mailing Address:	**Street or P.O. Box:**	9404 State Route 2096				
	City:	Robards	**State:**	KY	**Zip Code:**	42452

Standard Coordinates for Source Physical Location

Longitude: -87.501351 (decimal degrees) **Latitude:** 37.65378 (decimal degrees)

Primary (NAICS) Category: Alumina Refining and Primary Aluminum Production **Primary NAICS #:** 331313

Classification (SIC) Category: Primary Production of Aluminum **Primary SIC #:** 3334

Briefly discuss the type of business conducted at this site: At the Sebree Plant, Century produces primary aluminum through the electrolytic reduction of raw alumina (Al2O3) in vessels termed reduction cells or "pots". Century operates three nearly identical potlines at the Sebree Plant. Raw material inputs to the pots include alumina, bath, carbon anodes, and various other additives to the aluminum production process such as aluminum fluoride. The molten aluminum produced by the reduction cells from all three potlines is sent to the casthouse to be formed into billets and T-bars, along with other products. The casthouse utilizes natural gas-fired holding furnaces to condition molten aluminum and homogenizing furnaces to condition the aluminum billets.

Description of Area Surrounding Source: ☑ Rural Area ☐ Industrial Park ☐ Residential Area ☐ Urban Area ☐ Industrial Area ☐ Commercial Area

Is any part of the source located on federal land? ☐ Yes ☑ No

Number of Employees: ~500

Approximate distance to nearest residence or commercial property: *Approximately 2,500 ft*

Property Area: *Approximately 2,600 acres*

Is this source portable? ☐ Yes ☑ No

What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky?

NPDES/KPDES:	☑ Currently Hold	☐ Need	☐ N/A
Solid Waste:	☑ Currently Hold	☐ Need	☐ N/A
RCRA:	☐ Currently Hold	☐ Need	☑ N/A
UST:	☐ Currently Hold	☐ Need	☑ N/A

Type of Regulated Waste Activity:

☐ Mixed Waste Generator ☑ Generator ☐ Recycler ☐ Other: _____

☐ U.S. Importer of Hazardous Waste ☐ Transporter ☐ Treatment/Storage/Disposal Facility ☐ N/A

Section AI.2: Applicant Information

Applicant Name: Chris Goddard

Title: (if individual) Environmental Manager

Mailing Address:
Street or P.O. Box: 9404 State Route 2096
City: Robards **State:** KY **Zip Code:** 42452

Email: (if individual) christopher.goddard@centuryaluminum.com

Phone: 270-521-6215

Technical Contact

Name: Same as Applicant

Title:

Mailing Address:
Street or P.O. Box:
City: **State:** **Zip Code:**

Email:

Phone:

Air Permit Contact for Source

Name: Same as Applicant

Title:

Mailing Address:
Street or P.O. Box:
City: **State:** **Zip Code:**

Email:

Phone:

Section AI.3: Owner Information

☑ **Owner same as applicant**

Name:

Title:

Mailing Address: **Street or P.O. Box:**

City: **State:** **Zip Code:**

Email:

Phone:

List names of owners and officers of the company who have an interest in the company of 5% or more.

Name	Position

Section AI.4: Type of Application

Current Status: ☑ Title V ☐ Conditional Major ☐ State-Origin ☐ General Permit ☐ Registration ☐ None

Requested Action: *(check all that apply)*

☐ Name Change	☐ Initial Registration	☑ Significant Revision	☐ Administrative Permit Amendment
☐ Renewal Permit	☐ Revised Registration	☐ Minor Revision	☐ Initial Source-wide OperatingPermit
☐ 502(b)(10)Change	☐ Extension Request	☐ Addition of New Facility	☐ Portable Plant Relocation Notice
☐ Revision	☐ Off Permit Change	☐ Landfill Alternate Compliance Submittal	☐ Modification of Existing Facilities
☐ Ownership Change	☐ Closure		

Requested Status: ☑ Title V ☐ Conditional Major ☐ State-Origin ☐ PSD ☐ NSR ☐ Other:

Is the source requesting a limitation of potential emissions? ☑ Yes ☐ No

Pollutant:	Requested Limit:	Pollutant:	Requested Limit:
☐ Particulate Matter		☐ Single HAP	
☐ Volatile Organic Compounds (VOC)		☐ Combined HAPs	
☐ Carbon Monoxide		☐ Air Toxics (40 CFR 68, Subpart F)	
☐ Nitrogen Oxides		☐ Carbon Dioxide	
☑ Sulfur Dioxide	Refer to application letter.	☐ Greenhouse Gases (GHG)	
☐ Lead		☐ Other	

For New Construction:

Proposed Start Date of Construction: *(MM/YYYY)* NA

Proposed Operation Start-Up Date: *(MM/YYYY)* NA

For Modifications:

Proposed Start Date of Modification: *(MM/YYYY)* NA

Proposed Operation Start-Up Date: *(MM/YYYY)* NA

Applicant is seeking coverage under a permit shield. ☐ Yes ☑ No

Identify any non-applicable requirements for which permit shield is sought on a separate attachment to the application.

Section AI.5 Other Required Information

Indicate the documents attached as part of this application:

- ☐ DEP7007A Indirect Heat Exchangers and Turbines
- ☐ DEP7007B Manufacturing or Processing Operations
- ☐ DEP7007C Incinerators and Waste Burners
- ☐ DEP7007F Episode Standby Plan
- ☐ DEP7007J Volatile Liquid Storage
- ☐ DEP7007K Surface Coating or Printing Operations
- ☐ DEP7007L Mineral Processes
- ☐ DEP7007M Metal Cleaning Degreasers
- ☐ DEP7007N Source Emissions Profile
- ☐ DEP7007P Perchloroethylene Dry Cleaning Systems
- ☐ DEP7007R Emission Offset Credit
- ☐ DEP7007S Service Stations
- ☐ DEP7007T Metal Plating and Surface Treatment Operations
- ☐ DEP7007V Applicable Requirements and Compliance Activities
- ☐ DEP7007Y Good Engineering Practice and Stack Height Determination
- ☐ DEP7007AA Compliance Schedule for Non-complying Emission Units
- ☐ DEP7007BB Certified Progress Report
- ☐ DEP7007CC Compliance Certification
- ☐ DEP7007DD Insignificant Activities
- ☐ DEP7007EE Internal Combustion Engines
- ☐ DEP7007FF Secondary Aluminum Processing
- ☐ DEP7007GG Control Equipment
- ☐ DEP7007HH Haul Roads
- ☐ Confidentiality Claim
- ☐ Ownership Change Form
- ☐ Secretary of State Certificate
- ☐ Flowcharts or diagrams depicting process
- ☐ Digital Line Graphs (DLG) files of buldings, roads, etc.
- ☐ Site Map
- ☐ Map or drawing depicting location of facility
- ☐ Safety Data Sheet (SDS)
- ☐ Emergency Response Plan
- ☑ Other: ___ Refer to application letter and attachments.

Section AI.6: Signature Block

I, the undersigned, hereby certify under penalty of law, that I am a responsible official*, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.

Levi Chaffin	8/14/2024
Authorized Signature	**Date**
Levi Chaffin	**Sebree Plant Manager**
Type or Printed Name of Signatory	**Title of Signatory**

*Responsible official as defined by 401 KAR 52:001.

Section AI.7: Notes, Comments, and Explanations

ATTACHMENT 2

Derivation of Proposed Allowable SO_2 Emission Rates

1. Derivation of SO2 Emission Limits for ABF and Potlines Using Mass Balance Methodology

> The proposed SO2 emission limits are derived as documented below based on the same mass balance methodology used for calculating actual SO2 emissions on a monthly basis. Instead of using actual process rates and sulfur content data, the process capacity limits and maximum sulfur content specifications are used. Other process input variables are based on historical averages.

1.1 Anode Production Rates and Packing Coke Usage Rate

Baked anode (BA) production:	145,730	tpy	Represented capacity in V-05-088 R1 permit action.
Ratio of baked anode to green anode weight:	95.440	%	2021-2023 average
Green anode (GA) process rate:	152,693	tpy	= 145,730 tpy / 0.9544
Packing coke usage rate:	5.5	kg/mt BA	Updated make-up rate beginning in 2022
Packing coke usage (%):	0.55%		= 5.5 kg/mt / 1000 kg/mt
Packing coke process rate:	801.5	tpy	= 145,730 tpy x 0.0055

1.2 Anode Sulfur Contents

1.2.1 Raw Material Sulfur Contents

Pitch:	0.8%	sulfur	Pitch sulfur content limit from V-05-088 R2
Petroleum Coke:	3.0%	sulfur	Pet coke sulfur content limit from V-05-088 R2
Packing Coke:	3.0%	sulfur	Monthly average packing coke sulfur content
Green Anode to Pet Coke Sulfur Ratio:	73.11%		2021-2023 average; Takes into account % of recycled butts, pet coke, and pitch in anode recipe

1.2.2 Anode Sulfur Contents

Green anode sulfur content:	2.1933%	sulfur	= 3.0% x 73.11%
Ratio of BA sulfur content to GA sulfur content:	94.72%		2021-2023 average
Baked anode sulfur content:	2.0775%	sulfur	

1.3 ABF SO2 Emissions

1.3.1 ABF SO2 Emissions (Based on ABF Capacity)

> The sulfur input to the ABF is the sulfur in the green anodes plus the sulfur in the added packing coke.

Sulfur input rate to ABF:	3,373	tpy	= (152,693 tpy x 2.1933%) + (801.5 tpy x 3.0%)

> The sulfur leaving the ABF is the sulfur in the baked anodes that are then sent to the potlines.

Sulfur output rate from ABF:	3,028	tpy	= 145,730 tpy x 2.0775%

> Based on a mass balance, the sulfur released at the ABF is the sulfur input minus the sulfur output.

Sulfur released from anodes and sent to A-446:	345.5	tpy	= 3,373 tpy - 3,028 tpy

> 100% of the sulfur released from the ABF is conservatively assumed to be emitted as SO2. The SO2 emissions are thus directly calculated from the sulfur release based on the molecular weight ratio between SO2 and S.

SO2 emissions from A-446 scrubber (annual total):

345.5 tpy of sulfur / 32 lb S/lbmole S x 1 lbmole SO2/lbmole S x 64 lb SO2/lbmole SO2 = 691.0 tpy

SO2 emissions from A-446 scrubber (hourly average): 691.0 tpy x 2000 lb/ton / 8760 hr/yr = **157.8 lb/hr**

1.4 Potline SO2 Emissions

1.4.1 Potline Sulfur Released (Based on Anodes Consumed)

Potlines production capacity (plantwide):	253,531 ton Al/yr	Operating limit established in V-05-088 R2
Anode consumption rate:	0.4308 t/t Al	2021-2023 average
Baked anode sulfur content:	2.0775% sulfur	See Section 1.2.2

> The sulfur released from the potlines is directly calculated based on the sulfur content in the placed anodes and the anode consumption rate.

Total sulfur released from potlines:	2,269 tpy	= 253,531 ton Al/yr x 0.4308 t/t Al x 2.0775% S

1.4.2 Potline SO2 Emissions

> A portion of the sulfur is emitted as COS. For purposes of these mass balance calculations, Century also conservatively assumes that none of the sulfur is released as condensable particulate even though it is expected that up to 2% can be emitted in this form. Thus, the amount not emitted as COS, is assumed to be emitted as SO2.

% of anode sulfur emitted as COS:	6.25%	Assumption embedded within PMACT COS limit
% of anode sulfur emitted as CPM:	0%	Conservatively set to 0 for mass balance purposes
% of anode sulfur emitted as SO2:	93.75%	= (1- 6.25% - 0%)
SO2 emissions from potlines (annual total):	4,254 tpy	= 2,269 tpy x 93.75% x 64 lb SO2/32 lb S
SO2 emissions from potlines (hourly average):	**971 lb/hr**	= 4,254 tpy x 2000 lb/ton / 8760 hr/yr

1.4.3 Combined Potline and ABF SO2 Potential Emissions

Combined potlines and ABF SO2 emission rate:	4,946 tpy	= 691.0 tpy + 4,254.5 tpy (rounded to nearest ton)
Combined SO2 emission rate (hourly average):	**1,129 lb/hr**	= 4,946 tpy x 2000 lb/yr / 8760 hr/yr

ATTACHMENT 3

Proposed New Appendix B for Title V Permit

SO_2 Mass Balance Emissions Calculation Methodology To Be Used for Demonstrating Compliance with SO_2 Emission Limits

SULFUR MASS BALANCE EMISSION CALCULATION METHODOLOGY

This appendix documents the sulfur mass balance methodology that Century Aluminum shall use in calculating the monthly average SO_2 emission rates (lb/hr) from the Anode Bake Furnace (Emission Unit N2) and Potline Operations (Emission Units E1, E3, and E5) to demonstrate compliance with the SO_2 emission limits in Section D of the permit.

Anode Bake Furnace SO_2 Emissions

The coal tar pitch, petroleum coke, and the recycled anode butts material mixed into the green anode paste that is pressed into green anode blocks, as well as the packing coke used to cover the anodes during the baking process, all contain sulfur. As the anodes and packing coke are heated in the Anode Bake Furnace, the sulfur they contain can be volatilized and oxidized to form SO_2.[1]

Given these operating characteristics, the monthly average SO_2 emissions from the Anode Bake Furnace can be accurately quantified using a mass balance approach. In this mass balance, the sulfur input to the Furnace is calculated based on (1) the sulfur content and process rate of green anodes and (2) the sulfur content and usage rate of packing coke. The sulfur output from the Furnace is based on the sulfur content and process rate of baked anodes removed from the Furnace. The difference between the sulfur input to the Furnace and sulfur leaving the Furnace represents the net sulfur released to the A-446 dry alumina scrubber system. The SO_2 emission rate is then calculated by conservatively assuming that all sulfur released from the Furnace is emitted as SO_2 (i.e., not accounting for any portion that may be released as particulate sulfate or other sulfur compounds). The sulfur that is retained in the baked anodes is transferred to and emitted at the potlines. Thus, for the Anode Bake Furnace, the calculation of SO_2 emissions requires data on (1) the process rates of green anodes, baked anodes, and packing coke, and (2) their respective sulfur contents.

Process Rates for Green Anodes, Baked Anodes, and Packing Coke

Condition 5.g in Section B (Subject Item 6 – Anode Bake Furnace) of the Title V permit requires Century to track and record the monthly process rate (tons/month) of green anodes placed in and baked anodes removed from the Anode Bake Furnace. The process weights are determined by weighing each anode loaded and unloaded in the pits during a given month. In the baking process, volatiles in the anodes are released and thus the weight of a given anode after it is baked is less than its weight starting out as a green anode. This ratio of the total weight of baked anodes to green anodes is relatively consistent and is thus used in the mass balance to define the monthly green anode process rate based on the measured mass of baked anodes removed from the furnace.[2] Specifically, in a given calendar year, Century shall use the

[1] SO_2 is also generated as a by-product of natural gas combustion in the Anode Bake Furnace although in negligible quantities compared to the SO_2 generated from the liberation of sulfur from the anodes.

[2] Historically, Century used independently measured weights of green anodes placed in and baked anodes removed from the Anode Bake Furnace each month in the mass balance calculations. However, because of the long baking cycles and capacity of the Furnace, there could be situations, for example, where more baked anodes are removed in a calendar month than were placed. So that green anode and baked anode weights used in the mass balance for a given calendar month have the same count basis, Century now uses a calculated green anode process rate based on the baked anode process rate for a given month.

three-year average baked anode:green anode weight ratio to define the green anode process rate used in the mass balance calculation for a given month based on the measured amount of baked anodes removed from the furnace that month.[3]

Condition 5.g in Section B of the Title V permit also requires Century to track and record the monthly packing coke usage. This is determined based on the make-up supply of packing coke added each month. The weight ratio of packing coke added to baked anodes produced is consistent from month to month. Thus, the amount of packing coke used generally rises and falls with the baked anode production rate from month to month.

Monthly Average Sulfur Content Data

Conditions 3.i.i and 3.i.ii in Section B (Subject Item 6 – Anode Bake Furnace) of the Title V permit requires that Century collect samples of green anode paste (just upstream of the Anode Press) and core samples of baked anodes at least once daily and to measure the sulfur content using ASTM Method D6376 or an approved alternative method. Condition 3.i.iii of the Title V permit also requires that a sample of packing coke be tested at least monthly to measure its sulfur content. The samples within a month are then aggregated to define the monthly average sulfur contents for each of the three materials (green anodes, baked anodes, and packing coke), which are then input into the SO_2 mass balance calculation.

Monthly Average SO_2 Emissions from Anode Bake Furnace

The monthly average SO_2 emission rate (lb/hr) from the Anode Bake Furnace operations shall be calculated monthly using Equation B-1.

$$\boldsymbol{E_{SO_2-ABF}} = \frac{[(\boldsymbol{P_{GA}})(\%\boldsymbol{S_{GA}}) + (\boldsymbol{P_{PC}})(\%\boldsymbol{S_{PC}}) - (\boldsymbol{P_{BA}})(\%\boldsymbol{S_{BA}})]}{\boldsymbol{H}}\left(\frac{\mathbf{64}}{\mathbf{32}}\right)(\mathbf{2000}) \qquad \textbf{Equation B-1}$$

where:

$E_{SO2\text{-}ABF}$ = Monthly average SO_2 emissions from ABF (lb/hr)

P_{GA} = Mass of green anode blocks baked during month (ton/month), set equal to P_{BA} divided by the current three-year average baked anode:green anode weight ratio

$\%S_{GA}$ = Average green anode paste sulfur content (weight %) for month based on all valid daily samples tested

P_{PC} = Packing coke consumed during month (ton/month), based on make-up rate of packing coke added to system during the month

$\%S_{PC}$ = Average packing coke sulfur content (weight %) for month based on all valid samples collected and tested in the month

[3] For example, during the three-year period of 2021 to 2023, the mass of baked anodes removed the Anode Bake Furnace averaged 95.44% of the mass of green anodes placed in the Furnace during the same period. Thus, for mass balance calculations in 2024, Century defines sulfur inputs from green anodes based on a calculated green anode process rate for the month of 1/0.9544 × the baked anode process rate for the month. For 2025, an updated three- year average baked anode:green anode weight ratio for 2022 to 2024 would be used, and so on.

P_{BA} = Measured mass of baked anode blocks removed from the furnace during month (ton/month)

$\%S_{BA}$ = Average baked anode core samples sulfur content (weight %) for month based on all valid daily samples tested.

H = Operating hours in the month (hr/month)

64/32 = Mass ratio of SO_2 to S (lb/lbmole / lb/lbmole) where 1 lbmole SO_2 = 1 lbmole S

2000 = Conversion of tons to lb (2,000 lb/ton)

The monthly average SO_2 emission rate (lb/hr) determined from Equation B-1 shall be computed to demonstrate compliance with the Anode Bake Furnace SO_2 emission limit in Section D, Condition 3.c.

Potline Operations SO_2 Emissions

The rodded baked anodes used to form one part of the electrolytic cell in the pots of each potline contain sulfur, which can be volatilized and oxidized to form SO_2, carbonyl sulfide (COS), and other trace sulfur compounds as the anodes are consumed in the pots. The sulfur content of the baked anodes processed is known based on daily core samples extracted and tested. The anode consumption rate, a key performance metric of the plant, is also closely measured and tracked, as required by Condition 4.f.iii in Section B (Subject Item 4 – Existing Potlines) of the Title V permit. These two inputs define, on a mass balance basis, the maximum amount of sulfur that is released from the potline operations.

Of the sulfur released from the consumed anodes in the potlines, some percentage will be released as COS and particulate sulfate compounds. Although up to 2% of the sulfur is believed to be emitted as particulate sulfate, for purposes of defining SO_2 emissions from the potline operations via this mass balance methodology, it is conservatively assumed that all the sulfur is emitted as either SO_2 or COS.

The *National Emission Standards for Hazardous Air Pollutants for Primary Aluminum Reduction Plants* (40 CFR 63 Subpart LL, "PMACT") sets an emission limit on COS emissions from potlines at 3.9 lb/ton (40 CFR 63.843(e)). In the PMACT regulation, **40 CFR 63.847(j) stipulates that COS emissions be calculated monthly on a mass balance basis** using Equation 4 of the regulation shown below, which considers the anode consumption rate and sulfur content of the anodes consumed.

$$E_{COS} = [K] \times \left[\frac{Y}{Z}\right] \times [S] \qquad \text{Equation 4 in 40 CFR 63.847(j)}$$

where:

E_{COS} = the emission rate of COS during calendar month, lb/ton of aluminum produced

K = factor accounting for molecular weights and conversion of sulfur to carbonyl sulfide; K = 234

Y = the mass of anode consumed in the potline during the calendar month, tons

Z = the mass of aluminum produced by the potline during the calendar month, tons

S = the weighted average fraction of sulfur in the anode coke consumed in the production of aluminum during the calendar month (e.g., if the weighted average sulfur content of the anode coke consumed during the calendar month was 2.5 percent, then S = 0.025). The

weight of anode coke used during the calendar month of each different concentration of sulfur is used to calculate the overall weighted average fraction of sulfur.

In the K factor of Equation 4, EPA embeds a presumed conversion of sulfur to COS based on industry data available at the time of the last revision of the PMACT in 2015. Considering the average amounts of sulfur in raw petroleum coke converted to COS and typical percentage of anodes comprised of petroleum coke, EPA found that the sulfur to COS conversion rate ranged from 4.5% to 10%. As shown in the calculation below, the embedded COS conversion rate used for the COS emission limit in the PMACT is 6.25%.

$$\text{COS Conversion Rate} = 234 \times \left(\frac{32.065 \ \frac{\text{lb S}}{\text{lbmole S}}}{60.07 \ \frac{\text{lb COS}}{\text{lbmole COS}}}\right)\left(\frac{1 \text{ lbmole S}}{1 \text{ lbmole COS}}\right)\left(\frac{\text{ton}}{2{,}000 \text{ lb}}\right) = 6.25\%$$

To remain consistent with the methodology EPA prescribes in the PMACT for calculating monthly average SO_2 emissions, this same 6.25% sulfur to COS conversion rate is used in the monthly potline mass balance SO_2 emission calculations. Specifically, the monthly average SO_2 emission rate from the Potlines shall be calculated monthly using Equation B-2.

$$\boldsymbol{E_{SO_2-Potlines} = \frac{[(A)(\%S_{BA})]}{H}(93.75\%)\left(\frac{64}{32}\right)(2000)} \qquad \textbf{Equation B-2}$$

where:

$E_{SO2\text{-}Potlines}$ = Monthly average SO_2 emissions from Potlines (lb/hr)
A = Total anode consumption in the potlines during month (ton/month), based on the potline production rate (ton aluminum/month) and the monthly average anode consumption rate (ton anode/ton aluminum).
$\%S_{BA}$ = Average baked anode core samples sulfur content (weight %) for month based on all daily samples tested
H = Operating hours in the month (hr/month)
93.75% = Assumed conversion of sulfur to SO_2 with the balance being COS (6.25%)
64/32 = Ratio of mass of SO_2 to S (lb/lbmole / lb/lbmole) where 1 lbmole SO_2 = 1 lbmole S
2000 = Conversion of tons to lb (2,000 lb/ton)

The monthly average SO_2 emission rate (lb/hr) determined from Equation B-2 shall be computed to demonstrate compliance with the Potlines Operations SO_2 emission limit in Section D, Condition 3.d.

Combined Anode Bake Furnace and Potline Operations SO_2 Emissions

The monthly average combined SO_2 emission rate from the Anode Bake Furnace and Potlines Operations shall be calculated monthly using Equation B-3.

$$E_{SO_2-Combined} = E_{SO_2-ABF} + E_{SO_2-Potlines} \qquad \text{Equation B-3}$$

where:

$E_{SO2\text{-}Combined}$ = Monthly average SO_2 emissions from Andoe Bake Furnace and Potlines Combined (lb/hr)
$E_{SO2\text{-}ABF}$ = Monthly average SO_2 emissions from Anode Bake Furnace (lb/hr)
$E_{SO2\text{-}Potlines}$ = Monthly average SO_2 emissions from Potlines (lb/hr)

The monthly average SO_2 emission rate (lb/hr) determined from Equation B-3 shall be computed to demonstrate compliance with the combined Anode Bake Furnace and Potlines Operations SO_2 emission limit in Section D, Condition 3.b.

ATTACHMENT 4

Proposed Redline/Strikeout Markups to Existing Permit

Only Sections with proposed edits are included

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS

SUBJECT ITEM 4 REQUIREMENTS: Existing Potlines

EU	Equip. Desig.	Cons. Date	Description	Controls	Material	Capacity (tons/hr)
Emission Group VIII: Potlines						
E1	E1-1 (P4, P5)	8/4/1972	Potline 1 Roof Monitors	None – Vents to Atmosphere	Aluminum	9.65*
	E1-2 (P2, P3)		Potline 1	A-398 Dry Alumina Scrubbers: 161S A-398 161N A-398		
E3	E3-1 (P8, P9)	8/4/1972	Potline 2 Roof Monitors	None – Vents to Atmosphere	Aluminum	9.65*
	E3-2 (P6, P7)		Potline 2	A-398 Dry Alumina Scrubbers: 162S A-398 162N A-398		
E5	E5-1 (3P, 4P)	8/1/1979	Potline 3 Roof Monitors	None – Vents to Atmosphere	Aluminum	9.65*
	E5-2 (1P, 2P)		Potline 3	A-398 Dry Alumina Scrubbers: 163S A-398 163N A-398		

*Refer to 1. Operating Limitations (e) – The hourly capacity values listed are based upon an annual average.

APPLICABLE REGULATIONS:
401 KAR 51:017, *Prevention of significant deterioration of air quality*
401 KAR 53:010, *Ambient air quality standards* for HF & TF
401 KAR 61:165, *Existing primary aluminum reduction plants*
401 KAR 63:002, Section 2(4)(bb), 40 C.F.R. 63.840 to 63.855, Tables 1 to 4, and Appendix A (Subpart LL), *National Emission Standards for Hazardous Air Pollutants for Primary Aluminum Reduction Plants,* applicable with respect to each existing CWPB1 potline associated with primary aluminum production and located at a major source as defined in 40 CFR 63.2.
40 CFR 64, *Compliance Assurance Monitoring,* applicable to Potlines #1-3 with respect to $PM_{10}/PM_{2.5}$. Refer to Appendix A-1.

1. **Operating Limitations:**
   a. At all times, the permittee shall operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to,

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

monitoring results, review of operation and maintenance procedures, review of operation and maintenance records and inspection of the source. [40 CFR 63.843(f)]

b. The permittee shall comply with the requirements of 40 CFR 63.854(a)(1) through (8) during periods of operation other than startup. [40 CFR 63.854(a)]
   i. Ensure the potline scrubbers and exhaust fans are operational at all times. [40 CFR 63.854(a)(1)]
   ii. Ensure that the primary capture and control system is operating at all times. [40 CFR 63.854(a)(2)]
   iii. Hood covers should be replaced as soon as possible after each potroom operation. [40 CFR 63.854(a)(3)]
   iv. Inspect potlines daily and perform the work practices specified in 40 CFR 63.854(a)(4)(i) through (iii). [40 CFR 63.854(a)(4)]
      1) Identify unstable pots as soon as practicable but in no case more than 12 hours from the time the pot became unstable; [40 CFR 63.854(a)(4)(i)]
      2) Reduce cell temperatures to as low as practicable, and follow the written operating plan described in 40 CFR 63.854(b)(4) if the cell temperature exceeds the specified high temperature limit; and [40 CFR 63.854(a)(4)(ii)]
      3) Reseal pot crusts that have been broken as often and as soon as practicable. [40 CFR 63.854(a)(4)(iii)]
   v. Ensure that hood covers fit properly and are in good condition. [40 CFR 63.854(a)(5)]
   vi. If the exhaust system is equipped with an adjustable damper system, the hood exhaust rate for individual pots must be increased whenever hood covers are removed from a pot, provided that the exhaust system will not be overloaded by placing too many pots on high exhaust. [40 CFR 63.854(a)(6)]
   vii. Dust entrainment must be minimized during material handling operations and sweeping of the working aisles. [40 CFR 63.854(a)(7)]
   viii. Only tapping crucibles with functional aspirator air return systems (for returning gases under the collection hooding) can be used, unless the regulatory authority approves an alternative tapping crucible. [40 CFR 63.854(a)(8)]

c. The permittee shall comply with the requirements of 40 CFR 63.854(a)(1) through (8) and (b)(1) through (4) during periods of startup for each affected potline. [40 CFR 63.854(b)]
   i. Develop a potline startup schedule before starting up the potline. [40 CFR 63.854(b)(1)]
   ii. Keep records of the number of pots started each day. [40 CFR 63.854(b)(2)]
   iii. Inspect potlines daily and adjust pot parameters to their optimum levels, as specified in the operating plan described in 40 CFR 63.854(b)(4), including, but not limited to: alumina addition rate, exhaust air flow rate, cell voltage, feeding level, anode current and liquid and solid bath levels. [40 CFR 63.854(b)(3)]
   iv. Prepare a written operating plan to minimize emissions during startup to include, but not limited to, the requirements in 40 CFR 63.854(b)(1) through (3). The operating plan must include a specified high temperature limit for pots that will trigger corrective action. [40 CFR 63.854(b)(4)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Compliance Demonstration:
Refer to **5. Specific Recordkeeping Requirements (k).**

d. In the event of a recorded violation of the fluoride standard (either HF or TF) prescribed in 401 KAR 53:010, the Cabinet shall require that remedial measures be initiated from the source(s) responsible for causing said violation. [401 KAR 61:165, Section 4(2)]

Compliance Demonstration:
In the event of a recorded violation of the fluoride standard (either HF or TF) prescribed in 401 KAR 53:010, the permittee shall initiate remedial measures for the source(s) responsible for causing the violation. A record of these immediate remedial measures and a corrective action plan for future corrective action and remediation must be submitted to the Division with the next quarterly report required in **6. Specific Reporting Requirements (j).**

e. The total aluminum production shall not exceed 253,531 cumulative tons per year from Potlines 1, 2, & 3, on a rolling 12-month basis. [401 KAR 51:017]

Compliance Demonstration:
Refer to **4. Specific Monitoring Requirements (f)(ii)** and **5. Specific Recordkeeping Requirements (h)(ii).**

f. The permittee shall operate each dry scrubber/baghouse system when the associated potline is in operation. [401 KAR 51:017]

Compliance Demonstration:
Records shall be kept of the times when the units are operating but the control devices are not. Records shall also be kept of the maintenance activities for the control devices.

g. The petroleum coke used to make the green anodes shall not exceed 3.0 percent sulfur by weight and the pitch shall not exceed 0.80 percent sulfur by weight as measured by the standard ASTM method, an approved alternative method, or by vendor Certificate of Analysis (per shipment basis). [401 KAR 51:017]

Compliance Demonstration:
Refer to **5. Specific Recordkeeping Requirements (h)(v).**

h. The permittee shall follow good design and combustion practices for the potlines to control CO emissions. The standard operating procedures for following good operational procedures shall be kept available at site for inspection. Records shall be kept of continuing practices and maintenance. [401 KAR 51:017]

Compliance Demonstration:

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Refer to **5. Specific Recordkeeping Requirements (h)(ix).**

i. Refer to **SECTION D.**

2. Emission Limitations:

a. For each potline (combined roof monitor and stack emissions), the permittee shall not discharge or cause to be discharged into the atmosphere any emissions of TF, POM, or PM in excess of the applicable limits in 40 CFR 63.843(a)(1) through (3). [40 CFR 63.843(a)]
   i. Emissions of TF shall not exceed 1.9 lb/ton (0.95 kg/Mg) of aluminum produced. [40 CFR 63.843(a)(1)(i)]
   ii. Emissions of POM shall not exceed 1.1 lb/ton (0.55 kg/Mg) of aluminum produced. [40 CFR 63.843(a)(2)(iv)]
   iii. Emissions of PM shall not exceed 7.4 lb/ton (3.7 kg/Mg) of aluminum produced. [40 CFR 63.843(a)(3)(i)]

b. Emissions of COS shall not exceed 3.9 lb/ton (1.95 kg/Mg) of aluminum produced for each potline (combined roof monitor and stack emissions). [40 CFR 63.843(e)]

c. The owner or operator may average emissions from potlines and demonstrate compliance with the limits in 40 CFR 63, Subpart LL, Tables 1 through 3 using the procedures in 40 CFR 63.846(b)(1) through (3). [40 CFR 63.846(b)]
   i. Semiannual average emissions of TF shall not exceed 1.6 lb/ton if 3 potlines are averaged or 1.7 lb/ton if 2 potlines are averaged. The emission rate shall be calculated based on the total primary and secondary emissions from all potlines comprising the averaging group over the period divided by the quantity of aluminum produced during the period, from all potlines comprising the averaging group. To determine compliance with the applicable emission limit in 40 CFR 63, Subpart LL, Table 1 for TF emissions, the permittee shall determine the average emissions (in lb/ton) from each potline from at least three runs per potline semiannually for TF secondary emissions and at least three runs per potline primary control system each year using the procedures and methods in 40 CFR 63.847 and 63.849. The permittee shall combine the results of secondary TF average emissions with the TF results for the primary control system and divide total emissions by total aluminum production. [40 CFR 63.846(b)(1)]
   ii. Semiannual average emissions of POM shall not exceed 0.9 lb/ton if 3 potlines are averaged, or 1 lb/ton if 2 potlines are averaged. The emission rate shall be calculated based on the total primary and secondary emissions from all potlines comprising the averaging group over the period divided by the quantity of aluminum produced during the period, from all potlines comprising the averaging group. To determine compliance with the applicable emission limit in 40 CFR 63, Subpart LL, Table 2 for POM emissions, the permittee shall determine the average emissions (in lb/ton) from each potline from at least three runs per potline semiannually for POM secondary emissions and at least three runs per potline primary control system each year for POM primary emissions using the procedures and methods in 40 CFR 63.847 and 63.849. The permittee shall combine the results of secondary POM average emissions with the POM

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

results for the primary control system and divide total emissions by total aluminum production. [40 CFR 63.846(b)(2)]

iii. Semiannual average emissions of PM shall not exceed 6.1 lb/ton. The emission rate shall be calculated based on the total primary and secondary emissions from all potlines comprising the potline group over the period divided by the quantity of aluminum produced during the period, from all potlines comprising the averaging group. To determine compliance with the applicable emission limit in 40 CFR 63, Subpart LL, Table 3 for PM emissions, the permittee shall determine the average emissions (in lb/ton) from each potline from at least three runs per potline semiannually for PM secondary emissions and at least three runs per potline primary control system each year for PM primary emissions using the procedures and methods in 40 CFR 63.847 and 63.849. The permittee shall combine the results of secondary PM average emissions with the PM results for the primary control system and divide total emissions by total aluminum production. [40 CFR 63.846(b)(3)]

Compliance Demonstration:

1. The permittee shall determine compliance with the applicable TF, POM, or PM emission limits using the following equations and procedures: [40 CFR 63.847(e)]
   A. Compute the emission rate (E_p) of TF, POM, or PM from each potline using the following equation: [40 CFR 63.847(e)(1)]

$$E_p = \frac{[(C_{s1} \times Q_{sd})_1 + (C_{s2} \times Q_{sd})_2]}{(P \times K)}$$

   Where:
   E_p = emission rate of TF, POM, or PM from a potline, lb/ton (kg/Mg);
   C_{s1} = concentration of TF, POM, or PM from the primary control system, mg/dscf (mg/dscm);
   Q_{sd} = volumetric flow rate of effluent gas corresponding to the appropriate subscript location, dscf/hr (dscm/hr);
   C_{s2} = concentration of TF, POM, or PM as measured for roof monitor emissions, mg/dscf (mg/dscm);
   P = aluminum production rate, ton/hr (Mg/hr);
   K = conversion factor, 453,600 mg/lb (106 mg/kg) for TF, POM, and PM;
   1 = subscript for primary control system effluent gas; and
   2 = subscript for secondary control system or roof monitor effluent gas.

   B. Determine the weight of the aluminum tapped from the potline using the monitoring devices required in 40 CFR 63.848(j). [40 CFR 63.847(e)(5)]

   C. Determine the aluminum production rate (P) by dividing the number of hours in the calendar month into the weight of aluminum tapped from the potline during the calendar month that includes the three runs of a performance test. [40 CFR 63.847(e)(6)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

D. Refer to **3. Testing Requirements (d), (f),** and **(g)** and **7. Specific Control Equipment Operating Conditions (b).**

2. The permittee shall calculate, for each potline, the emission rate of COS for each calendar month of operation using the following equation: [40 CFR 63.847(j)]

$$E_{COS} = [K] \times \left[\frac{Y}{Z}\right] \times [S]$$

Where:

E_{COS} = the emission rate of COS during the calendar month, pounds per ton of aluminum produced;

K = factor accounting for molecular weights and conversion of sulfur to carbonyl sulfide = 234;

Y = the mass of anode consumed in the potline during the calendar month, tons;

Z = the mass of aluminum produced by the potline during the calendar month, tons; and

S = the weighted average fraction of sulfur in the anode coke consumed in the production of aluminum during the calendar month (e.g., if the weighted average sulfur content of the anode coke consumed during the calendar month was 2.5 percent, then S = 0.025). The weight of anode coke used during the calendar month of each different concentration of sulfur is used to calculate the overall weighted average fraction of sulfur.

Compliance is demonstrated if the calculated value of E_{COS} is less than the applicable standard for COS emissions in 40 CFR 63.843(e). Refer to **3. Testing Requirements (l).**

d. The permittee shall not cause to be discharged into the atmosphere: [401 KAR 61:165, Section 3]
   i. From any potroom roof monitor any gases which exhibit ten (10) percent opacity or greater during normal potroom operation except start-up cells; [401 KAR 61:165, Section 3(1)]
   ii. From any potroom roof monitor section directly above sick cells or start-up cells any gases which exhibit forty (40) percent opacity or greater; [401 KAR 61:165, Section 3(2)]
   iii. From any dry scrubbing plant primary control system any gases which exhibit ten (10) percent opacity or greater. [401 KAR 61:165, Section 3(3)]

Compliance Demonstration:
Refer to **4. Specific Monitoring Requirements (e)** and **5. Specific Recordkeeping Requirements (h)(iii).**

e. The permittee shall not, from a dry scrubbing plant, cause to be discharged into the atmosphere gases which contain total fluorides in excess of one and nine-tenths (1.9) lb/ton of aluminum produced. [401 KAR 61:165, Section 4(1)(a) and 401 KAR 51:017]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Compliance Demonstration:
Compliance **2. Emission Limitations (e)** shall be demonstrated by complying with **2. Emission Limitations (a)(i)** or **(c)(i).**

f. The permittee shall not allow CO emissions from the potlines (combined roof monitor and stack emissions) to exceed 233.6 lb/ton of aluminum produced. [401 KAR 51:017]

g. The permittee shall not allow PM emissions from the potlines (combined roof monitor and stack emissions) to exceed 4.88 lb/ton of aluminum produced. [401 KAR 51:017]

h. The permittee shall not allow $PM_{10}/PM_{2.5}$ emissions from the potlines (combined roof monitor and stack emissions) to exceed 2.1 lb/ton of aluminum produced. [401 KAR 51:017]

Compliance Demonstration:
Refer to **3. Testing Requirements (r).**

i. For SO_2 standards, refer to **SECTION D 3.**

j. For HF standards, refer to **SECTION D 4.**

k. For TF standards, refer to **SECTION D 5**.

3. Testing Requirements:

a. The permittee shall prepare a site-specific test plan prior to the initial performance test according to the requirements of 40 CFR 63.7(c). The test plan shall include procedures for conducting the initial performance test and for subsequent performance tests required in 40 CFR 63.848 for emission monitoring. In addition to the information required by 40 CFR 63.7, the test plan shall include: [40 CFR 63.847(b)]
   i. Procedures to ensure a minimum of three runs are performed annually for the primary control system for each source; [40 CFR 63.847(b)(1)]
   ii. For a source with a single control device exhausted through multiple stacks, procedures to ensure that at least three runs are performed annually by a representative sample of the stacks satisfactory to the Division; [40 CFR 63.847(b)(2)]
   iii. Procedures for establishing the frequency of testing to ensure that at least one run is performed before the 15th of the month, at least one run is performed after the 15th of the month, and that there are at least 6 days between two of the runs during the month, or that secondary emissions are measured according to an alternate schedule satisfactory to the Division. [40 CFR 63.847(b)(8)]

b. Following approval of the site-specific test plan, the permittee shall conduct a performance test to demonstrate initial compliance according to the procedures in 40 CFR 63.847(d). If a performance test has been conducted on the primary control system for the potlines within the 12 months prior to the compliance date, the results of that performance test may be

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

used to demonstrate initial compliance. The permittee shall conduct the performance test: [40 CFR 63.847(c)]

i. During the first month following: [40 CFR 63.847(c)(1)]
   1) October 7, 1999 for TF testing. [40 CFR 63.847(a)(1)]
   2) October 17, 2016 for calculation of COS emissions pursuant to 40 CFR 63.847(j). [40 CFR 63.847(a)(2)(ii)]
   3) October 16, 2017 for POM and PM testing. [40 CFR 63.847(a)(2)(iii)]

ii. For an existing potline that was shut down at the time compliance would have otherwise been required and is subsequently restarted, by the 180th day following startup for a potline or potroom group. The 180-day period starts when the first pot in a potline or potroom group is energized. [40 CFR 63.847(c)(3)(i)]

c. The initial performance test and all subsequent performance tests shall be conducted in accordance with the applicable requirements of the general provisions in 40 CFR 63, Subpart A, the approved test plan, and the procedures in 40 CFR 63.847. Performance tests shall be conducted under such conditions as the Division specifies to the permittee based on representative performance of the affected source for the period being tested. Upon request, the permittee shall make available to the Division such records as may be necessary to determine the conditions of performance tests. [40 CFR 63.847(d)]

d. For each potline, the permittee shall measure and record the emission rates of TF, POM and PM exiting the outlet of the primary control system and the rate of secondary emissions exiting through each roof monitor. Using the equation in 40 CFR 63.847(e)(1), the permittee shall compute and record the average of at least three runs semiannually for secondary emissions and at least three runs each year for the primary control system to determine compliance with the applicable emission limit. Compliance is demonstrated when the emission rates of TF, POM, and PM are equal to or less than the applicable emission limits in 40 CFR 63.843 or 40 CFR 63.846. [40 CFR 63.847(d)(1)]

e. If the permittee has performed more than one test of primary emission control device(s) for a potline during the previous consecutive 12 months, the average of all runs performed in the previous 12-month period shall be used to determine the contribution from the primary emission control system. [40 CFR 63.847(d)(3)]

f. Using the procedures in 40 CFR 63.847 and in the approved test plan, the permittee shall monitor emissions of TF and PM from each potline by conducting annual performance tests on the primary control system and semiannual performance tests on the secondary emissions. The permittee shall compute and record the average semiannually from at least three runs for secondary emissions and the average from at least three runs for the primary control system to determine compliance with the applicable emission limit. The permittee shall include all valid runs in the semiannual average. The duration of each run for secondary emissions shall represent a complete operating cycle. Potline emissions shall be recorded as the sum of the average of at least three runs from the primary control system

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

and the average of at least three runs from the roof monitor or secondary emissions control device. [40 CFR 63.848(a)]

g. Using the procedures in 40 CFR 63.847 and in the approved test plan, the permittee shall monitor emissions of POM from each potline stack annually and secondary potline POM emissions semiannually. The permittee shall compute and record the semiannual average from at least three runs for secondary emissions and at least three runs for the primary control systems to determine compliance with the applicable emission limit. The permittee shall include all valid runs in the semiannual average. The duration of each run for secondary emissions shall represent a complete operating cycle. The primary control system shall be sampled over an 8-hour period, unless site-specific factors dictate an alternative sampling time subject to the approval of the Division. Potline emissions shall be recorded as the sum of the average of at least three runs from the primary control system and the average of at least three runs from the roof monitor or secondary emissions control device. [40 CFR 63.848(b)]

h. The permittee shall use the following reference methods to determine compliance with the applicable emission limits for TF, POM, PM, and conduct visible emissions observations: [40 CFR 63.849(a)]
   i. Method 1 in 40 CFR 60, Appendix A for sample and velocity traverses; [40 CFR 63.849(a)(1)]
   ii. Method 2 in 40 CFR 60, Appendix A for velocity and volumetric flow rate; [40 CFR 63.849(a)(2)]
   iii. Method 3 in 40 CFR 60, Appendix A for gas analysis; [40 CFR 63.849(a)(3)]
   iv. Method 13A or Method 13B in 40 CFR 60, Appendix A, or an approved alternative, for the concentration of TF where stack or duct emissions are sampled; [40 CFR 63.849(a)(4)]
   v. Method 13A or Method 13B and Method 14 or Method 14A in 40 CFR 60, Appendix A or an approved alternative method for the concentration of TF where emissions are sampled from roof monitors not employing wet roof scrubbers; [40 CFR 63.849(a)(5)]
   vi. Method 315 in 40 CFR 63, Appendix A or an approved alternative method for the concentration of POM where stack or duct emissions are sampled; [40 CFR 63.849(a)(6)]
   vii. Method 315 in 40 CFR 63, Appendix A and Method 14 or 14A in 40 CFR 60, Appendix A or an approved alternative method for the concentration of POM where emissions are sampled from roof monitors not employing wet roof scrubbers. Method 315 need not be set up as required in the method. Instead, when using Method 14A, replace the Method 14A monitor cassette filter with the filter specified by Method 315. Recover and analyze the filter according to Method 315. When using Method 14, test at ambient conditions, do not heat the filter and probe, and do not analyze the back half of the sampling train; [40 CFR 63.849(a)(7)]
   viii. Method 5 in 40 CFR 60, Appendix A or an approved alternative method for the concentration of PM where stack or duct emissions are sampled; [40 CFR 63.849(a)(8)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

ix. Method 17 and Method 14 or Method 14A in 40 CFR 60, Appendix A or an approved alternative method for the concentration of PM where emissions are sampled from roof monitors not employing wet roof scrubbers. Method 17 need not be set up as required in the method. Instead, when using Method 14A, replace the Method 14A monitor cassette filter with the filter specified by Method 17. Recover and analyze the filter according to Method 17. When using Method 14, test at ambient conditions, do not heat the filter and probe, and do not analyze the back half of the sampling train; [40 CFR 63.849(a)(9)]

x. Method 22 in 40 CFR 60, Appendix A or an approved alternative method for determination of visual emissions; [40 CFR 63.849(a)(12)]

i. Except as provided in 40 CFR 63.845(g)(1), references to "potroom" or "potroom group" in Method 14 in 40 CFR 60, Appendix A shall be interpreted as "potline" for the purposes of 40 CFR 63, Subpart LL. [40 CFR 63.849(c)]

j. For sampling using Method 14 in 40 CFR 60, Appendix A, the permittee shall install one Method 14 manifold per potline in a potroom that is representative of the entire potline, and this manifold shall meet the installation requirements specified in 40 CFR 60, Appendix A, Method 14, Section 2.2.1. [40 CFR 63.849(d)]

k. The permittee may use an alternative test method for TF or POM emissions providing: [40 CFR 63.849(e)]
   i. The permittee has already demonstrated the equivalency of the alternative method for a specific plant and has received previous approval from the U.S. EPA or the Division for TF or POM measurements using the alternative method; or [40 CFR 63.849(e)(1)]
   ii. The permittee demonstrates to the satisfaction of the Division that the results from the alternative method meet the criteria specified in 40 CFR 63.848(d)(1) and (d)(3) through (d)(6). The results from the alternative method shall be based on simultaneous sampling using the alternative method and the following reference methods: [40 CFR 63.849(e)(2)]
      1) For TF, Methods 13 and 14 or Method 14A in 40 CFR 60, Appendix A; or [40 CFR 63.849(e)(2)(i)]
      2) For POM, Method 315 in 40 CFR 63, Appendix A and Method 14 in 40 CFR 60, Appendix A. [40 CFR 63.849(e)(2)(ii)]

l. The permittee shall use either ASTM D4239-14e1 or ASTM D6376-10 (incorporated by reference; see 40 CFR 63.14) for determination of the sulfur content in anode coke shipments to determine compliance with the applicable emission limit for COS emissions. [40 CFR 63.849(f)]

m. Reference methods as defined in Appendix A of 40 CFR 60 or as otherwise specified, filed by reference in 401 KAR 50:015, except as provided for in 401 KAR 50:045, shall be used to determine compliance with the standards prescribed in 401 KAR 61:165, Sections 3, 4 and 5 as follows: [401 KAR 61:165, Section 7(1)]
   i. For sampling emissions from stacks: [401 KAR 61:165, Section 7(1)(a)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

1) Reference Method 13A or 13B for the concentration of total fluoride and the associated moisture content; [401 KAR 61:165, Section 7(1)(a)(1)]
2) Reference Method 1 for sample and velocity traverses; [401 KAR 61:165, Section 7(1)(a)(2)]
3) Reference Method 2 for velocity and volumetric flow rate; [401 KAR 61:165, Section 7(1)(a)(3)]
4) Reference Method 3 for gas analysis; and [401 KAR 61:165, Section 7(1)(a)(4)]
5) Reference Method 5 for particulate emissions. [401 KAR 61:165, Section 7(1)(a)(5)]

ii. For sampling emissions from roof monitors not employing stacks or pollutant collection systems: [401 KAR 61:165, Section 7(1)(b)]
1) Reference Method 14 and Kentucky Method 130 for the concentration of gaseous fluorides and associated moisture content; [401 KAR 61:165, Section 7(1)(b)(1)]
2) Reference Method 1 for sample and velocity traverses; [401 KAR 61:165, Section 7(1)(b)(2)]
3) Reference Method 2 and Reference Method 14 for velocity and volumetric flow rate; and [401 KAR 61:165, Section 7(1)(b)(3)]
4) Reference Method 3 for gas analysis. [401 KAR 61:165, Section 7(1)(b)(4)]

iii. For opacity determination: Reference Method 9. [401 KAR 61:165, Section 7(1)(c)]

n. For Reference Method 13A or 13B, 14, and Kentucky Method 130, the sampling time for each run shall be at least eight (8) hours for any potroom sample, and the minimum sample volume shall be six and eight-tenths (6.8) dscm (240 dscf) for any potroom sample except that shorter sampling times or smaller volumes, when necessitated by process variables or other factors, may be approved by the Cabinet. [401 KAR 61:165, Section 7(2)]

o. The air pollution control system for each affected facility shall be constructed so that volumetric flow rates and total fluoride emissions can be accurately determined using applicable methods specified under 401 KAR 61:165, Section 7(1). [401 KAR 61:165, Section 7(3)]

p. For the purposes of demonstrating compliance with the requirements of 401 KAR 61:165, the rate of aluminum production is determined by dividing 720 hours into the weight of aluminum tapped from the affected facility during a period of thirty (30) days prior to and including the final run of a performance test. [401 KAR 61:165, Section 7(4)]

q. For each run for any plant with an emission limitation expressed in lbs/ton of aluminum produced, potroom group emissions expressed in kg/metric ton of aluminum produced shall be determined using the equation in 401 KAR 61:165, Appendix A. [401 KAR 61:165, Section 7(5)]

r. The following compliance tests shall be performed to demonstrate compliance with all emission limitations listed above for CO, SO_2, PM, PM_{10}, and $PM_{2.5}$:

Commented [PS1]: Refer to Section 5 of the application letter for additional discussion regarding the proposed edits to the potline CO and SO2 testing permit condition language.

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

i. The permittee shall perform testing according to Reference Method 10 for CO emissions **from a representative potline A-398 scrubber system and from a representative potline roof monitor** once within the 5 year permit term of permit V-19-010. ~~Where similar potlines exist, the permittee may perform sampling on a representative potline.~~

ii. The permittee shall perform testing according to Reference Method 6 for SO_2 emissions **from a representative potline A-398 scrubber system** once within the 5 year permit term of permit V-19-010. ~~Where similar potlines exist, the permittee may perform sampling on a representative potline.~~ The permittee shall also perform ~~annual~~ testing of **SO_2 emissions from** the roof monitors associated with a representative potline to determine the contribution from the roof monitors to the SO_2 emission**s once within the 5 year permit term**~~limit~~. ~~The test shall be performed within 180 days of the issuance of permit V-19-010.~~

iii. The permittee shall conduct a performance test for particulate emissions (filterable PM, $PM_{10,}$ $PM_{2.5}$ and Condensable Particulate) once every 12 months during the life of permit V-19-010. The tests shall be performed according to Reference Method 5 and Reference Method 201A/202 for particulate emissions (filterable PM, $PM_{10,}$ $PM_{2.5}$ and Condensable Particulate). Where similar potlines exist, the permittee may perform sampling on a representative potline. These tests can be performed simultaneously with the testing required by 40 CFR 63, Subpart LL.

iv. The permittee may use other test methods as approved by the Division.

s. For sampling emissions from roof monitors not employing stacks or pollutant collection systems, the permittee may use Reference Method 14A for the concentration of gaseous fluorides and associated moisture content in lieu of the methods specified in 401 KAR 61:165, Section 7(1)(b)(1).

t. If the permittee chooses to perform representative sampling on a potline in lieu of performing testing on each potline, the permittee shall ensure that each potline is equipped for sampling (both stack and roof monitor sampling) such that different potlines can be sampled in future tests.

u. Pursuant to 401 KAR 61:005, Section 2(2) and 401 KAR 50:045, Section 1, performance testing using the reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division.

4. Specific Monitoring Requirements:

a. The permittee shall determine the operating limits and monitoring frequency for each control device that is to be monitored as required in 40 CFR 63.848(f). [40 CFR 63.847(h)]

i. For potlines, the permittee shall determine upper and/or lower operating limits, as appropriate, for each monitoring device for the emission control system from the values recorded during each of the runs performed during the initial performance test and from historical data from previous performance tests conducted by the methods specified in 40 CFR 63, Subpart LL. [40 CFR 63.847(h)(1)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

ii. The permittee may redetermine the upper and/or lower operating limits, as appropriate, based on historical data or other information and submit an application to the Division to change the applicable limit(s). The redetermined limits shall become effective upon approval by the Division. [40 CFR 63.847(h)(3)]

b. As an alternative to semiannual monitoring of TF, POM or PM secondary emissions from each potline using the methods in 40 CFR 63.849, the permittee may perform semiannual monitoring of TF, POM or PM secondary emissions from one potline using the test methods in 40 CFR 63.849(a) or (b) to represent the performance of similar potline(s). The similar potline(s) shall be monitored using an alternative method that meets the requirements of 40 CFR 63.848(d)(1) through (7). Two or more potlines are similar if the permittee demonstrates that their structure, operability, type of emissions, volume of emissions and concentration of emissions are substantially equivalent. [40 CFR 63.848(d)]

i. To demonstrate (to the satisfaction of the Division) that the level of emission control performance is the same or better, the permittee shall perform an emission test using an alternative monitoring procedure for the similar potline simultaneously with an emission test using the applicable test methods. The results of the emission test using the applicable test methods shall be in compliance with the applicable emission limit for existing or new potlines in 40 CFR 63.843 or 40 CFR 63.844. An alternative method: [40 CFR 63.848(d)(1)]

1) For TF emissions, shall account for or include gaseous fluoride and cannot be based on measurement of particulate matter or particulate fluoride alone; and [40 CFR 63.848(d)(1)(i)]
2) For TF, POM and PM emissions, shall meet or exceed Method 14 criteria. [40 CFR 63.848(d)(1)(ii)]

ii. An HF continuous emission monitoring system is an approved alternative for the monitoring of TF secondary emissions. [40 CFR 63.848(d)(2)]

iii. If the permittee elects to use an alternative monitoring procedure, the permittee shall establish an alternative emission limit based on at least nine simultaneous runs using the applicable test methods and the alternative monitoring method. All runs shall represent a full process cycle. [40 CFR 63.848(d)(3)]

iv. The permittee shall derive an alternative emission limit for the HF continuous emission monitor or an alternative method using either of the following procedures: [40 CFR 63.848(d)(4)]

1) Use the highest value from the alternative method associated with a simultaneous run by the applicable test method that does not exceed the applicable emission limit; or [40 CFR 63.848(d)(4)(i)]
2) Correlate the results of the two methods (the applicable test method results and the alternative monitoring method results) and establish an emission limit for the alternative monitoring system that corresponds to the applicable emission limit. [40 CFR 63.848(d)(4)(ii)]

v. The permittee shall submit the results required in 40 CFR 63.848(d)(4) and all supporting documentation to the Division for review and approval. [40 CFR 63.848(d)(5)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

vi. The Division will review and approve or disapprove the request for an alternative method and alternative emission limit. The criterion for approval shall be a demonstration (to the satisfaction of the Division) that the alternative method and alternative emission limit achieve a level of emission control that is the same as or better than the level that would have otherwise been achieved by the applicable method and emission limit. [40 CFR 63.848(d)(6)]

vii. If the alternative method is approved by the Division, the permittee shall perform semiannual emission monitoring using the approved alternative monitoring procedure to demonstrate compliance with the alternative emission limit for each similar potline. [40 CFR 63.848(d)(7)]

c. The permittee shall install, operate, and maintain a monitoring device to determine the daily weight of aluminum produced. [40 CFR 63.848(j)]

d. The permittee shall install, use, and maintain ambient air monitoring equipment for the detection of fluorides in accordance with such methods as the Cabinet shall prescribe; establish and maintain records of same; and make periodic emission reports at intervals prescribed by the Cabinet. [401 KAR 61:165, Section 6(3)]

e. The permittee shall perform a qualitative visual observation of the opacity of emissions at each stack and roof monitor daily and maintain a log of the observations. If visible emissions from a stack or roof monitor are observed (not including condensed water in the plume), then an inspection of process/control equipment shall be initiated and corrective action taken. If visible emissions are present after the corrective action, the permittee shall determine the opacity using Reference Method 9. The Method 22 observations performed for 40 CFR 63, Subpart LL may also be used to meet the qualitative requirement for the stack. [401 KAR 52:020, Section 10]

f. For each emission unit listed above, the permittee shall monitor the following parameters: [401 KAR 52:020, Section 10]
   i. Monthly hours of operation;
   ii. Monthly and 12-month rolling throughput for each potline;
   iii. Monthly anode consumption **rate** in ~~p~~**P**otline~~s~~ 1-3 **(ton anode/ton aluminum produced)**.

g. For Potlines 1-3, refer to Appendix A for CAM requirements pursuant to 40 CFR 64.

h. Refer to **SECTION F.**

5. Specific Recordkeeping Requirements:

a. The permittee shall develop a written startup plan as described in 40 CFR 63.854(b) that contains specific procedures to be followed during startup periods of potline(s). Compliance with the applicable standards in 40 CFR 63.854(b) will be demonstrated through site inspection(s) and review of site records by the Division. [40 CFR 63.847(k)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

b. The permittee shall maintain files of all information (including all reports and notifications) required by 40 CFR 63.10(b) and by 40 CFR 63, Subpart LL. [40 CFR 63.850(e)]

c. The permittee shall retain each record for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The most recent 2 years of records must be retained at the facility. The remaining 3 years of records may be retained offsite; [40 CFR 63.850(e)(1)]

d. The permittee may retain records on microfilm, on a computer, on computer disks, on magnetic tape, or on microfiche; [40 CFR 63.850(e)(2)]

e. The permittee may report required information on paper or on a labeled computer disc using commonly available and compatible computer software; and [40 CFR 63.850(e)(3)]

f. In addition to the general records required by 40 CFR 63.10(b), the permittee shall maintain records of the following information: [40 CFR 63.850(e)(4)]
   i. Daily production rate of aluminum; [40 CFR 63.850(e)(4)(i)]
   ii. Records supporting the monitoring of similar potlines demonstrating that the performance of similar potlines is the same as or better than that of potlines sampled by manual methods; [40 CFR 63.850(e)(4)(vi)]
   iii. Records supporting a request for reduced sampling of potlines; [40 CFR 63.850(e)(4)(vii)]
   iv. The current implementation plan for emission averaging and any subsequent amendments; [40 CFR 63.850(e)(4)(ix)]
   v. Records, such as a checklist or the equivalent, demonstrating that the daily visual inspection of the exhaust stack for each control device has been performed as required in 40 CFR 63.848(g), including the results of each inspection; [40 CFR 63.850(e)(4)(xi)]
   vi. For a potline equipped with an HF continuous emission monitor, records of information and data required by 40 CFR 63.10(c); [40 CFR 63.850(e)(4)(xii)]
   vii. Records documenting the corrective actions taken when the limit(s) for an operating parameter established under 40 CFR 63.847(h) were exceeded or when visible emissions indicating abnormal operation were observed from a control device stack during a daily inspection required under 40 CFR 63.848(g). [40 CFR 63.850(e)(4)(xiii)]
   viii. Records documenting any POM data that are invalidated due to the installation and startup of a cathode; [40 CFR 63.850(e)(4)(xiv)]
   ix. Records documenting the portion of TF that is measured as particulate matter and the portion that is measured as gaseous when the particulate and gaseous fractions are quantified separately using an approved test method; [40 CFR 63.850(e)(4)(xv)]
   x. Records of the occurrence and duration of each malfunction of operation (i.e. process equipment) or the air pollution control equipment and monitoring equipment; and [40 CFR 63.850(e)(4)(xvi)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

xi. Records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.843(f) and 63.844(f), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation. [40 CFR 63.850(e)(4)(xvii)]

g. Records of the installation, use, and maintenance of the ambient air monitoring equipment required by 401 KAR 61:165. [401 KAR 61:165, Section 6(3)]

h. For each emission unit listed above, the permittee shall maintain the following records: [401 KAR 52:020, Section 10]
   i. Monthly hours of operation;
   ii. Monthly and 12-month rolling throughput for each potline;
   iii. The qualitative visual observations required by **4. Specific Monitoring Requirements (e),** including the date, time, initials of observer, whether any emissions were observed (yes/no), any Method 9 readings taken, and any corrective action taken including results due to observed emissions;
   iv. Monthly anode consumption in potlines 1-3;
   v. Records of sulfur contents of coal and pitch from standard ASTM method, an approved alternative method, or by vendor Certificate of Analysis per shipment basis;
   vi. Records of ambient air monitoring results for fluorides;
   vii. Records of calibration for all monitoring devices;
   viii. Records of the quarterly ambient monitoring data reports required by **6. Specific Reporting Requirements (e).**
   ix. Records of standard operating procedures, continuing practices, and maintenance used to meet **1. Operating Limitations (h)**.
   x. Records of violations of the ambient air standards for total and gaseous fluorides as prescribed in 401 KAR 53:010. [401 KAR 61:165, Section 4(2)]

i. The permittee shall record the occurrence, duration, cause and any corrective action taken for any incident or malfunction that occurs that causes or might cause an exceedance of the particulate emission or opacity standard when an emission unit is in operation. A log of Method 9 observations (if performed) shall be kept and made available for inspection. [401 KAR 52:020, Section 10]

j. For Potlines 1-3:
   i. The permittee shall comply with the recordkeeping requirements specified in **SECTION F**. The permittee shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan required pursuant to 40 CFR 64.8 and any activities undertaken to implement a quality improvement plan, and other supporting information required to be maintained under 40 CFR 64 (such as data used to document the adequacy of monitoring, or records of monitoring maintenance or corrective actions). [40 CFR 64.9(b)(1)]
   ii. Instead of paper records, the permittee may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements. [40 CFR 64.9(b)(1)]

k. Refer to **SECTION F.**

6. Specific Reporting Requirements:

a. If the permittee chooses to average emissions, the permittee shall develop and submit an implementation plan for emission averaging to the Division for review and approval according to the following procedures and requirements: [40 CFR 63.846(d)]

i. The permittee shall submit the implementation plan no later than 6 months before the date that the facility intends to comply with the emission averaging limits. [40 CFR 63.846(d)(1)]

ii. The permittee shall include the following information in the implementation plan or in the application for an operating permit for all emission sources to be included in an emissions average: [40 CFR 63.846(d)(2)]

1) The identification of all emission sources (potlines) in the average; [40 CFR 63.846(d)(2)(i)]

2) The assigned TF, POM and/or PM emission limit for each averaging group of potlines; [40 CFR 63.846(d)(2)(ii)]

3) The specific control technologies or pollution prevention measures to be used for each emission source in the averaging group and the date of its installation or application. If the pollution prevention measures reduce or eliminate emissions from multiple sources, the permittee shall identify each source; [40 CFR 63.846(d)(2)(iii)]

4) The test plan for the measurement of TF, POM and/or PM emissions in accordance with the requirements in 40 CFR 63.847(b); [40 CFR 63.846(d)(2)(iv)]

5) The operating parameters to be monitored for each control system or device and a description of how the operating limits will be determined; [40 CFR 63.846(d)(2)(v)]

6) If the permittee requests to monitor an alternative operating parameter pursuant to 40 CFR 63.848(l): [40 CFR 63.846(d)(2)(vi)]

A. A description of the parameter(s) to be monitored and an explanation of the criteria used to select the parameter(s); and [40 CFR 63.846(d)(2)(vi)(A)]

B. A description of the methods and procedures that will be used to demonstrate that the parameter indicates proper operation of the control device; the frequency and content of monitoring, reporting, and recordkeeping requirements; and a demonstration, to the satisfaction of the Division, that the proposed monitoring frequency is sufficient to represent control device operating conditions; and [40 CFR 63.846(d)(2)(vi)(B)]

7) A demonstration that compliance with each of the applicable emission limit(s) will be achieved under representative operating conditions. [40 CFR 63.846(d)(2)(vii)]

iii. Upon receipt, the Division will review and approve or disapprove the plan or permit application according to the following criteria: [40 CFR 63.846(d)(3)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

1) Whether the content of the plan includes all of the information specified in 40 CFR 63.846(d)(2); and [40 CFR 63.846(d)(3)(i)]
2) Whether the plan or permit application presents sufficient information to determine that compliance will be achieved and maintained. [40 CFR 63.846(d)(3)(ii)]

iv. The Division will not approve an implementation plan or permit application containing any of the following provisions: [40 CFR 63.846(d)(4)]
1) Any averaging between emissions of differing pollutants or between differing sources. Emission averaging shall not be allowed between TF, POM and/or PM, and emission averaging shall not be allowed between potlines and anode bake furnaces; [40 CFR 63.846(d)(4)(i)]
2) The inclusion of any emission source other than an existing potline or existing anode bake furnace or the inclusion of any potline or anode bake furnace not subject to the same operating permit; or [40 CFR 63.846(d)(4)(ii)]
3) The inclusion of any potline or anode bake furnace while it is shut down, in the emission calculations. [40 CFR 63.846(d)(4)(iii)]

v. Following review, the Division will approve the plan or permit application, request changes, or request additional information. Once the Division receives any additional information requested, the Division will approve or disapprove the plan or permit application within 120 days. [40 CFR 63.846(d)(5)]
1) The Division will approve the plan for the term of the operating permit; [40 CFR 63.846(d)(5)(i)]
2) To revise the plan prior to the end of the permit term, the permittee shall submit a request to the Division; and [40 CFR 63.846(d)(5)(ii)]
3) The permittee may submit a request to the Division to implement emission averaging after the applicable compliance date. [40 CFR 63.846(d)(5)(iii)]

vi. While operating under an approved implementation plan, the permittee shall monitor the operating parameters of each control system, keep records, and submit periodic reports as required for each source subject to 40 CFR 63, Subpart LL. [40 CFR 63.846(d)(6)]

b. The permittee shall submit recommended accuracy requirements to the Division for review and approval. All monitoring devices required by 40 CFR 63.848 must be certified by the permittee to meet the accuracy requirements and must be calibrated in accordance with the manufacturer's instructions. [40 CFR 63.848(k)]

c. The permittee shall develop and submit to the Division, if requested, an engineering plan that describes the techniques that will be used to address the capture efficiency of the reduction cells for gaseous hazardous air pollutants in compliance with the emission limits in 40 CFR 63.843, 63.844, and 63.846; and [40 CFR 63.850(a)(8)]

d. One-time notification of startup of an existing potline or potroom group that was shut down for a long period and subsequently restarted. The permittee must provide written notice to the Administrator at least 30 days before the startup. [40 CFR 63.850(a)(9)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

e. Within 60 days after the date of completing each performance test (as defined in 40 CFR 63.2) required by 40 CFR 63, Subpart LL, the permittee shall submit the results of the performance tests following the procedure specified in either 40 CFR 63.850(b)(1) or (b)(2). [40 CFR 63.850(b)]

f. In addition to the information required under 40 CFR 63.10 of the General Provisions, the permittee shall provide semiannual reports containing the information specified in 40 CFR 63.850(d)(1) and (2) to the Division. [40 CFR 63.850(d)]
   i. Excess emissions report. As required by 40 CFR 63.10(e)(3), the permittee shall submit a report (or a summary report) if measured emissions are in excess of the applicable standard. The report shall contain the information specified in 40 CFR 63.10(e)(3)(v) and be submitted quarterly. [40 CFR 63.850(d)(1)]
   ii. If there was a malfunction during the reporting period, the permittee shall submit a report that includes the number, duration and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limitation to be exceeded. The report shall also include a description of actions taken by the permittee during a malfunction of an affected source to minimize emissions in accordance with 40 CFR 63.843(f) and 63.844(f), including actions taken to correct a malfunction. [40 CFR 63.850(d)(2)]

g. All reports required by 40 CFR 63, Subpart LL not subject to the requirements in 40 CFR 63.850(b) or (c) shall be sent to the Administrator at the appropriate address listed in 40 CFR 63.13. If acceptable to both the Administrator and the permittee, these reports may be submitted on electronic media. The Administrator retains the right to require submittal of reports subject to 40 CFR 63.850(b) in paper format. [40 CFR 63.850(f)]

h. The Division will notify the permittee in writing of the need for additional time to review the submissions in 40 CFR 63.851(a)(1) through (a)(5) or of approval or intent to deny approval of the submissions in 40 CFR 63.851(a)(1) through (a)(5) within 60 calendar days after receipt of sufficient information to evaluate the submission. The 60-day period begins after the permittee has been notified that the submission is complete. [40 CFR 63.851(a)]
   i. The test plan in 40 CFR 63.847(b); [40 CFR 63.851(a)(1)]
   ii. Request to change limits for operating parameters in 40 CFR 63.847(h)(3); [40 CFR 63.851(a)(2)]
   iii. Request for similar potline monitoring in 40 CFR 63.848(d)(5); [40 CFR 63.851(a)(3)]
   iv. Request for an alternative method in 40 CFR 63.849(e)(2). [40 CFR 63.851(a)(5)]

i. The Division will notify the permittee in writing whether the submission is complete within 30 calendar days of receipt of the original submission or within 30 days of receipt of any supplementary information that is submitted. When a submission is incomplete, the Division will specify the information needed to complete the submission and will give the permittee 30 calendar days after receipt of the notification to provide the information. [40 CFR 63.851(b)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

j. The permittee shall submit to the Division quarterly ambient monitoring data reports. If the maximum 24-hour average primary standard or any of the secondary standards for HF as defined in 401 KAR 53:010, Appendix A, are exceeded more than once annually, than any subsequent exceedance is a violation. Any exceedance of the secondary standards for TF as defined in 401 KAR 53:010, Appendix A, is a violation. Refer to **SECTION D.** [401 KAR 61:165]

k. For Potlines 1-3:
   i. On and after the date specified in 40 CFR 64.7(a) by which the permittee must use monitoring that meets the requirements of 40 CFR 64, the permittee shall submit monitoring reports to the Division in accordance with **SECTION F**. [40 CFR 64.9(a)(1)]
   ii. Refer to Appendix A for reporting requirements under 40 CFR 64.

l. Refer to **SECTION F.**

7. Specific Control Equipment Operating Conditions:

a. The permittee shall install, operate, calibrate, and maintain a continuous parameter monitoring system for each emission control device. The permittee shall submit for approval by the Division a description of the parameter(s) to be monitored, the operating limits, and the monitoring frequency to ensure that the control device is being properly operated and maintained. An explanation of the criteria used for selection of the parameter(s), the operating limits, and the monitoring frequency, including how these relate to emission control also shall be submitted to the Division. Except as provided in 40 CFR 63.848(l), the following monitoring devices shall be installed: [40 CFR 63.848(f)]
   i. For dry alumina scrubbers, devices for the measurement of alumina flow and air flow; [40 CFR 63.848(f)(1)]

b. The owner or operator of an existing affected source that is equipped with a control device and is subject to a PM limit shall: [40 CFR 63.848(g)]
   i. Install and operate a bag leak detection system in accordance with 40 CFR 63.848(f)(6); or [40 CFR 63.848(g)(1)]
   ii. Install and operate a PM CEMS in accordance with 40 CFR 63.848(f)(7); or [40 CFR 63.848(g)(2)]
   iii. Visually inspect the exhaust stack(s) using Method 22 on a twice daily basis (at least 4 hours apart) for evidence of any visible emissions indicating abnormal operations and, shall initiate corrective actions within 1 hour of a visible emissions inspection that indicates abnormal operation. Corrective actions shall include, at a minimum, isolating, shutting down and conducting an internal inspection of the compartment that is the source of the visible emissions that indicate abnormal operations. [40 CFR 63.848(g)(3)]

c. If a monitoring device for a primary control device measures an operating parameter outside the limit(s) established pursuant to 40 CFR 63.847(h) or if visible emissions indicating abnormal operation are observed from the exhaust stack of a control device

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

during a daily inspection, the permittee shall initiate corrective action procedures within 1 hour. Failure to initiate the corrective action procedures within 1 hour or to take the necessary corrective actions to remedy the problem is a violation. [40 CFR 63.848(h)]

d. If the limit for a given operating parameter associated with monitoring a specific control device is exceeded six times in any semiannual reporting period, then any subsequent exceedance in that reporting period is a violation. For the purpose of determining the number of exceedances, no more than one exceedance shall be attributed in any given 24-hour period. [40 CFR 63.848(i)]

e. The permittee may monitor alternative control device operating parameters subject to prior written approval by the Division. [40 CFR 63.848(l)]

f. The permittee shall install, operate, and maintain the dry alumina scrubbers and baghouses in accordance with manufacturer's specifications. [401 KAR 51:017]

g. The permittee shall continuously monitor the alumina bed differential pressure and the baghouse differential pressure. [401 KAR 51:017]

h. Refer to **SECTION E.**

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

SUBJECT ITEM 6 REQUIREMENTS: Anode Bake Furnace

EU	Equip. Desig.	Cons. Date	Description	Controls	Material	Capacity
Emission Group IV: Anode Bake Furnace						
N2	(EE)	8/4/1972; Refurbished 2007	Anode Bake Furnace ("261 Furnace")	A-446 Dry Scrubber/ Baghouse System	Green Anodes; Natural Gas	17.74 tons/hr*; 51.0 MMBtu/hr

*Based on an annual average

APPLICABLE REGULATIONS:
401 KAR 51:017, *Prevention of significant deterioration of air quality*
401 KAR 53:010, *Ambient air quality standards* for HF & TF
401 KAR 59:010, *New process operations*
401 KAR 63:002, Section 2(4)(bb), 40 C.F.R. 63.840 to 63.855, Tables 1 to 4, and Appendix A (Subpart LL), *National Emission Standards for Hazardous Air Pollutants for Primary Aluminum Reduction Plants,* applicable with respect to each existing anode bake furnace associated with primary aluminum production and located at a major source as defined in 40 CFR 63.2.
40 CFR 64, *Compliance Assurance Monitoring,* applicable to the Anode Bake Furnace with respect to PM_{10}. Refer to Appendix A-1.

PRECLUDED REGULATIONS:
401 KAR 51:017, *Prevention of significant deterioration of air quality*

1. **Operating Limitations:**
   a. At all times, the permittee shall operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records and inspection of the source. [40 CFR 63.843(f) and 63.844(f)]

   b. The permittee shall install and operate an advanced furnace firing and control system to minimize natural gas usage per unit of baked anode production and thus, CO emissions. [401 KAR 51:017]

   c. Refer to **SECTION D.**

2. **Emission Limitations**:
   a. The permittee shall not discharge or cause to be discharged into the atmosphere any emissions of TF, POM, PM or mercury in excess of the limits in 40 CFR 63.843(c)(1) through (4). [40 CFR 63.843(c)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

i. Emissions of TF shall not exceed 0.20 lb/ton (0.10 kg/Mg) of green anode; [40 CFR 63.843(c)(1)]
ii. Emissions of POM shall not exceed 0.18 lb/ton (0.09 kg/Mg) of green anode; [40 CFR 63.843(c)(2)]
iii. Emissions of PM shall not exceed 0.20 lb/ton (0.10 kg/Mg) of green anode; and [40 CFR 63.843(c)(3)]
iv. Emissions of mercury shall not exceed 1.7 µg/dscm. [40 CFR 63.843(c)(4)]

Compliance Demonstration:

1. The permittee shall determine compliance with the applicable TF, POM, PM or Hg emission limits using the following equations and procedures: [40 CFR 63.847(e)]
   A. Compute the emission rate (E_b) of TF, POM or PM from each anode bake furnace using the following equation: [40 CFR 63.847(e)(3)]

$$E_b = \frac{(C_s \times Q_{sd})}{(P_b \times K)}$$

   Where:
   E_b= emission rate of TF, POM or PM, lb/ton (kg/mg) of green anodes;
   C_s = concentration of TF, POM or PM, mg/dscf (mg/dscm);
   Q_{sd} = volumetric flow rate of effluent gas, dscf/hr (dscm/hr);
   P_b = quantity of green anode material placed in the furnace, ton/hr (mg/hr); and
   K = conversion factor, 453,600 mg/lb (106 mg/kg).

   B. Compliance with the anode bake furnace Hg emission standard is demonstrated if the Hg concentration of the exhaust from the anode bake furnace control device is equal to or less than the applicable concentration standard in 40 CFR 63.843(c)(4). [40 CFR 63.847(e)(4)]

   C. Determine the weight of the green anode material placed in the anode bake furnace using the monitoring devices required in 40 CFR 63.848(j). [40 CFR 63.847(e)(5)]

   D. Determine the rate of green anode material introduced into the furnace by dividing the number of operating hours in the calendar month into the weight of green anode material used during the calendar month in which the performance test was conducted. [40 CFR 63.847(e)(7)]

2. Refer to **3. Testing Requirements (e)** and **(f)** and **7. Specific Control Equipment Operating Conditions (b).**

b. The permittee shall not cause, suffer, allow or permit any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than twenty (20) percent opacity. [401 KAR 59:010, Section 3(1)(a)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Compliance Demonstration:
Refer to **5. Specific Recordkeeping Requirements** and **7. Specific Control Equipment Operating Conditions.**

c. For all emission units listed above: For emissions from a control device or stack the permittee shall not cause, suffer, allow or permit the emission into the open air of particulate matter from any affected facility which is in excess of the quantity specified in 401 KAR 59:010, Appendix A: [401 KAR 59:010, Section 3(2)]
   i. For process weights < 0.5 tons/hour: 2.34 lbs/hr
   ii. For process weights < 30 tons/hour: $E = 3.59P^{0.62}$
   Where
   E = rate of emission in lb/hr; and
   P = process weight rate in tons/hr.

Compliance Demonstration:
Compliance with the hourly particulate emission limits described above shall be determined by comparing the allowable rate to the actual rate as calculated below:

$$E_{PM_{ij}} = \frac{P_{ij} \times EF_{PM_j}}{h_{ij}} \times \left(1 - CE_j\right)$$

Where:
i = month;
j = unit;
E_{PMij} = actual average hourly particulate emission rate from unit j during month i (pounds/hour);
P_{ij} = actual specific operating parameter for month i (units/month);
EF_{PMj} = overall uncontrolled particulate emission factor as determined from the most recent performance test or approved by the Division for unit j (pounds/unit);
h_{ij} = actual total hours of operation for unit j during month i (hours/month)
CE_j = overall control efficiency (%) of any air pollution control equipment associated with unit j.

d. The permittee shall not allow PM/PM_{10} emissions from the Anode Bake Furnace to exceed 5.14 lbs/hr based on a 3-hour average. [To preclude 401 KAR 51:017]

Compliance Demonstration:
Refer to **3. Testing Requirements (k)** and **4. Specific Monitoring Requirements (d)**.

e. For SO_2 standards, refer to **SECTION D 3.**

3. Testing Requirements:

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

a. The permittee shall prepare a site-specific test plan prior to the initial performance test according to the requirements of 40 CFR 63.7(c). The test plan shall include procedures for conducting the initial performance test and for subsequent performance tests required in 40 CFR 63.848 for emission monitoring. In addition to the information required by 40 CFR 63.7, the test plan shall include: [40 CFR 63.847(b)]
   i. Procedures to ensure a minimum of three runs are performed annually for the primary control system for each source; [40 CFR 63.847(b)(1)]
   ii. For a source with a single control device exhausted through multiple stacks, procedures to ensure that at least three runs are performed annually by a representative sample of the stacks satisfactory to the Division; [40 CFR 63.847(b)(2)]
   iii. Procedures for sampling single stacks associated with multiple anode bake furnaces; [40 CFR 63.847(b)(4)]

b. The permittee shall conduct the performance test: For an existing anode bake furnace that was shut down at the time compliance would have otherwise been required and is subsequently restarted, by the 45th day from the start of the second anode bake cycle (but no later than the 180th day from the startup of the anode bake furnace). [40 CFR 63.847(c)(3)(ii)]

c. All performance tests shall be conducted in accordance with the applicable requirements of the general provisions in 40 CFR 63, Subpart A, the approved test plan, and the procedures in 40 CFR 63.847. Performance tests shall be conducted under such conditions as the Division specifies to the permittee based on representative performance of the affected source for the period being tested. Upon request, the permittee shall make available to the Division such records as may be necessary to determine the conditions of performance tests. [40 CFR 63.847(d)]

d. If the permittee has performed more than one test of primary emission control device(s) for a bake furnace during the previous consecutive 12 months, the average of all runs performed in the previous 12-month period shall be used to determine the contribution from the primary emission control system. [40 CFR 63.847(d)(3)]

e. For each anode bake furnace, the permittee shall measure and record the emission rate of TF, POM, PM and Hg exiting the exhaust stacks(s) of the primary emission control system. In accordance with 40 CFR 63.847(e)(3) and (4), the permittee shall compute and record the average of at least three runs each year to determine compliance with the applicable emission limits for TF, POM, PM and Hg. Compliance is demonstrated when the emission rates of TF, POM, PM and Hg are equal to or less than the applicable TF, POM, PM and Hg emission limits in 40 CFR 63.843. [40 CFR 63.847(d)(4)]

f. Using the procedures in 40 CFR 63.847 and in the approved test plan, the permittee shall determine TF, PM, Hg and POM emissions from each anode bake furnace on an annual basis. The permittee shall compute and record the annual average of TF, PM, Hg and POM emissions from at least three runs to determine compliance with the applicable emission

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

limits. A minimum of four dscm per run must be collected for monitoring of Hg emissions. The owner or operator must include all valid runs in the annual average. [40 CFR 63.848(c)]

g. The permittee shall use the following reference methods to determine compliance with the applicable emission limits for TF, POM, PM, and conduct visible emissions observations: [40 CFR 63.849(a)]
   i. Method 1 in 40 CFR 60, Appendix A for sample and velocity traverses; [40 CFR 63.849(a)(1)]
   ii. Method 2 in 40 CFR 60, Appendix A for velocity and volumetric flow rate; [40 CFR 63.849(a)(2)]
   iii. Method 3 in 40 CFR 60, Appendix A for gas analysis; [40 CFR 63.849(a)(3)]
   iv. Method 13A or Method 13B in 40 CFR 60, Appendix A, or an approved alternative, for the concentration of TF where stack or duct emissions are sampled; [40 CFR 63.849(a)(4)]
   v. Method 315 in 40 CFR 63, Appendix A or an approved alternative method for the concentration of POM where stack or duct emissions are sampled; [40 CFR 63.849(a)(6)]
   vi. Method 5 in 40 CFR 60, Appendix A or an approved alternative method for the concentration of PM where stack or duct emissions are sampled; [40 CFR 63.849(a)(8)]
   vii. Method 29 in 40 CFR 60, Appendix A or an approved alternative method for the concentration of mercury, nickel and arsenic where stack or duct emissions are sampled; [40 CFR 63.849(a)(10)]
   viii. Method 22 in 40 CFR 60, Appendix A or an approved alternative method for determination of visual emissions; [40 CFR 63.849(a)(12)]

h. The permittee may use an alternative test method for TF or POM emissions providing: [40 CFR 63.849(e)]
   i. The permittee has already demonstrated the equivalency of the alternative method for a specific plant and has received previous approval from the U.S. EPA or the Division for TF or POM measurements using the alternative method; or [40 CFR 63.849(e)(1)]
   ii. The permittee demonstrates to the satisfaction of the Division that the results from the alternative method meet the criteria specified in 40 CFR 63.848(d)(1) and (d)(3) through (d)(6). The results from the alternative method shall be based on simultaneous sampling using the alternative method and the following reference methods: [40 CFR 63.849(e)(2)]
      1) For TF, Methods 13 and 14 or Method 14A in 40 CFR 60, Appendix A; or [40 CFR 63.849(e)(2)(i)]
      2) For POM, Method 315 in 40 CFR 63, Appendix A and Method 14 in 40 CFR 60, Appendix A. [40 CFR 63.849(e)(2)(ii)]

i. Sulfur Content Sampling and Testing:

~~iii. A sample of green anode and bake anode shall be tested monthly for sulfur content.~~

Commented [PS2]: This new set of sulfur content sampling conditions are being proposed as part of the enhanced compliance determination method for the SO2 emission limits in Section D and for cross reference by the SO2 calculation methodology documented in a new proposed Appendix B of the permit.

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

i. A sample of green anode paste (normally from the conveyor downstream of the mixers and upstream of the anode press block) shall be collected at least once daily on days the Paste Plant is operating, except in the case of equipment malfunction.
1) The green anode paste samples shall be analyzed using ASTM Method D6376 or an approved alternative method to determine the sulfur content.
2) On days when samples cannot be obtained or analyzed due to a malfunction, the sulfur content for that day shall be set to the average of the values from the most recent day and next following day samples are obtained.

ii. Core samples shall be extracted from baked anode blocks removed from the Anode Bake Furnace at least once per day on days the Furnace is in operation, except in the case of equipment malfunction.
1) The daily core samples shall be extracted from a distribution of no less than four baked anodes and the sulfur content averages shall be attributed to anodes for the day the blocks were removed from the Furnace.
2) The samples shall be analyzed using ASTM Method D6376 or an approved alternative method to determine the sulfur content.
3) On days when core samples cannot be obtained due to a malfunction or other situation in which the core drilling sampling equipment is inoperable, the sulfur content for that day shall be set to the average of the values from the most recent day and next following day samples are obtained.

~~iv.~~**iii. A sample of packing coke used in the Anode Bake Furnace as cover material shall be collected and analyzed at least once per month using ASTM Method D6376 or an approved alternative method to determine the sulfur content. If raw petroleum coke as received is used for packing coke, the permittee may alternatively use the average of sulfur content from certificate of analysis data provided by the supplier for shipments received in the prior month in lieu of conducting on-site analyses.**

~~i. A sample of packing coke shall be tested quarterly for sulfur content.~~

j. The following compliance tests shall be performed to demonstrate compliance with the emission limitations listed above and to develop emission factors:
   i. The permittee shall perform testing according to Reference Method 10 for CO emissions once within the 5 year permit term of permit V-19-010.
   ii. The permittee shall perform testing according to Reference Method 6 for SO_2 emissions once within the 5 year permit term of permit V-19-010. The test shall be performed within 180 days of the issuance of permit V-19-010.
   iii. The permittee shall conduct a performance test for particulate emissions (filterable PM, $PM_{10,}$ $PM_{2.5}$ and Condensable Particulate) from each stack once during the within the 5 year permit term of permit V-19-010. The tests shall be performed according to Reference Method 5 and Reference Method 201A/202 for particulate emissions (filterable PM, $PM_{10,}$ $PM_{2.5}$ and Condensable Particulate).
   iv. The permittee may use other test methods as approved by the Division.

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

k. Pursuant to 401 KAR 59:005, Section 2(2) and 401 KAR 50:045, Section 1, performance testing using the reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division.

4. Specific Monitoring Requirements:

a. The permittee shall determine the operating limits and monitoring frequency for each control device that is to be monitored as required in 40 CFR 63.848(f). [40 CFR 63.847(h)]
   i. For anode bake furnaces, the permittee shall determine upper and/or lower operating limits, as appropriate, for each monitoring device for the emission control system from the values recorded during each of the runs performed during the initial performance test and from historical data from previous performance tests conducted by the methods specified in 40 CFR 63, Subpart LL. [40 CFR 63.847(h)(1)]
   ii. The permittee may redetermine the upper and/or lower operating limits, as appropriate, based on historical data or other information and submit an application to the Division to change the applicable limit(s). The redetermined limits shall become effective upon approval by the Division. [40 CFR 63.847(h)(3)]

b. The permittee shall install, operate, and maintain a monitoring device to determine the daily weight of green anode material placed in the anode bake furnace. The weight of green anode material may be determined by monitoring the weight of all anodes or by monitoring the number of anodes placed in the furnace and determining an average weight from measurements of a representative sample of anodes. [40 CFR 63.848(j)]

c. The permittee shall monitor the following: [401 KAR 52:020, Section 10]
   i. Monthly hours of operation;
   ii. Monthly material processed;
   iii. Hourly PM emissions, calculated monthly.

d. For the Anode Bake Furnace, refer to Appendix A for CAM requirements pursuant to 40 CFR 64.

e. Refer to **SECTION F.**

5. Specific Recordkeeping Requirements:

a. The permittee shall develop a written startup plan as described in 40 CFR 63.847(l)(1) through (4), to be followed during startup periods of bake furnaces. Compliance with the startup plan will be demonstrated through site inspection(s) and review of site records by the Division. The written startup plan must contain specific procedures to be followed during startup periods of anode bake furnaces, including the following: [40 CFR 63.847(l)]
   i. A requirement to develop an anode bake furnace startup schedule. [40 CFR 63.847(l)(1)]
   ii. Records of time, date, duration of anode bake furnace startup and any nonroutine actions taken during startup of the furnaces. [40 CFR 63.847(l)(2)]
   iii. A requirement that the associated emission control system be operating within normal parametric limits prior to startup of the anode bake furnace. [40 CFR 63.847(l)(3)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

iv. A requirement to take immediate actions to stop the startup process as soon as practicable and continue to comply with 40 CFR 63.843(f) if the associated emission control system is off line at any time during startup. The anode bake furnace restart may resume once the associated emission control system is back on line and operating within normal parametric limits. [40 CFR 63.847(l)(4)]

b. The permittee shall maintain files of all information (including all reports and notifications) required by 40 CFR 63.10(b) and by 40 CFR 63, Subpart LL. [40 CFR 63.850(e)]

c. The permittee shall retain each record for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The most recent 2 years of records must be retained at the facility. The remaining 3 years of records may be retained offsite; [40 CFR 63.850(e)(1)]

d. The permittee may retain records on microfilm, on a computer, on computer disks, on magnetic tape, or on microfiche; [40 CFR 63.850(e)(2)]

e. The permittee may report required information on paper or on a labeled computer disc using commonly available and compatible computer software; and [40 CFR 63.850(e)(3)]

f. In addition to the general records required by 40 CFR 63.10(b), the permittee shall maintain records of the following information: [40 CFR 63.850(e)(4)]
   i. Daily production rate of green anode material placed in the anode bake furnace; [40 CFR 63.850(e)(4)(ii)]
   ii. Records, such as a checklist or the equivalent, demonstrating that the daily visual inspection of the exhaust stack for each control device has been performed as required in 40 CFR 63.848(g), including the results of each inspection; [40 CFR 63.850(e)(4)(xi)]
   iii. Records documenting the corrective actions taken when the limit(s) for an operating parameter established under 40 CFR 63.847(h) were exceeded or when visible emissions indicating abnormal operation were observed from a control device stack during a daily inspection required under 40 CFR 63.848(g). [40 CFR 63.850(e)(4)(xiii)]
   iv. Records documenting the portion of TF that is measured as particulate matter and the portion that is measured as gaseous when the particulate and gaseous fractions are quantified separately using an approved test method; [40 CFR 63.850(e)(4)(xv)]
   v. Records of the occurrence and duration of each malfunction of operation (i.e. process equipment) or the air pollution control equipment and monitoring equipment; and [40 CFR 63.850(e)(4)(xvi)]
   vi. Records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.843(f) and 63.844(f), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation. [40 CFR 63.850(e)(4)(xvii)]

g. The permittee shall maintain the following records:

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

i. Monthly hours of operation;
ii. Number of green anodes and total mass of green anodes (tons) placed in the anode bake furnace per month. ~~Monthly material processed;~~
iii. Number of baked anodes and total mass of baked anodes (tons) removed from the anode bake furnace per month, including baked anodes or baked anode pieces scrapped for quality or other reasons.
~~ii.~~**iv. Mass of packing coke (tons) added to anode bake furnace per month.**
v. Records of sulfur content measurements of green anode **paste**~~s~~, baked anodes, and packing coke used in quantifying SO_2 emissions using the **methodology documented in Appendix B of the permit** ~~Century Aluminum SO_2 Calculation Engine~~.
~~iii.~~**vi. Records of the occurrence, duration, and corrective actions taken for malfunctions of the green and baked anode sampling equipment.**

h. For the Anode Bake Furnace:
i. The permittee shall comply with the recordkeeping requirements specified in **SECTION F**. The permittee shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan required pursuant to 40 CFR 64.8 and any activities undertaken to implement a quality improvement plan, and other supporting information required to be maintained under 40 CFR 64 (such as data used to document the adequacy of monitoring, or records of monitoring maintenance or corrective actions). [40 CFR 64.9(b)(1)]
ii. Instead of paper records, the permittee may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements. [40 CFR 64.9(b)(1)]

i. Refer to **SECTION F.**

6. Specific Reporting Requirements:

a. The permittee shall submit recommended accuracy requirements to the Division for review and approval. All monitoring devices required by 40 CFR 63.848 must be certified by the permittee to meet the accuracy requirements and must be calibrated in accordance with the manufacturer's instructions. [40 CFR 63.848(k)]

b. One-time notification of startup of an existing anode bake furnace that was shut down for a long period and subsequently restarted. The permittee must provide written notice to the Administrator at least 30 days before the startup. [40 CFR 63.850(a)(9)]

c. Within 60 days after the date of completing each performance test (as defined in 40 CFR 63.2) required by 40 CFR 63, Subpart LL, the permittee shall submit the results of the performance tests following the procedure specified in either 40 CFR 63.850(b)(1) or (b)(2). [40 CFR 63.850(b)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

d. In addition to the information required under 40 CFR 63.10 of the General Provisions, the permittee shall provide semiannual reports containing the information specified in 40 CFR 63.850(d)(1) and (2) to the Division. [40 CFR 63.850(d)]
   i. Excess emissions report. As required by 40 CFR 63.10(e)(3), the permittee shall submit a report (or a summary report) if measured emissions are in excess of the applicable standard. The report shall contain the information specified in 40 CFR 63.10(e)(3)(v) and be submitted quarterly. [40 CFR 63.850(d)(1)]
   ii. If there was a malfunction during the reporting period, the permittee shall submit a report that includes the number, duration and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limitation to be exceeded. The report shall also include a description of actions taken by the permittee during a malfunction of an affected source to minimize emissions in accordance with 40 CFR 63.843(f) and 63.844(f), including actions taken to correct a malfunction. [40 CFR 63.850(d)(2)]

e. All reports required by 40 CFR 63, Subpart LL not subject to the requirements in 40 CFR 63.850(b) or (c) shall be sent to the Administrator at the appropriate address listed in 40 CFR 63.13. If acceptable to both the Administrator and the permittee, these reports may be submitted on electronic media. The Administrator retains the right to require submittal of reports subject to 40 CFR 63.850(b) in paper format. [40 CFR 63.850(f)]

f. The Division will notify the permittee in writing of the need for additional time to review the submissions in 40 CFR 63.851(a)(1) through (a)(5) or of approval or intent to deny approval of the submissions in 40 CFR 63.851(a)(1) through (a)(5) within 60 calendar days after receipt of sufficient information to evaluate the submission. The 60-day period begins after the permittee has been notified that the submission is complete. [40 CFR 63.851(a)]
   i. The test plan in 40 CFR 63.847(b); [40 CFR 63.851(a)(1)]
   ii. Request to change limits for operating parameters in 40 CFR 63.847(h)(3); [40 CFR 63.851(a)(2)]
   iii. Request for an alternative method in 40 CFR 63.849(e)(2). [40 CFR 63.851(a)(5)]

g. The Division will notify the permittee in writing whether the submission is complete within 30 calendar days of receipt of the original submission or within 30 days of receipt of any supplementary information that is submitted. When a submission is incomplete, the Division will specify the information needed to complete the submission and will give the permittee 30 calendar days after receipt of the notification to provide the information. [40 CFR 63.851(b)]

h. For the Anode Bake Furnace:
   i. On and after the date specified in 40 CFR 64.7(a) by which the permittee must use monitoring that meets the requirements of 40 CFR 64, the permittee shall submit monitoring reports to the Division in accordance with **SECTION F**. [40 CFR 64.9(a)(1)]
   ii. Refer to Appendix A for reporting requirements under 40 CFR 64.

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

i. Refer to **SECTION F.**

7. Specific Control Equipment Operating Conditions:

a. The permittee shall install, operate, calibrate, and maintain a continuous parameter monitoring system for each emission control device. The permittee shall submit for approval by the Division a description of the parameter(s) to be monitored, the operating limits, and the monitoring frequency to ensure that the control device is being properly operated and maintained. An explanation of the criteria used for selection of the parameter(s), the operating limits, and the monitoring frequency, including how these relate to emission control also shall be submitted to the Division. Except as provided in 40 CFR 63.848(l), the following monitoring devices shall be installed: [40 CFR 63.848(f)]

i. For dry alumina scrubbers, devices for the measurement of alumina flow and air flow; [40 CFR 63.848(f)(1)]

ii. For emission sources control device exhaust streams for which the permittee chooses to demonstrate continuous compliance through bag leak detection systems the permittee shall install and operate a bag leak detection system according to the requirements in 40 CFR 63.848(o), and the permittee shall set the operating limit such that the sum of the durations of bag leak detection system alarms does not exceed 5 percent of the process operating time during a 6-month period. [40 CFR 63.848(f)(6)]

iii. For emission sources control device exhaust streams for which the permittee chooses to demonstrate continuous compliance through a PM CEMS, the permittee shall install and operate a PM CEMS according to the requirements in 40 CFR 63.848(p). The permittee shall determine continuous compliance averaged on a rolling 30 operating day basis, updated at the end of each new operating day. All valid hours of data from 30 successive operating days shall be included in the arithmetic average. Compliance is demonstrated when the 30 operating day PM emissions are equal to or less than the applicable emission limits in 40 CFR 63.843. [40 CFR 63.848(f)(7)]

b. The owner or operator of an existing affected source that is equipped with a control device and is subject to a PM limit shall: [40 CFR 63.848(g)]

i. Install and operate a bag leak detection system in accordance with 40 CFR 63.848(f)(6); or [40 CFR 63.848(g)(1)]

ii. Install and operate a PM CEMS in accordance with 40 CFR 63.848(f)(7); or [40 CFR 63.848(g)(2)]

iii. Visually inspect the exhaust stack(s) using Method 22 on a twice daily basis (at least 4 hours apart) for evidence of any visible emissions indicating abnormal operations and, shall initiate corrective actions within 1 hour of a visible emissions inspection that indicates abnormal operation. Corrective actions shall include, at a minimum, isolating, shutting down and conducting an internal inspection of the compartment that is the source of the visible emissions that indicate abnormal operations. [40 CFR 63.848(g)(3)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

c. If a monitoring device for a primary control device measures an operating parameter outside the limit(s) established pursuant to 40 CFR 63.847(h) or if visible emissions indicating abnormal operation are observed from the exhaust stack of a control device during a daily inspection, the permittee shall initiate corrective action procedures within 1 hour. Failure to initiate the corrective action procedures within 1 hour or to take the necessary corrective actions to remedy the problem is a violation. [40 CFR 63.848(h)]

d. If the limit for a given operating parameter associated with monitoring a specific control device is exceeded six times in any semiannual reporting period, then any subsequent exceedance in that reporting period is a violation. For the purpose of determining the number of exceedances, no more than one exceedance shall be attributed in any given 24-hour period. [40 CFR 63.848(i)]

e. The permittee may monitor alternative control device operating parameters subject to prior written approval by the Division. [40 CFR 63.848(l)]

f. Refer to **SECTION E**.

~~f~~g. Refer to SECTION I for requirements associated with the construction of a new stack for the Anode Bake Furnace.

SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS

1. As required by Section 1b of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26; compliance with annual emissions and processing limitations contained in this permit, shall be based on emissions and processing rates for any twelve (12) consecutive months.

2. *CO, COS, D/F, HCl, HF, Mercury, NO_x, PM, PM_{10}, $PM_{2.5}$, POM, SO_2,* and *TF* emissions, measured by applicable reference methods, or an equivalent or alternative method specified in 40 C.F.R. Chapter I, or by a test method specified in the state implementation plan shall not exceed the respective limitations specified herein.

3. ***Sulfur Dioxide Emissions:***

   a. Sulfur dioxide (SO_2) emissions shall not exceed 5,853 total tons per year, on a rolling 12-month basis, from the production of primary aluminum by electrolysis (potline operations) and anode bake furnace operations. [401 KAR 51:017]

   b. Monthly average SO_2 emissions shall not exceed 1,129 lb/hr in any calendar month from the potline operations and anode bake furnace operations combined. [401 KAR 53:010]

   c. Monthly average SO_2 emissions shall not exceed 237 lb/hr in any calendar month from the anode bake furnace operations. [401 KAR 53:010]

   ~~a.~~**d. Monthly average SO_2 emissions shall not exceed 1,018 lb/hr in any calendar month from the production of primary aluminum by electrolysis (potlines operations). [401 KAR 53:010]**

   Compliance Demonstration: Compliance with the ~~annual~~ SO_2 emission limit**s** shall be determined by computing the **monthly average SO_2 emission rates (lb/hr) from the anode bake furnace operations and the potline operations via the mass balance methodology documented in Appendix B (Sulfur Mass Balance Methodology) of the permit**~~total primary aluminum production SO_2 emissions monthly using the Century Aluminum SO_2 Calculation Engine (an example of the form can be found in the Kentucky Division for Air Quality tracking system "TEMPO"); and calculating a rolling 12-month SO_2 emission total for the primary aluminum process (potlines and anode baking furnaces)~~.

~~3.~~**4.** Source-wide gaseous fluorides shall not exceed the amounts that violate, or interfere with the attainment or maintenance of, ambient air quality standards as specified in 401 KAR 53:010 and the following concentrations: [401 KAR 53:005, Section 1(3)]

Primary Standards:	Annual Average:	400 µg/m^3 (0.5 ppm)
	Maximum 24 Hour Average:	800 µg/m^3 (1.0 ppm)
Secondary Standards:	Maximum monthly average:	0.82 µg/m^3 (1.0 ppb)
	Maximum weekly average:	1.64 µg/m^3 (2.0 ppb)

Commented [PS3]: This legacy BACT limit condition from the V-05-088 R2 permit action is now subsumed by the new proposed combined SO2 emission limit of 1,129 lb/hr (equivalent to an annual potential to emit of 4,946 tpy). If possible, it therefore can be removed. Or, if it has to be retained because of the tie to a past PSD permit action, it is of no consequence.

SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS (CONTINUED)

Maximum 24-hour average: 2.86 µg/m^3 (3.5 ppb)
Maximum 12-hour average: 3.68 µg/m^3 (4.5 ppb)

Gaseous Fluoride (HF) Compliance Demonstration:
To provide reasonable assurance that HF emission limits are being met, the source shall demonstrate compliance by the following methods or other Division approved method:

A. The permittee shall comply with the terms in 401 KAR 61:165, in addition to **SECTION B, Subject Item 4, 1. Operating Limitations (e)**, **4. Specific Monitoring Requirements (d)**, **5. Specific Recordkeeping Requirements (g)**, and **6. Specific Reporting Requirements (j).**

B. The permittee shall submit to the Division quarterly ambient monitoring data reports. If either the maximum 24-hour average primary standard or any of the secondary standards for HF listed above and defined in 401 KAR 53:010, Appendix A, are exceeded more than once annually, than any subsequent exceedance is a violation. The reports shall clearly identify any exceedances of the ambient standards.

C. Ambient air modeling for HF shall be performed at the time of each renewal, and based on the modeled maximum impact area and in consideration of common siting criteria (e.g., Appendix E to 40 CFR 58, Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring), the Division may require relocation of the ambient air monitoring equipment as provided for in **SECTION B, Subject Item 4, 4. Specific Monitoring Requirements (d).**

D. In the event of a recorded violation of the HF standard as listed above and defined in 401 KAR 53:010, Appendix A, the Division shall require that remedial measures be initiated from the source(s) responsible for causing said violation. [401 KAR 61:165, Section 4(2)] This includes, but is not limited to:
   i. A corrective action plan, identifying possible causes for the exceedances and remedies initiated; and
   ii. A follow-up testing plan to ensure that the exceedance of the standard has been remedied.

E. Major modifications triggering a significant permit revision under 401 KAR 52:020, or changes that can increase emissions of HF above the projected emission rate that exceeds the Kentucky Ambient Air Quality Standard for HF, will require additional air dispersion modeling be completed with the revision application.

~~4.~~**5.** Source-wide total fluorides emissions shall not exceed the amounts that violate, or interfere with the attainment or maintenance of, ambient air quality standards as specified in 401 KAR 53:010 and the following concentrations: [401 KAR 53:005, Section 1(3)]

Dry weight basis (as fluoride ion) in and on forage for consumption by grazing ruminants:

SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS (CONTINUED)

Secondary Standards:	Growing Season:	40 ppm
	Two-Month Average:	60 ppm
	One-month average:	80 ppm

Total Fluoride (TF) Compliance Demonstration:
To provide reasonable assurance that TF emission limits are being met, the source shall demonstrate compliance by the following methods or other Division approved method:

A. The permittee shall comply with the terms in 401 KAR 61:165, in addition to **SECTION B, Subject Item 4, 1. Operating Limitations (e)**, **4. Specific Monitoring Requirements (d)**, **5. Recordkeeping Requirements (g)**, and **6. Specific Reporting Requirements (j).**

B. Major modifications triggering a significant permit revision under 401 KAR 52:020, or changes that can increase emissions of TF above the projected emission rate that exceeds the Kentucky Ambient Air Quality Standard for TF, will require additional air dispersion modeling be completed with the revision application. Continued compliance for TF is demonstrated if the model shows compliance with the primary standards for gaseous fluorides.

~~5.~~6. ~~The permittee shall, within 1 year of the final issuance of permit V-19-010, relocate the ambient air monitor required by 401 KAR 61:165 and **SECTION B, Subject Item 4, 1. Operating Limitations (e).** The monitor shall be located at the location proposed in the plan for relocation submitted to the Division on December 8, 2016 (Across from the DRR SO_2 monitoring location). Refer to **SECTION I** for the relocation schedule and steps.~~

Commented [PS4]: This permit condition can be removed from the permit since the relocation of the ambient monitoring station was completed in 2021.

SECTION I - COMPLIANCE SCHEDULE

This section contains compliance schedule requirements as specified by Section 1c of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26. Progress reports on this schedule must be submitted at least semiannually, or at more frequent intervals if required in the specific conditions outlined below. Reports shall include the following items: (a) Dates scheduled for achieving each milestone, and the actual date that compliance is achieved; and (b) An explanation of why dates in /the schedule of compliance were not or will not be met, and preventive or corrective measures adopted to ensure that compliance with future items will be brought back on schedule. Compliance certifications shall be mailed to the addresses listed in General Condition F.9

~~Regarding the relocation of the HF Ambient Air Monitor required by 401 KAR 61:165, Section 6(3), the following steps will be completed within 12 months after the final issuance of renewal permit, V-19-010.~~

~~1. The permittee shall prepare the new approved site in terms of mowing, ground clearing, drive access improvements (if needed), shelter procurement and set up (including leveling via block, poured concrete, or other foundation or site leveling), set up of security measures (install a surrounding security fencing with a lock and key for the gated entryway as well as the door of the structure), and electrical supply hookup. The electrical supply hookup will include internal shelter installation of ample amperage, outlets, lighting, and controls. The permittee shall also install a combined heating and cooling unit appropriate for the size of the shelter with required electrical supply and outlet.~~

~~2. The permittee shall prepare all internal space, electrical, probe set up, and access arrangements at the approved HF monitoring site. The probe for sampling will be installed in accordance with 40 CFR 58, Appendix E, Probe and Monitor Path Siting Criteria for Ambient Air Quality Monitoring.~~

~~3. After steps 1 and 2 are complete, the permittee shall contact the Division for Air Quality Technical Services Branch to request a site meeting to review and verify that the new area inside and outside the monitoring structure, ports, and other infrastructure aspects are properly configured and ready to have HF monitoring equipment installed. The site will be considered ready for installation upon final approval by the Division.~~

~~4. The permittee shall refurbish, clean, and calibrate the HF sampler and analyzer components as necessary consistent with the manufacturer's operating instructions. As part of this process, the permittee shall determine whether any of the existing HF monitoring equipment will need to be replaced and upgraded or whether the existing monitoring instrumentation is still usable and up to current HF monitoring specifications and can be relocated and reused at the new site. If the permittee purchases new instrumentation, the permittee shall submit notification describing the new equipment to the Division for approval.~~

~~5. The permittee shall pack up all serviceable components of the existing HF ambient monitoring system at the existing site and, along with any new purchased equipment, carefully transport to the approved new site location. The equipment will be installed consistent with all manufacturer recommended instructions.~~

~~6. The permittee shall field test the overall system consisting of the sampling probe, analyzer, data logger, and other miscellaneous instrumentation. Field testing will include any flow~~

SECTION I - COMPLIANCE SCHEDULE (CONTINUED)

~~calibrations required as well as testing of the timer and its control of the tape movement and opacity measurements of the tape system.~~

~~7. Steps 4-6 shall not take longer than 1 month, during which time the monitor will be unable to gather data.~~

~~8. Immediately following the transportation, installation, and field test of the ambient HF monitoring system at the approved new location, the monitor will begin ambient air sampling and measurements on the same schedule as the existing monitor, with monitoring taking place at least every eighth day (e.g. Monday of the first week, Tuesday of the second week, Wednesday of the third week, etc.) Two individual 12-hour samples will be collected each sample day. These measurements will be logged by a data logger and averaged to obtain a 24-hour sample. As additional data is available, weekly, monthly and annual averages will obtained with the data to compare against the respective KYAAQS for gaseous fluorides. All data will be summarized and submitted to the Division quarterly. The reports shall clearly identify any exceedances of the ambient standards.~~

~~9.~~**1.** ~~After steps 1-6 are complete, the permittee shall arrange for a site meeting with Division personnel to review and verify the operation and data collection procedures of the newly relocated HF ambient monitoring system. Prior to this meeting, a facility SOP shall be prepared for the operation, maintenance, and data collection (QA/QC) procedures to be followed by facility personnel. The SOP shall be submitted for to the Division for review prior to the meeting.~~

Commented [PS5]: These conditions should be removed from the permit since the relocation of the ambient fluoride monitoring station was completed in 2021.

1. Regarding the construction/erection of a new stack for the exhaust from the A-446 Dry Scrubber/Baghouse serving the Anode Bake Furnace (EU N2) as required to support the SO_2 Nonattainment Modeling Demonstration (August 2024), the following actions shall be completed: [401 KAR 53:010]

- **a. The stack shall be located southeast of the existing bank of the A-446 dry alumina scrubber system within 100 meters of coordinate 456,089.60 m East, 4,168,045.80 m North (UTM Zone 16), or other approved alternative site.**
- **b. The discharge height of the new stack shall be not less than 213.2 ft from ground-level.**
- **c. The permittee shall complete design and onsite erection of the stack, and the construction of tie-in ductwork and all associated components necessary to redirect exhaust gases from the A-446 scrubber system to the new stack, and commence use of the new stack as soon as practically feasible, but in no case later than December 31, 2025 or 12 months following issuance of Final Permit V-19-010 R3, whichever is later.**

2. Regarding the construction/erection of new permanent fence sections on the western and southern property boundary, the following actions shall be completed: [401 KAR 53:010]

- **a. Erect a permanent fence between the main plan entrance and the southwest tip of the property boundary allowing controlled access openings as needed for the existing Big Rivers coal road.**
- **b. Erect a permanent fence along the southern property boundary from the southwest tip to the Green River, allowing controlled access openings for existing railroad and road crossings.**
- **c. At a minimum, the erected fence sections shall possess the following characteristics:**

SECTION I - COMPLIANCE SCHEDULE (CONTINUED)

1) **The fence must be a permanent continuous physical structure approximately 5 feet tall that prevents easy access to the property.**
2) **The fence shall be comprised of durable materials that can withstand weather conditions and attempts at entry (e.g., chain link, barbed wire, metal, wood, etc.).**
3) **The fence should be clearly visible and recognizable as a boundary with appropriate signage (e.g., "No Trespassing" or "Private Property") at regular intervals along the fence.**

d. **The permittee shall complete the installation of the new fence as soon as practically feasible, not later than November 30, 2024 or within 3 months following issuance of Final Permit V-19-010 R3, whichever is later.**

APPENDIX B

SO_2 Mass Balance Emissions Calculation Methodology To Be Used for Demonstrating Compliance with SO_2 Emission Limits

Commented [PS6]: Placeholder for adding new proposed Appendix B to the Title V permit. Refer to Attachment 3 of the permit application.

November 8, 2024

Ms. Michelle McCloskey
Permit Support Section Manager
Kentucky Division for Air Quality
300 Sower Blvd, 2nd Floor
Frankfort, KY 40601
(Submitted via eForms Permit Review Branch Portal)

RE: Response to First Notice of Deficiency
Title V Permit Significant Revision Application – Activity APE20240004
Century Aluminum Sebree, LLC
Source ID 21-101-00029; Agency Interest #1788; Permit V-19-010 R2

Dear Ms. McCloskey:

Century Aluminum Sebree, LLC (Century) owns and operates a primary aluminum production facility in Robards, Kentucky near the town of Sebree (Sebree Plant). On August 14, 2024, Century submitted a Title V permit revision application to establish new federally enforceable conditions limiting SO_2 emissions as well as other requirements consistent with the emissions and stack configuration used in the State Implementation Plan (SIP) modeling demonstration analysis submitted on August 7, 2024. As part of its review of this permit application, the Kentucky Division for Air Quality (Division) requested additional information in an October 10, 2024 letter. Responses providing the information requested are contained herein.

Each of the requested information items in the Division's October 10, 2024 letter are restated in blue font followed by our response to each item in plain black text.

1. *The application requests installation of a new stack in accordance with good engineering practice (GEP), please provide documentation and/or calculations supporting that 213.2 ft (65 m) is GEP stack height for the Anode Bake Furnace. For reference, the requirements for GEP are in 401 KAR 50:042.*

The primary requirement of 401 KAR 50:042 is found in Section 3, which states that "*no stack height in excess of GEP height, nor any other dispersion techniques, shall be used to determine the emissions limitations required for control of any pollutant regulated by the cabinet or the U.S. EPA.*" Thus, the height of a stack equal to or shorter than the GEP height is creditable for determining emission limitations through dispersion modeling. GEP height is defined in 401 KAR 50:042 Section 2(5) as the greater of 65 meters, a height calculated based on an equation in the regulation, or a height demonstrated by a fluid model or field study. The option to complete a fluid model or field study is not often used.

The full physical stack height is creditable for dispersion modeling for stacks shorter than or equal to 65 meters even if the equation height is less than 65 meters. GEP calculations are only relevant for stacks greater than 65 meters in height and are not necessary to justify modeling the new proposed Anode Bake Furnace stack as proposed.

Century Aluminum Sebree LLC 270.521.7811
9404 State Route 2096 270.521.7305 (F)
Robards, KY 42452

2. Please provide an analysis of the current potline scrubber stacks and whether they currently meet GEP stack height specifications in 401 KAR 50:042.

The current potline scrubber stack tops are 24.57 meters above ground level for the Potline #1 and Potline #2 scrubber stacks and 31.98 meters above ground level for the Potline #3 scrubber stacks. As discussed in the previous response, 401 KAR 50:042 defines GEP height as the greater of 65 meters, a height calculated based an equation in the regulation, or a height demonstrated by a fluid model or field study. Therefore, all stacks equal to or less than 65 meters tall meet the GEP stack height requirements to be creditable for setting emission limits through air dispersion modeling.

Stacks shorter than the GEP height may experience building downwash, which is simulated in the AERMOD modeling analysis. However, stacks that are shorter than 65 meters do not require calculations or other justification to show that the physical stack height is creditable for modeling under the GEP stack height regulation.

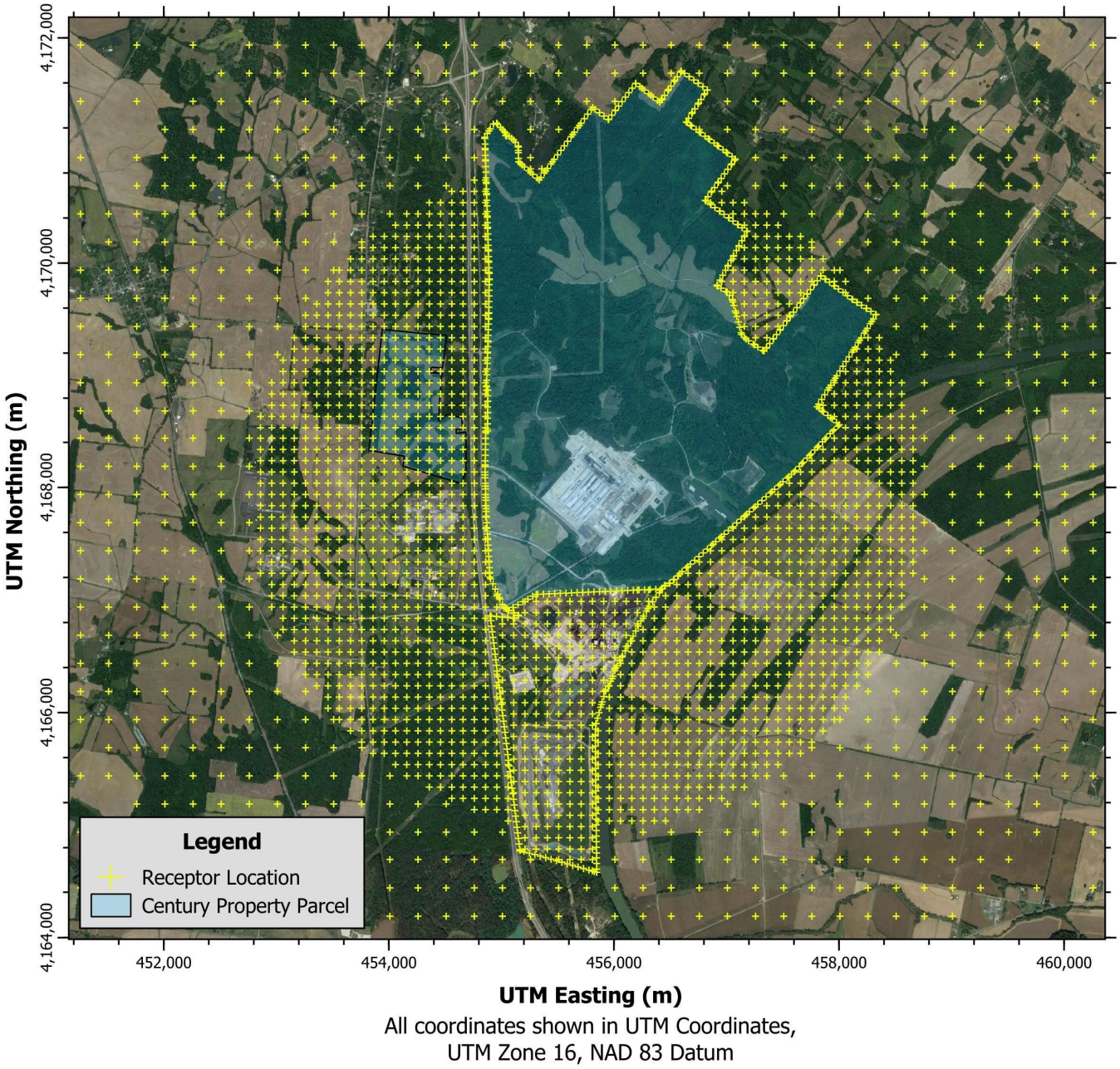
3. Please provide a map of the property that indicates the location of the current facility boundary and fencing as well as where the new proposed fencing will be installed.

Figure 2-6 in the August 7, 2024 SIP Modeling Demonstration Report illustrated the ambient air boundary used in the dispersion modeling analysis. This is carried forward to this letter as Figure 1 below to provide an overall map of the property. Figure 2 shows an aerial of the property area south of the main plant entrance where new fencing is located.

Referring to Figure 1, approximately mid-way down the western side of the Sebree Plant property line is a back entrance to the plant via Moss and Moss Road. An existing fence was already in place from Moss and Moss Road heading south down the western property boundary to the main plant entrance (shown in orange on Figure 2). In October 2024, Century completed a project to install new fencing from this point all the way down the remaining western property boundary to the southernmost point (shown in yellow on Figure 2). A new rolling gate was also installed at the old Big Rivers coal truck access road. Pictures of this section of new fencing are provided in Figure 3.

From the southernmost tip on the western boundary, the new fencing then was extended heading north-northeast along the north edge of the rail spur link approximately 580 feet to the edge of a stream. Here, there is a deep gully that provides a barrier to entering the property. A picture of this section of new fencing is shown in Figure 4. The western and southern edges of the Big Rivers property are also fenced. Thus, between the stream and the Green River, there is no access point to the property except via the Big Rivers coal truck access road entrance on the western property edge, which is now gated. Century had originally planned to extend the new fencing all the way across the southern property boundary to the Green River. However, because the area between the stream and the Green River is inaccessible to the general public, this final segment of fencing is not necessary, and the ambient air boundary used in the modeling analysis is still appropriate.

Figure 1. Ambient Air Boundary View of Receptor Grid and Property



All coordinates shown in UTM Coordinates,
UTM Zone 16, NAD 83 Datum

Figure 2 Illustration of New Fencing Installed October 2024

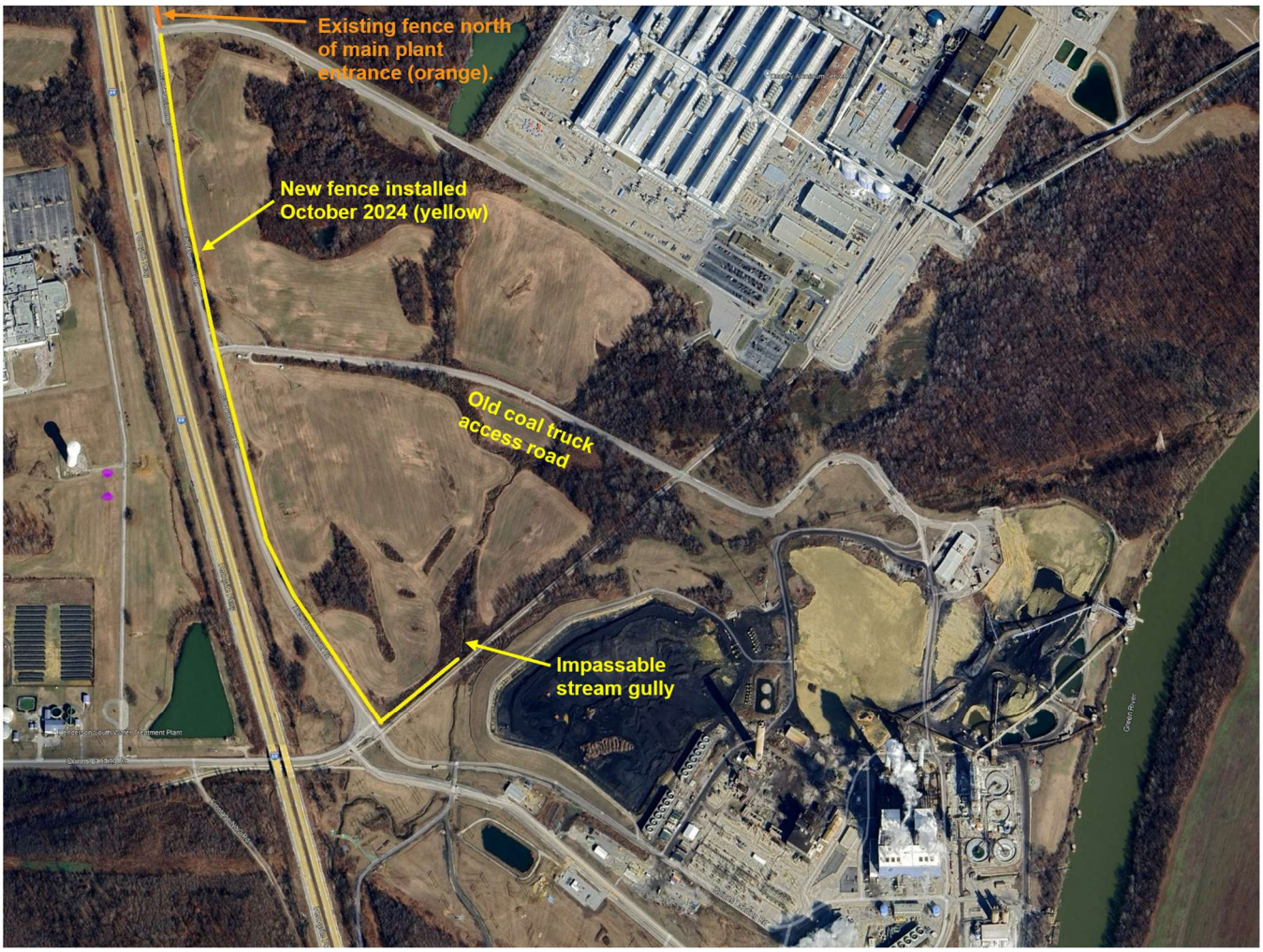


Figure 3 New Fencing on Western Boundary and at Southernmost Corner





Figure 4 New Fencing Along Rail Spur Up to Stream Gully



4. Please provide a DEP7007N form reflecting the proposed stack parameters for the new stack.

An updated DEP7007N form that includes the forecast stack parameters for the planned new ABF stack is provided in Attachment 1 of this letter.

5. Please provide the calculations and supporting data for the "Highest ABF Scenario" and "Highest Potlines Scenario" emission limits in Table 1.

The derivation of the proposed lower combined SO_2 emission rate limit for the ABF and potlines was presented in the emission calculations provided in the August 14, 2024 permit application. An updated version of these calculations expanded to include more detail to support the responses to the information requested by the Division is provided with this letter in Attachment 3. As shown in Section 1.4.3 of these calculations, based on the mass balance approach with maximum production capacity inputs and other operating limit derived inputs, Century proposed a new combined SO_2 30-day limit of **1,129 lb/hr** in the August 14, 2024 permit application. Of this emissions total, in a typical month, 158 lb/hr (14%) is expected to be emitted from the ABF on average and 971 lb/hr (86%) is expected to be emitted from the potlines on average.

Century anticipated that the Division would also want to establish new SO_2 emission limits on the Anode Bake Furnace and Potlines separately to account for the distribution of SO_2 emissions from these two sources used in the SIP modeling analysis. However, these individual limits would need account for month-to-month variability in the distribution of emissions between the Anode Bake Furnace and Potlines, which can be caused by numerous process factors such as changes in green anode sulfur content, anode bake furnace performance, and potline anode consumption rates. Therefore, Century proactively proposed separate individual emission limits at the expected source-specific maximums (i.e., the "highest ABF" and "highest potlines" scenarios) and also conducted the SIP modeling demonstration under all three scenarios.

The individual limits proposed for the ABF and potlines were selected based on a review of the historical variability of the distribution of SO_2 emissions between the ABF and potlines. For example, over the past three years, while the average ABF emissions predicted by the mass balance is expected to be 14% of total emissions, the average ABF emissions have varied between 11% to 21%. Thus, the individual 30-day average emission rate limit proposed for the ABF was set at 21% of the plant-wide limit, which equates to **237 lb/hr** (21% × 1,129 lb/hr = 237 lb/hr). Refer to Section 1.5.1 in the expanded emission calculations provided in Attachment 3.

For the potlines, while average emissions predicted by the mass balance are expected to be 86% of the total emissions in a typical month, they varied between 79% to 89% of total emissions on an annual average basis in the past three years. Looking at individual months, the potlines never exceeded more than 90.2% of total emissions in a single month. Because the potlines make up a larger portion of emissions, this more conservative monthly maximum distribution value was used. Thus, the individual 30-day average emission rate limit proposed for the potlines was set at 90.2% of the combined plant-wide limit, which equates to **1,018 lb/hr**. Refer to Section 1.5.2 in Attachment 3.

6. *The application provides justification for not installing CEMS on the multiple individual Potline stacks, but does not include information regarding the feasibility of CEMS on the new proposed single ABF furnace stack. Please provide additional information regarding the feasibility of CEMS on the proposed stack for the Division's consideration.*

The are currently no known fatal technical limitations that would prevent installing an SO_2 CEMS on the planned new ABF stack. However, the initial installation costs and on-going annual operating costs associated with maintaining the CEMS would be significant. These costs would be further elevated by the fact that there are currently no CEMS in operation at the plant and thus no existing trained staff or infrastructure for maintaining a CEMS.

Based on preliminary discussions with prospective CEMS vendors, the initial installation, set-up, acceptance testing, commissioning, and training costs for a CEMS shelter, SO_2 CEMS, flowrate monitor and a DAHS to calculate emission rates, automate daily calibration, handle data validation, and calculate 30-day rolling emission limits is estimated to range from $250,000 to $300,000. RATA certifications and maintenance are expected to be $50,000 to $100,000 per year and there also will be up to one full time equivalent (FTE) of labor costs incurred. This is an significant financial burden that would be imposed that Century maintains is unwarranted nor mandated by regulation.

As discussed in the EPA's 2014 SO_2 Nonattainment SIP Guidance, CEMS may be a suitable method for demonstrating compliance with a long-term average emission limit.[1] However, EPA also acknowledges in this guidance that it may be suitable for compliance to be demonstrated without a CEMS when SO_2

[1] Guidance for 1-Hour SO_2 Nonattainment SIP Submissions, Memorandum from Stephen D. Page, Director, to Regional Air Division Directors, Regions 1-10, dated April 23, 2014, Page 39.

emissions are a direct function of process rates and sulfur content data and those sulfur content measurements are of sufficient frequency and accuracy to effectively characterize SO_2 emissions. This is precisely the case with respect to SO_2 emissions from the ABF furnace at Century Sebree. Therefore, although installation and operation of a CEMS is technically feasible for the ABF furnace stack based on information known at this time, Century asserts that it would not be cost effective and that the existing mass balance approach provides a suitably accurate and appropriate methodology for calculating emissions and demonstrating compliance.

7. Please provide additional information regarding the change in packing coke usage from 10 kg/mt to 5.5 kg/mt in 2022.

Packing coke to be used as cover material for the Anode Bake Furnace firing pits is delivered from a storage tank via hoppers and forklift trucks into two storage pits within the ABF building in batches. When packing coke is needed to seal a set of firing pits for the baking process, cranes retrieve the packing coke from these storage pits and place it in the firing pits.

Because of the batch nature of the delivery process of packing coke to the ABF and the surge capacity of the in-building storage pits, the transfer rate of packing coke to the ABF in a given month cannot be used to track the usage rate. For example, in one month, if inventories are low, a large volume of packing coke may be transferred to the storage pits at one time, but it may take a few months to deplete this inventory. Instead, the packing coke usage rate is determined based on accumulated packing coke transfer rates over a longer time period (e.g., 12-months).

Historically, for the SO_2 mass balance, a packing coke usage rate of between 10 and 15 kg/mt had been used as the default consumption rate based on long term consumption averages. However, in January 2022, as part of an effort to refine and verify inputs used in the mass balance, Century reviewed more recent usage rate data and found that on average, the consumption rate had been consistently lower than in earlier years. Thus, the default usage rate factor to be used for SO_2 mass balance emissions calculations was updated to 5.5 kg/mt to reflect the more recent consumption rate data available at that time (in early 2022).

In response to the Division's inquiry, Century compiled and reviewed the most recent packing coke usage trend data. For the 12-month period ending December 2023, the average packing coke consumption rate was 4.0 kg/mt, slightly less than the default value being used for emission inventory purposes (i.e., the plant was slightly overestimating SO_2 emissions). For the 12-month period ending January 2024, the average consumption rate was 5.5 kg/mt, matching the default value exactly. Based on the data available thus far in 2024 through September, the usage rate has been trending back upwards.

The packing coke usage rate input value for the SO_2 mass balance does not significantly impact the SO_2 emissions. For example, a doubling of the packing coke usage rate from 5.5 to 11 kg/mt only results in a calculated increase in SO_2 emissions of roughly 39 tpy, or less than 1% of the total plant-wide potential emission rate. Nonetheless, consistent with the other refinements that Century proposed to use for the SO_2 mass balance calculations moving forward in the August 14, 2024 application, we are now proposing to also update the methodology used to set the packing coke usage rate for each month's mass balance calculation. Specifically, rather than using the same standard default factor each month, Century proposes to use the most recent 12-month rolling average actual packing coke usage rate (based on packing coke delivery rates to the ABF) for each month's SO_2 emission calculations.

8. For all parameters used in the calculations in Attachment 2 that rely on data external to the permit revision submittal, please provide the supporting data and a description of how this data is acquired (e.g. daily sampling, etc.). This includes the following: Ratio of baked anode to green anode weight, green anode to pet coke sulfur ratio, ratio of baked anode sulfur content to green anode sulfur content, and anode consumption rate.

The following sections provide a description of how key values used in the monthly mass balance calculations, aside from process rates, are determined.

Ratio of Baked Anode to Green Anode Weight

The average baked anode to green anode weight ratio is used to set the green anode process rate as a function of the baked anode process rate for each month's mass balance calculation. Here is how this ratio is determined:

- Each month, the following production data is compiled:
  - Gross production of green anodes in the Paste Plant (lbs)
  - Number of green anode blocks produced
  - Gross production of baked anodes in the ABF (lbs)
  - Number of baked anode blocks pulled from ABF
- The average green anode weight for the month is calculated by dividing the green anode production by the green anode block tally.
- The average baked anode weight for the month is calculated by dividing the baked anode production by the baked anode block tally.
- The total green anodes processed in the furnace for the month (tons GA/month) is calculated by multiplying the average green anode weight by the number of anodes pulled from the furnace.
- The total baked anodes processed in the furnace for the month (tons BA/month) is calculated by multiplying the average baked anode weight by the number of anodes pulled from the furnace.
- These two values are divided to get the baked anode:green anode ratio for the month.
- For monthly mass balance calculations, the actual calculated production ratio for that month has historically been used for that month's calculations. However, for the purpose of defining a potential SO_2 emission rate, an average ratio value must be specified. As documented in the permit application, Century chose to use the 3-year average baked anode:green anode weight rate to define the "potential" green anode production rate based on the ABF capacity. For example, the 2021-2023 average baked anode:green anode weight ratio is 95.44%.
- To improve the quality of the monthly mass balance calculation to smooth other the swings in calculated emissions due to variances between green anode and baked anode average weights, moving forward, Century is also proposing to use the three-year baked anode:green anode weight ratio to set the green anode process rate used in the mass balance for a month based on the actual known baked anode process rate for that month. This methodology is detailed in the proposed new Appendix B for the Title V permit that was provided in Attachment 3 of the August 14, 2024 permit application package.

Green Anode, Baked Anode, and Pet Coke Sulfur Data and Ratios

The green anode:pet coke sulfur content ratio and the baked anode:green anode sulfur content ratio are not directly used in the monthly mass balance calculations. They are simply tracked so that these variables can be trended over time. As described below, these ratios are relevant, however, for purposes of defining a potential SO_2 emission rate. Here is how the sulfur content values and ratios are determined:

- Sulfur content data for the three primary anode materials are based on frequent on-site sampling and laboratory measurements:
  - Samples of paste used to make the green anodes are collected from just upstream of the Anode Press roughly once per day. Core samples drilled from baked anodes are collected roughly two to three times per day. Refer to the process flow diagrams provided in Attachment 2, which show the specific sampling point locations.
  - The green anode paste and baked anode core samples are analyzed within the Sebree Plant's laboratory by qualified staff using ASTM Method D6376 to measure the sulfur content.
  - All the sulfur content samples for a month are averaged to determine that month's average green anode and baked anode sulfur contents used in the mass balance.
  - Pet coke and packing coke samples are collected and analyzed using the same method but less frequently. Normally, the packing coke sulfur content is measured roughly once per week. Alternatively, if raw pet coke is being used as the packing material, sulfur content data from that month's received shipments may be used in lieu of in-house analytical testing data.
- A green anode is comprised of pitch and recycled anode butts material, in addition to the raw pet coke. The sulfur content in pitch and recycled anode butts is lower than in pet coke. Thus, the sulfur content of a green anode will always be less than that of the raw pet coke.
  - Pitch typically makes up around 15% of the total anode weight and its sulfur content is currently limited in the permit to 0.8%, whereas the pet coke sulfur content limit is 3%.
  - Anode butts material is the residual anode material removed from the spent anodes pulled from the pots, which is crushed and recycled into the green anode mix. It normally comprises around 20% of the mix recipe. Due to the environment the anode is exposed to while it is in the pots, the sulfur content of the residual butts material recovered from anodes is below that of baked anodes. Thus, mixing this recycled butts material into the process results in a lower overall green anode sulfur content (relative to the raw pet coke).
  - For conducting monthly mass balance calculations, the SO_2 emissions are based on that month's actual average sulfur content values. However, for purposes of defining a potential SO_2 emission rate for setting the emission limit, average forecast values for the two key sulfur content ratios had to be used.
    - As documented in the emission calculations provided in Attachment 3 of this response letter, Century used the three-year average of the green anode sulfur content:raw pet coke sulfur content ratio to determine what the green anode sulfur content would be for purposes of defining potential emissions, based on the maximum allowable pet coke sulfur content of 3%. As shown in Section 1.2.1 of the emission calculations, this ratio was 73.11%.
    - Century used the three-year average of the monthly baked anode:green anode sulfur content ratio to determine what the baked anode sulfur content would be for purposes of defining potential emissions. As shown in Section 1.2.2, this was 94.72%.
    - Note that these calculations for determining potential emissions are different than the SO_2 mass balance that will be used monthly to calculate actual SO_2 emissions. For the actual emissions calculations, there is no need to define a theoretical maximum green anode and bake anode sulfur content. Instead, the actual green anode and baked anode sulfur contents based on the samples collected that month are used.

Anode Consumption Rate

The anode consumption rate is one of the most critical performance metrics tracked by the plant for the potline process. It is also one of the primary inputs to the mass balance to determine the SO_2 emissions from the potlines. At a gross level, the anode consumption rate is based on the difference in weight of anodes set in the pots for a month, which is known to a high degree of accuracy, and the weight of the residual anode butts material recovered from spent anodes. Corrections for burn-offs and other variables

are used to adjust this number. Note that Century would be tracking anode consumption rate to the highest accuracy feasible regardless of whether it was needed as an input for the mass balance.

The anode consumption rate does not vary significantly from month to month. As noted in Section 1.4.1 of the emission calculations in Attachment 3, for purposes of defining the new proposed SO_2 emission limit, Century used the three-year (2021-2023) average anode consumption rate of 0.431 ton anode/ton aluminum produced. Over this period, the actual anode consumption rate value in any given month ranged from 0.403 to 0.457 ton/ton, roughly 6-7% of the average.

9. Please provide a process flow diagram that specifically indicates each location in the process where each material is sampled for sulfur content for use in the mass balance calculations.

Refer to the Sebree Plant air permitting process flow diagrams provided in Attachment 2 of this letter. The sampling locations for the pet coke/packing coke, green anode paste, and baked anode core samples are shown as red circles on Figures 2, 4, and 5 in this Attachment. With regard to the raw pet coke, samples are taken either directly from barge shipments or from the conveyor leading from the barge to the receiving tanks. The green anode paste samples are collected from the M-14-BC belt conveyor. The baked anode core samples are taken from baked anodes after they are pulled from the furnace, upstream of the anode sawing station.

10. The application does not allocate emissions from the potlines between stack emissions and roof monitor emissions. Division required SO2 testing for the potlines (stack and roof monitors) in the last renewal to demonstrate compliance, but also to help better determine the appropriate allocations for emissions. Please provide emission calculations that determine a capture efficiency of the potlines for SO2 emissions and allocates emissions appropriately between the stacks and roof monitors using test data.

Potline A-398 Stack SO_2 Emissions

Condition 3.r.ii in Section B (Existing Potlines) of the existing Title V permit, V-19-010 R2, requires that a once-per-permit term SO_2 emissions test be performed of the stack emissions from a representative potline. Separately, the permit requires that an annual SO_2 emissions test be conducted for the roof vent of a representative potline.

Since this testing condition was established, the plant has conducted an SO_2 emissions test of the potline stacks once for the current permit term in June 2020. In accordance with an approved test protocol, the emissions were measured from the South A-398 (163S) dry alumina scrubber stacks for Potline 3, as Potline 3 is deemed representative of all three potlines.[2] The results of the June 2020 stack test are summarized in Table 1. The monthly average SO_2 emission rate calculated via the SO_2 mass balance for Potline 3 in the same month the stack tests were conducted is also shown in Table 1 for comparison. The new SO_2 emission limit for the potlines that was proposed in the August 14, 2024 Title V permit revision application attributable to the Potline 3 stacks, is also shown for comparison.

[2] All three potlines at the Sebree Plant have the same design, process, and production capacity and would be expected to have similar emission characteristics.

Table 1 Comparison of Potline Stack Test Data with Mass Balance

A-398 Dry Alumina Scrubber Stack Test Event 1
6/30/2020; 3 1-hr test runs between 11:30 a.m. and 2:50 p.m.

SO2 Mass Emission Rates (lb/hr)		
Stack Test		
Potline 3 A-398 Scrubber South (Total for 5 reactors):	152.5 lb/hr	See Executive Summary table in submitted test report
Potline 3 primary emissions (for 2 A-398 scrubbers):	**305.0 lb/hr**	152.5 lb/hr x 2 A-398 scrubbers = 305.0 lb/hr
Mass Balance for June 2020 *(Refer to Attachment 3 of 8/14/2024 permit application for explanation of mass balance calculation method.)*		
Potline metal production:	18,342.49 tons	
Average anode consumption rate:	0.419 ton/tonAl	
Average baked anode sulfur content:	1.83%	
% of sulfur assumed to be emitted as COS:	6.25%	
Assumed capture efficiency achieved by A-398 scrubber system:	98%	
Predicted total potlines stack emissions:	258.00 ton/mo	18,342.49 tons Al x 0.419 ton/ton/Al x 1.83% x (1-6.25%) x 98% x 64 lb SO2/32 lb S = 258.00 ton/mo
Potline 3 percent of total monthly production, June 2020:	34.4%	
Potline 3 monthly average stack emissions predicted by mass balance:	246.2 lb/hr	258.00 ton/mo x 34.4% x 2000 lb/ton / 30 days / 24 hr/day = 246.2 lb/hr
New Emission Limit Proposed		
Proposed new monthly average SO2 emission limit for potlines:	1,018 lb/hr	Refer to Table 1 in August 14, 2024 permit revision application
Allocation of potlines limit to Potline 3 stacks with 98% capture achieved:	332.7 lb/hr	1,018 lb/hr / 3 potlines x 98% = 332.7 lb/hr

In the August 14, 2024 permit revision application, Century proposed that a new potlines-specific SO_2 emission limit of 1,018 lb/hr be established, consistent with the emission rate represented in the SIP modeling demonstration analysis. Century does not believe that individual emission limits on each potline are warranted or necessary, nor that separate emission limits should be imposed on the stack and roof portion of the SO_2 emissions from each potline. This is in part due to the fact that the dispersion modeling analyses conducted have demonstrated that the culpability of each potline stack and roof vent to the ambient receptors to the west and south of the facility where the highest predicated impacts occur, are close in value (i.e., each potline stack set has about the same ambient impact and each roof vent has about the same ambient impact). Additional data from the modeling analyses validating this statement can be provided if needed.

As the expected emissions from each potline are roughly the same, splitting up the potlines emission limit into individual limits for each potline, and further between stack and roof emission limits is not necessary to support the modeling demonstration, but it would impose significant testing, monitoring, and recordkeeping cost and compliance burdens resulting from more emission limits (since six separate actual/allowable emission limit spreads would have to be maintained versus one). Nonetheless, for purposes of drawing a comparison with the SO_2 test data available, the portion of the proposed 1,018 lb/hr potlines emission limit that would be attributable to the Potline 3 stacks can be calculated as 332.7 lb/hr as shown in Table 1. Thus, although it was a single 3-hour snapshot emission measurement, the SO_2 emissions measured during the June 30, 2024 test for the Potline 3 stacks of 305.0 lb/hr is less than the proposed limit.

With regard to the SO_2 mass balance, actual emissions are calculated on a monthly average basis. The overall monthly average SO_2 emissions calculated for the potlines, and then allocated to the Potline 3 stacks based on its proportional production rate and the assumed 98% capture efficiency is 246.2 lb/hr as shown in Table 1. Although it would not be appropriate to compare an emission rate measured during a single 3-hour period in the month to the overall monthly average emission rate, the values in this case are

reasonably close with the monthly average mass balance value being roughly 81% of the actual short-term measured emission rate.

Potline Roof Vent SO_2 Emissions

Prior to the current permit term, SO_2 emissions testing was not required of the potlines given the use of a mass balance for directly calculating emissions. Since the start of the current Title V Permit term, when the new SO_2 testing provision was established, the SO_2 emissions from the potline roof vents have been measured twice—once in June 2020 and once in January 2024.[3] As with the stacks, both tests were conducted on Potline 3. These tests were conducted using the downcomer method in accordance with an approved protocol. The M-106 downcomer is tied to the south section of Potroom Building 106, which is one of the two potroom buildings comprising Potline 3. Refer to Figure 8 of the process flow diagrams provided in Attachment 2 to this response letter.

The results of the June 2020 and January 2024 roof vent SO_2 emissions tests are shown in Table 2. For comparison, the monthly average SO_2 emission rate calculated via the SO_2 mass balance for the Potline 3 roof vents in the same month the tests were conducted is shown for comparison. The portion of the new SO_2 emission limit for the potlines that was proposed in the August 14, 2024 Title V permit revision attributable to the Potline 3 roof vents is also shown for comparison.

Table 2 Comparison of Potline Roof Test Data with Mass Balance

Roof Test Event 1		
6/29/2020; 3 1-hr test runs between 1:30 p.m. and 4:24 p.m.		
Mass Emission Rates (lb/hr)		
Potroom Bldg 6, South Section M-106 Downcomer measured emissions:	2.66 lb/hr	See Executive Summary table in submitted test report
Potline 3 total roof vent emissions:	**10.62 lb/hr**	2.66 lb/hr from downcomer x 4 potroom sections = 10.62 lb/hr
Potline 3 monthly average roof emissions predicted by mass balance:	5.0 lb/hr	Assumes 98% capture to A-398 stacks
Proposed new monthly average SO2 emission limit for potlines:	1,018 lb/hr	Refer to Table 1 in August 14, 2024 permit revision application
Allocation of potlines limit to Potline 3 roof with 98% capture achieved:	6.8 lb/hr	1,018 lb/hr / 3 potlines x 2% = 6.8 lb/hr
Roof Test Event 2		
1/9/2024; 3 1-hr test runs between 12:00 p.m. and 3:48 p.m.		
Mass Emission Rates (lb/hr)		
Potroom Bldg 6, South Section M-106 Downcomer measured emissions:	0.52 lb/hr	See Executive Summary table in submitted test report
Potline 3 total roof vent emissions:	**2.08 lb/hr**	0.52 lb/hr from downcomer x 4 potroom sections = 2.08 lb/hr
Potline 3 monthly average roof emissions predicted by mass balance:	5.8 lb/hr	Assumes 98% capture to A-398 stacks
Proposed new monthly average SO2 emission limit for potlines:	1,018 lb/hr	Refer to Table 1 in August 14, 2024 permit revision application
Allocation of potlines limit to Potline 3 roof with 98% capture achieved:	6.8 lb/hr	1,018 lb/hr / 3 potlines x 2% = 6.8 lb/hr

For the June 29, 2020 test, the measured SO_2 emission rate from the Potroom Building 106 south section downcomer was 2.66 lb/hr. Since there are two sections per potroom building and two potroom buildings

[3] After the issuance of the Title V renewal permit V-19-010 on November 11, 2019, Century conducted the first roof vent SO_2 emission test in June 2020 on the day before the SO_2 emissions test of the potline stacks was conducted. Roof vent testing for SO_2 was not completed in 2021, 2022, and 2023 due to a misinterpretation of the testing condition. This matter was raised by the Division's regional office in an October 26, 2023 communication and a NOV was subsequently issued on November 8, 2023. Century immediately prepared and submitted an SO_2 emission test protocol on November 9, 2023, and conducted the next roof vent SO_2 emission test on January 9, 2024, the soonest date feasible within the 60-day notification time requirement. Century will be conducting roof vent tests annually through the remainder of the current permit term with the next test planned for first quarter 2025.

per potline, the equivalent total measured roof vent emission rate for Potline 3 for this test is 10.62 lb/hr. For the January 9, 2024 test, the measured Potline 3 roof vent emission rate was 2.08 lb/hr. While the results of the first test are higher than the attributable allocation of the new proposed combined potlines emission limit to the Potline 3 roof vents, 6.8 lb/hr, the value from the second test is well below it. The average of the two tests, 6.4 lb/hr, is less than the proposed limit.

The monthly average mass-balance calculated SO_2 emission rates for the Potline 3 roof vents for June 2020 and January 2024 are 5.0 lb/hr and 5.8 lb/hr, respectively. Thus, while the mass balance underpredicts the measured emissions in the first test, it over predicts relative to the second test. The average test results are within 15% of the mass-balance predicted emission rates. As noted in the discussion of the stack results, there are obvious limitations in making a comparison between a single 3-hour snapshot measured emission rate and a monthly average emission rate. While Century believes that SO_2 emissions from the potlines should be relatively steady state, there still would be expected to be some variability. Also, the spread between the measured potline roof vent emissions and mass balance predicted emissions is very small (around 1%) as a percentage of total SO_2 emissions.

Potline A-398 Scrubber Capture Efficiency

For the SO_2 mass balance calculations, the amount of SO_2 emissions generated in the pots sitting inside the potroom buildings that is captured by the A-398 dry alumina scrubber systems must be specified in order to calculate a separate potline stack and roof vent emission rate. Unlike for fluorides, the capture efficiency is not important for control purposes as the A-398 scrubber systems do not provide an SO_2 control benefit. Instead, the capture efficiency is only relevant for knowing the location of the SO_2 emissions, which have different dispersion characteristics. With effective pot shield management practices, Century believes that 98% of SO_2 emissions generated will be captured by the A-398 scrubber systems, leaving 2% of the emissions to be released from the potroom building roof vents.

As stated in Condition 3.r.ii of the permit, the purpose of the supplementary roof vent testing was only to determine the contribution from the roof vents to total SO_2 emission rates. This obligation was fulfilled from the testing conducted in the permit term as the relative mass emission rates from the stacks and roof vents were quantified (See Table 1 and Table 2). However, the testing programs completed were not designed nor were they intended to enable a direct determination of the capture efficiency of the alumina dry scrubber control systems for each potline. Obtaining that information would require a much more costly and extensive testing program involving simultaneous sampling by multiple testing crews of a representative potline stack and roof vent over an extended period of time. The one SO_2 test conducted of the stacks for Potline 3 was conducted the day after the roof vent testing was conducted. Since the tests were conducted at different times, the results cannot be directly used to calculate capture efficiency. Regardless, some inferences can be made.

The combined SO_2 emission rates from the June 29, 2020 roof vent test and June 30, 2020 stack test was 315.6 lb/hr. The stack emission rate measured on June 30, 2024 is 97% of the total, close to the 98% capture assumed in the mass balance calculations. For the January 9, 2024 test, only roof vent SO_2 emissions were measured. However, during this same testing program both roof vent CO and stack emissions were measured, albeit on two separate back-to-back days. Although CO and SO_2 have different densities, it would be reasonable to assume that the A-398 capture efficiency achieved for CO would be roughly the same as for SO_2. The measured CO emission rate from the Potroom Building 6 downcomer on January 9, 2024 was 3.43 lb/hr, corresponding to a total Potline 3 roof vent emission rate of 13.72 lb/hr. The measured CO emission rate from the Potline 3 South A-398 scrubber stacks was 827.2 lb/hr, corresponding to a total Potline 3 stack emission rate of 1,654.4 lb/hr. In this case, the stack CO emissions comprise 99.2% of the total, which is greater than the 98% capture efficiency assumed. Thus, although no direct determination of capture efficiency can be determined from the available test data, the data collected

for SO_2 and CO suggests that the 98% capture efficiency assumption used in the mass balance is reasonable.

11. The emission calculations use a mass balance method for allocating emissions between the ABF and the potlines. While this generally may be appropriate, the Division required SO2 testing for the potlines (stack and roof monitors) and the ABF in the last permit renewal to demonstrate compliance, but also to help better determine the appropriate allocations for emissions. This data should be used to validate the assumptions being made in the mass balance calculations. The Division requires an analysis of the stack data compared to the mass balance calculations.

An analysis and comparison of measured SO_2 emission rates from the potline stacks compared to the mass balance calculations was provided in response to the previous question. A comparison of SO_2 emissions test data to mass balance predicted emissions for the ABF is covered in this response.

Condition 3.k.ii in Section B (Anode Bake Furnace) of the existing Title V permit, V-19-010 R2, requires that a once-per-permit term SO_2 emissions test be performed of the stack emissions from the Anode Bake Furnace (ABF) within 180 days of issuance of the permit. Consistent with an extension granted by the Division at the time due to the COVID-19 pandemic, this ABF SO_2 emissions test was conducted on July 8, 2020. The results of this test are shown in Table 3. For comparison, the monthly average SO_2 emission rate calculated via the SO_2 mass balance for the ABF in July 2020 is shown for comparison. The new SO_2 emission limit for the ABF that was proposed in the August 14, 2024 Title V permit revision application is also shown to show that measured and mass-balanced calculated actual emissions are below the future proposed limit.

Table 3 Comparison of ABF Stack Test Data with Mass Balance

Anode Bake Furnace Stack Test Event 1
7/8/2020; 3 1-hr test runs between 10:40 a.m. and 3:08 p.m.

Mass Emission Rates (lb/hr)		
A-446 Dry Alumina Scrubber inlet duct measured SO2 emissions:	**106.8 lb/hr**	See Executive Summary table in submitted test report
ABF monthly average stack emissions predicted by mass balance:	196.8 lb/hr	SO2 mass balance for July 2020
Proposed new monthly average SO2 emission limit for ABF:	237 lb/hr	Refer to Table 1 in August 14, 2024 permit revision application

In the August 14, 2024 permit revision application, Century proposed that a new ABF-specific SO_2 emission limit of 237 lb/hr be established, consistent with the emission rate represented in the SIP modeling demonstration analysis. Thus, although it was a single 3-hour snapshot emission measurement, the SO_2 emissions measured during the July 8, 2020 test for the ABF stack of 106.8 lb/hr is less than the proposed limit.

With regards to the SO_2 mass balance, the overall monthly average SO_2 emissions calculated for the ABF in July 2020 was 196.8 lb/hr as shown in Table 3, meaning that the mass balance was overpredicting emissions by a factor of 1.84. However, it would not be appropriate to compare an emission rate measured during a single 3-hour period in the month to the overall monthly average emission rate. Century believes that there is more short-term variability in the SO_2 emissions from the ABF compared to the potlines, which is why the directly calculated SO_2 emissions from the mass balance over a monthly period are believed to be more accurate and reliable than short-term snapshot emissions measurements from stack tests. The results of the SO_2 emission tests that have been conducted do not warrant any significant adjustments or revisions

to the current mass balance approach. As noted in response to Item 7 above, Century is proposing a relatively minor refinement to how the monthly packing coke usage rate is input in the mass balance.

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If you have any questions or need additional information as part of the agency's review and processing of the permit revision application, please do not hesitate to contact Mr. Paul Smith of Trinity Consultants at (859) 803-1314, psmith@trinityconsultants.com or me at 270-521-6215, christopher.goddard@centuryaluminum.com. We are also open to conducting an in-person meeting in Frankfort to talk through the agency's questions if deemed beneficial.

Sincerely,

Chris Goddard

Chris Goddard
Environmental Manager

Attachments

cc: Mr. Levi Chaffin, Plant Manager, Century
Mr. Paul J. Smith, P.E., Trinity Consultants

ATTACHMENT 1

DEP7007N Form for Anode Bake Furnace

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007N

Source Emissions Profile

__ Section N.1: Emission Summary
__ Section N.2: Stack Information
__ Section N.3: Fugitive Information
__ Section N.4: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI

Source Name: Century Aluminum Sebree, LLC
KY EIS (AFS) #: 21- 101-00029
Permit #: V-19-010 R2
Agency Interest (AI) ID: 1788
Date: 11/6/2024

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
COMB6,N2	Anode Bake Furnace (261 Furnace)	1	Anode Bake Furnace (261 Furnace)	A-446 Reactors Stacks (3)	A-446	EE	17.74	CO	3.6	Most Recent Test (5/31/2021)	na	na	63.86	na	279.69	na
COMB6,N2	Anode Bake Furnace (261 Furnace)	1	Anode Bake Furnace (261 Furnace)	A-446 Reactors Stacks (3)	A-446	EE	17.74	PM	17.0	Most Recent Test (10/17/2023)	na	99%	301.55	3.02	1320.78	13.21
COMB6,N2	Anode Bake Furnace (261 Furnace)	1	Anode Bake Furnace (261 Furnace)	A-446 Reactors Stacks (3)	A-446	EE	17.74	PM10	2.7087	9/10/2015 Stack Test + Condens.	na	99%	48.05	0.48	210.44	2.10
COMB6,N2	Anode Bake Furnace (261 Furnace)	1	Anode Bake Furnace (261 Furnace)	A-446 Reactors Stacks (3)	A-446	EE	17.74	PM2.5	2.6785	PM2.5:PM10 Ratio from 10/2008 Test	na	99%	47.51	0.48	208.10	2.08
COMB6,N2	Anode Bake Furnace (261 Furnace)	1	Anode Bake Furnace (261 Furnace)	A-446 Reactors Stacks (3)	A-446	EE	17.74	SO2	8.8946	Derived from Nominal Hourly ER of 157.8 lb/hr	na	na	157.8	na	691.05	na

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
COMB6,N2	Anode Bake Furnace (261 Furnace)	1	Anode Bake Furnace (261 Furnace)	A-446 Reactors Stacks (3)	A-446	EE	17.74	POM	0.051	Most Recent Test (5/24/2023)	na	(Note 1)	0.90	na	3.96	na
COMB6,N2	Anode Bake Furnace (261 Furnace)	1	Anode Bake Furnace (261 Furnace)	A-446 Reactors Stacks (3)	A-446	EE	17.74	H2SO4	0.1074	Engineering Estimate	na	na	1.91	na	8.34	na
COMB6,N2	Anode Bake Furnace (261 Furnace)	1	Anode Bake Furnace (261 Furnace)	A-446 Reactors Stacks (3)	A-446	EE	17.74	Fluoride	0.01044	Most Recent Test (5/24/2023)	na	(Note 1)	0.185	na	0.811	na
COMB6,N2	Anode Bake Furnace (261 Furnace)	1	Anode Bake Furnace (261 Furnace)	A-446 Reactors Stacks (3)	A-446	EE	17.74	HF	0.00261	Most Recent Test (5/24/2023)	na	(Note 1)	0.046	na	0.203	na
COMB6,N2	Anode Bake Furnace (261 Furnace)	1	Anode Bake Furnace (261 Furnace)	A-446 Reactors Stacks (3)	A-446	EE	17.74	Mercury	2.07459E-05	PMACT Limit (1.7 ug/dscm)	na	na	0.00037	na	0.00161	na
COMB6,N2	Anode Bake Furnace (261 Furnace)	1	Anode Bake Furnace (261 Furnace)	A-446 Reactors Stacks (3)	A-446	EE	17.74	CO2	294.7	40CFR98 Subpart F, Eqn F-7, F-8	na	na	5,228	na	22,899	na
COMB6,N2	Anode Bake Furnace (261 Furnace)	2	ABF Gas Burners	A-446 Reactors Stacks (3)	A-446	EE	0.050395	CO	84	AP-42, Chp.1.4, Tbl 1.4-2	na	na	4.23	na	18.54	na
COMB6,N2	Anode Bake Furnace (261 Furnace)	2	ABF Gas Burners	A-446 Reactors Stacks (3)	A-446	EE	0.050395	NOx	50	AP-42, Chp.1.4, Tbl 1.4-1, LowNOX	na	na	2.52	na	11.04	na
COMB6,N2	Anode Bake Furnace (261 Furnace)	2	ABF Gas Burners	A-446 Reactors Stacks (3)	A-446	EE	0.050395	PM	1.9	AP-42, Chp.1.4, Tbl 1.4-2	na	na	0.10	na	0.42	na
COMB6,N2	Anode Bake Furnace (261 Furnace)	2	ABF Gas Burners	A-446 Reactors Stacks (3)	A-446	EE	0.050395	PM10	1.9	AP-42, Chp.1.4, Tbl 1.4-2	na	na	0.10	na	0.42	na
COMB6,N2	Anode Bake Furnace (261 Furnace)	2	ABF Gas Burners	A-446 Reactors Stacks (3)	A-446	EE	0.050395	PM2.5	1.9	AP-42, Chp.1.4, Tbl 1.4-2	na	na	0.10	na	0.42	na
COMB6,N2	Anode Bake Furnace (261 Furnace)	2	ABF Gas Burners	A-446 Reactors Stacks (3)	A-446	EE	0.050395	SO2	0.6	AP-42, Chp.1.4, Tbl 1.4-2	na	na	0.03	na	0.13	na

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
COMB6,N2	Anode Bake Furnace (261 Furnace)	2	ABF Gas Burners	A-446 Reactors Stacks (3)	A-446	EE	0.050395	VOC	5.5	AP-42, Chp.1.4, Tbl 1.4-2	na	na	0.28	na	1.21	na
COMB6,N2	Anode Bake Furnace (261 Furnace)	2	ABF Gas Burners	A-446 Reactors Stacks (3)	A-446	EE	0.050395	CO2	118,380	40CFR98 Subpart C, Table C-1	na	na	5,966	na	26,130	na
COMB6,N2	Anode Bake Furnace (261 Furnace)	2	ABF Gas Burners	A-446 Reactors Stacks (3)	A-446	EE	0.050395	CH4	2.23	40CFR98 Subpart C, Table C-2	na	na	0.11	na	0.49	na
COMB6,N2	Anode Bake Furnace (261 Furnace)	2	ABF Gas Burners	A-446 Reactors Stacks (3)	A-446	EE	0.050395	N2O	0.223	40CFR98 Subpart C, Table C-2	na	na	0.01	na	0.05	na

Note 1: Emission factor listed is a controlled emission factor so no control efficiency value is used on this form.
Note 2: Although hourly and annual emissions are listed for Process ID 2, these emissions are subsumed under the hourly and annual emissions values shown for Process ID 1.

Section N.2: Stack Information

UTM Zone: 16

Stack ID	Identify all Emission Units (with Process ID) and Control Devices that Feed to Stack	Stack Physical Data		Stack Gas Stream Data		
		Equivalent Diameter *(ft)*	Height *(ft)*	Flowrate *(acfm)*	Temperature *(° F)*	Exit Velocity *(ft/sec)*
Control Device	Emission Unit/Process Description (from KyEIS)	Diameter	Height	Flowrate	Temperature	Exit Velocity
EE	Anode Bake Furnace (261 Furnace)	8.5	213.2	98,000	190	28.78

Section N.3: Fugitive Information

UTM Zone:

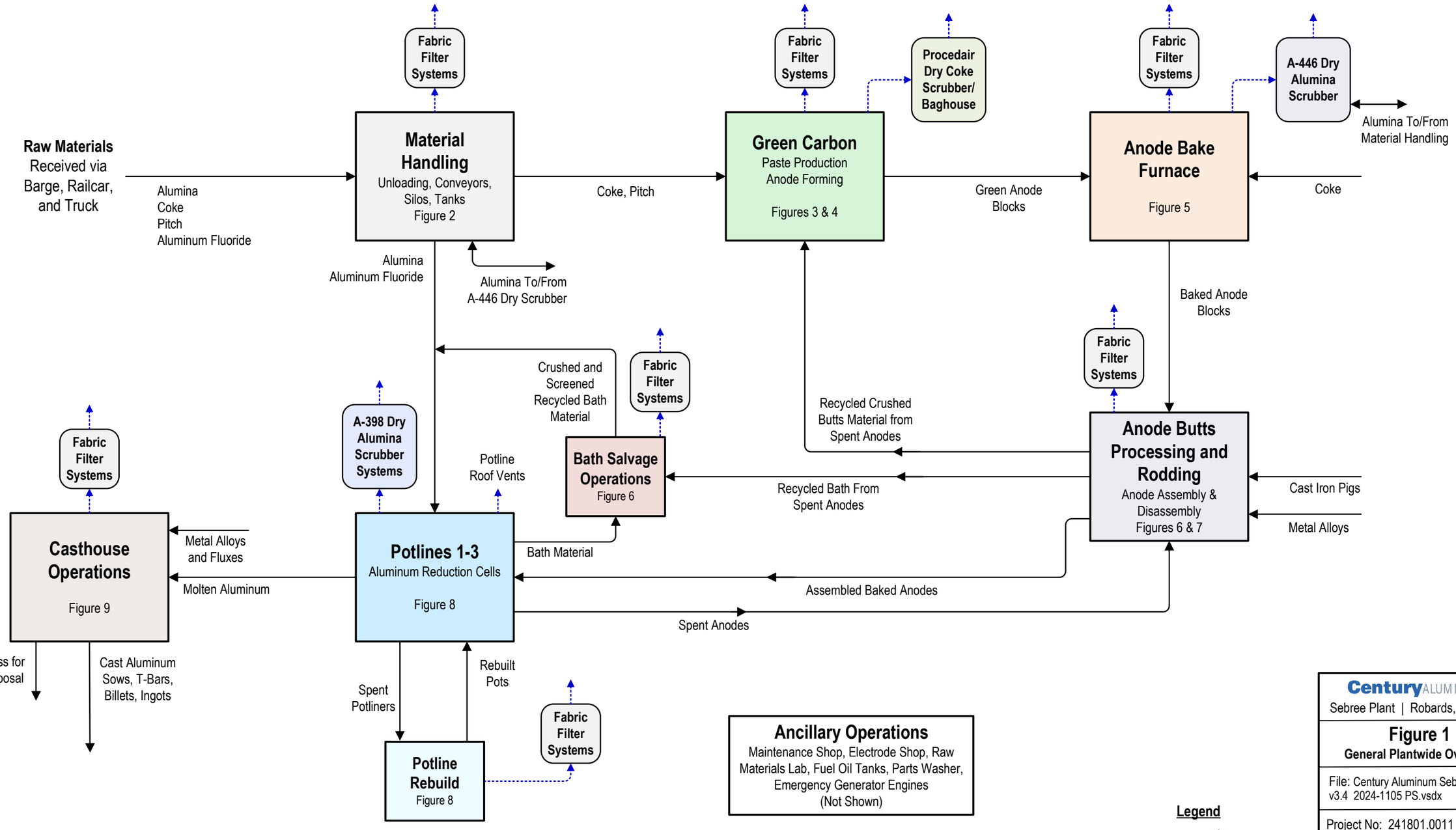
Emission Unit #	Emission Unit Name	Process ID	Area Physical Data		Area UTM Coordinates		Area Release Data	
			Length of the X Side *(ft)*	Length of the Y Side *(ft)*	Northing *(m)*	Easting *(m)*	Release Temperature *(°F)*	Release Height *(ft)*
Not applicable. There are no exterior fugitive sources afftected by the current project.								

Section N.4: Notes, Comments, and Explanations

ATTACHMENT 2

Sebree Plant Process Flow Diagrams

Figure 1
General Plantwide Overview



Century ALUMINUM
Sebree Plant | Robards, Kentucky

Figure 1
General Plantwide Overview

File: Century Aluminum Sebree PFD v3.4 2024-1105 PS.vsdx

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Covington, KY 41011

Figure 2
Raw Material Receiving & Storage

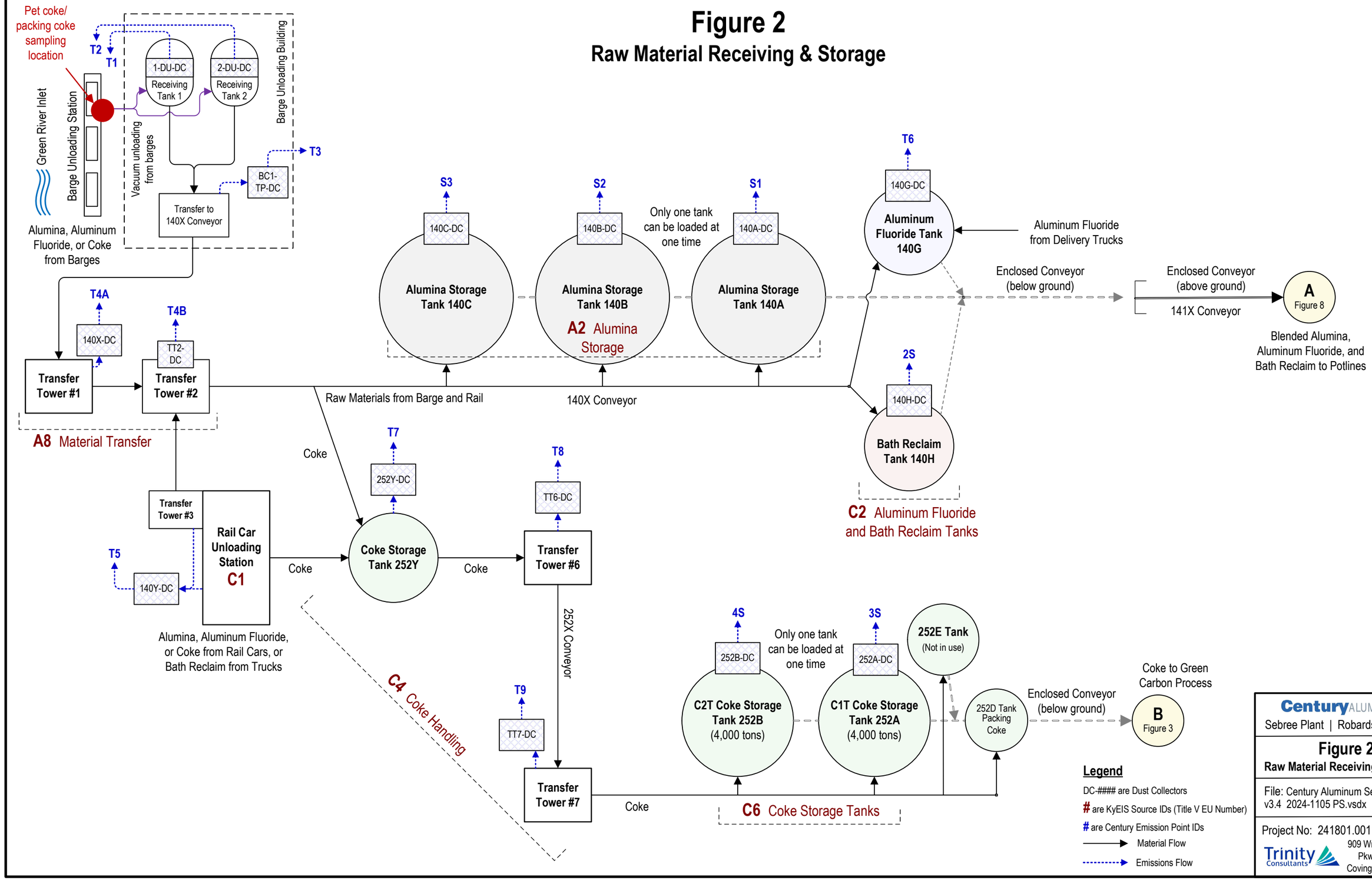


Figure 3

Green Carbon Processing – Dry Circuit

All operations shown are inside the Green Carbon Building

Clean Packing Material to ABF via Hopper and Fork Truck

B Figure 2 — From Coke Storage Tanks

Coke

C-8-BE Bucket Elevator

C-9A-VS & C-9B-VS Screens

Oversized Coke for Size Reduction

C-10A-VS & C-10B-VS Screens

+28 mesh Coke

-28 mesh Coke

E6 — CCD-2-DC

C-12-HM Coke Hammermill K7

Reduced Size Coke

Recovered Coke

C Figure 6 — From Anode Butts Fines Tank

CC-3-T Coarse Tank (35 tons)

+28 mesh Coke (Coarse)

CC-4-T Coarse Tanks (260 tons)

C-12-BE Bucket Elevator

CC14-T Scale Feed Tank

L1 Coke Ball Mill

E7 — CF-13-DC

Oversize

CF-4 Coke Ball Mill

CF-8-CL Classifier System

-100 mesh Coke (Fines)

CF-17-T Fines Tanks (145 tons)

CF-25-BE Bucket Elevator

CF-27-T Scale Feed Tank

E9 — MD-2-DC

BL-1-H Mix Hopper M1

F Figure 4 — To Dry Coke Mix Screw Conveyors

E8 — CFD-2-DC

Pickup points from elevators and conveyors

CI-10-T Intermediates Tank

CIF-3-T Intermediate Fines (15 tons)

CFD-5-T Dust Tank (15 tons)

N Figure 6 — Pickup points from Anode Butts Area

L3 Coke Fines Handling

CI7 — CI-7-DC

-28 + 100 mesh Coke (Intermediate)

Fines

CI-1-T Intermediate All Tank (35 tons)

CI-4-CL Classifier System

-28 + 100 mesh Coke (Intermediate)

CI-12-T Intermediate Tanks (145 tons)

CI-17-BE Bucket Elevator

CI-19-T Scale Feed Tank

U2 Coke Intermediates Handling

Butts Material

Green Scrap

D Figure 6 — Butts Material from B-14-T Butts Tank

E Figure 6 — Green Scrap from GS-2-T Green Scrap Tank

Legend

DC-#### are Dust Collectors

are KyEIS Source IDs (Title V EU Number)

are Century Emission Point IDs

Material Flow

Emissions Flow

Century ALUMINUM

Sebree Plant | Robards, Kentucky

Figure 3

Green Carbon - Dry Circuit

File: Century Aluminum Sebree PFD v3.4 2024-1105 PS.vsdx

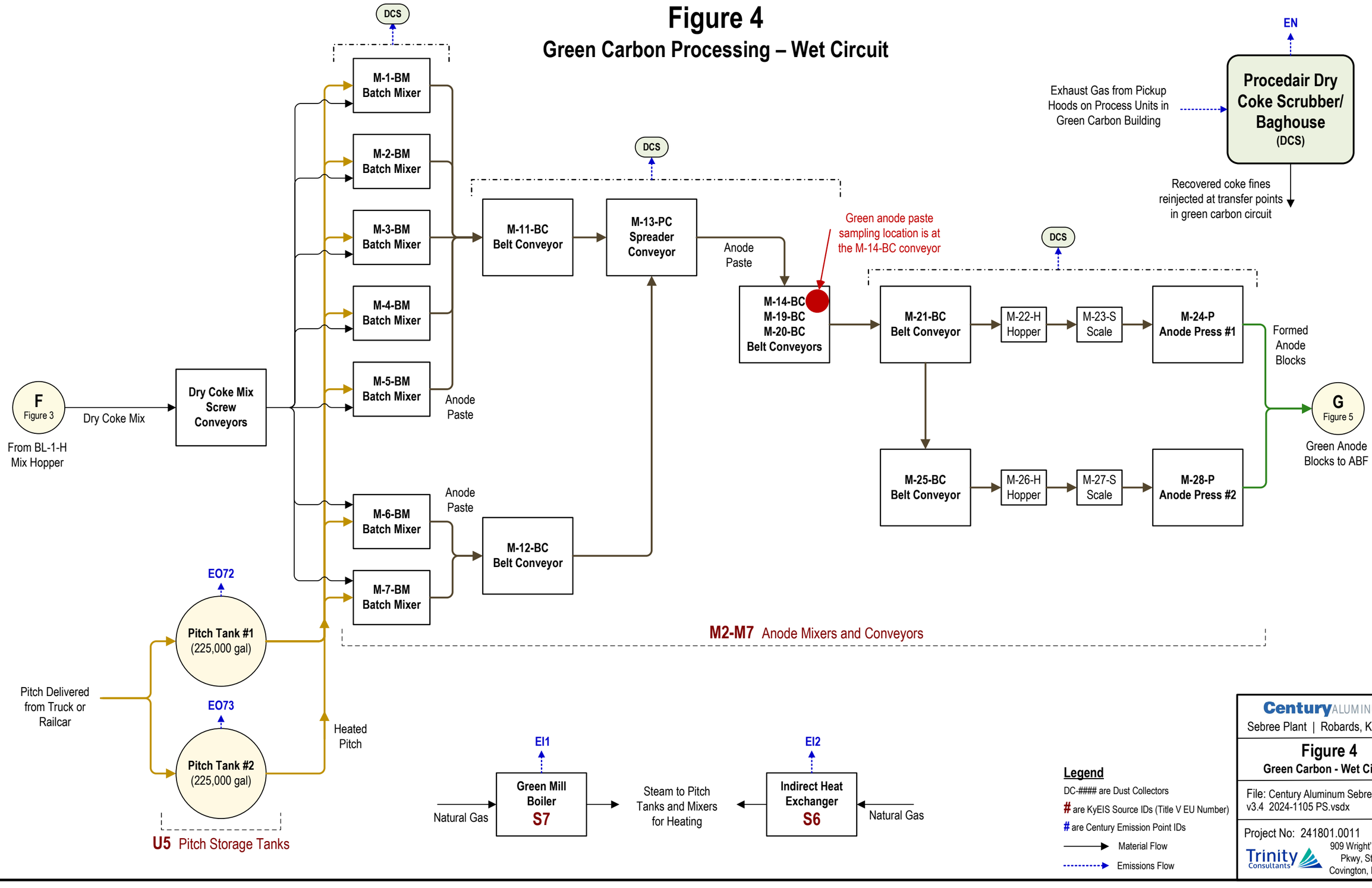
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Figure 4
Green Carbon Processing – Wet Circuit



Legend

DC-#### are Dust Collectors

are KyEIS Source IDs (Title V EU Number)

are Century Emission Point IDs

Material Flow

Emissions Flow

Century ALUMINUM
Sebree Plant | Robards, Kentucky

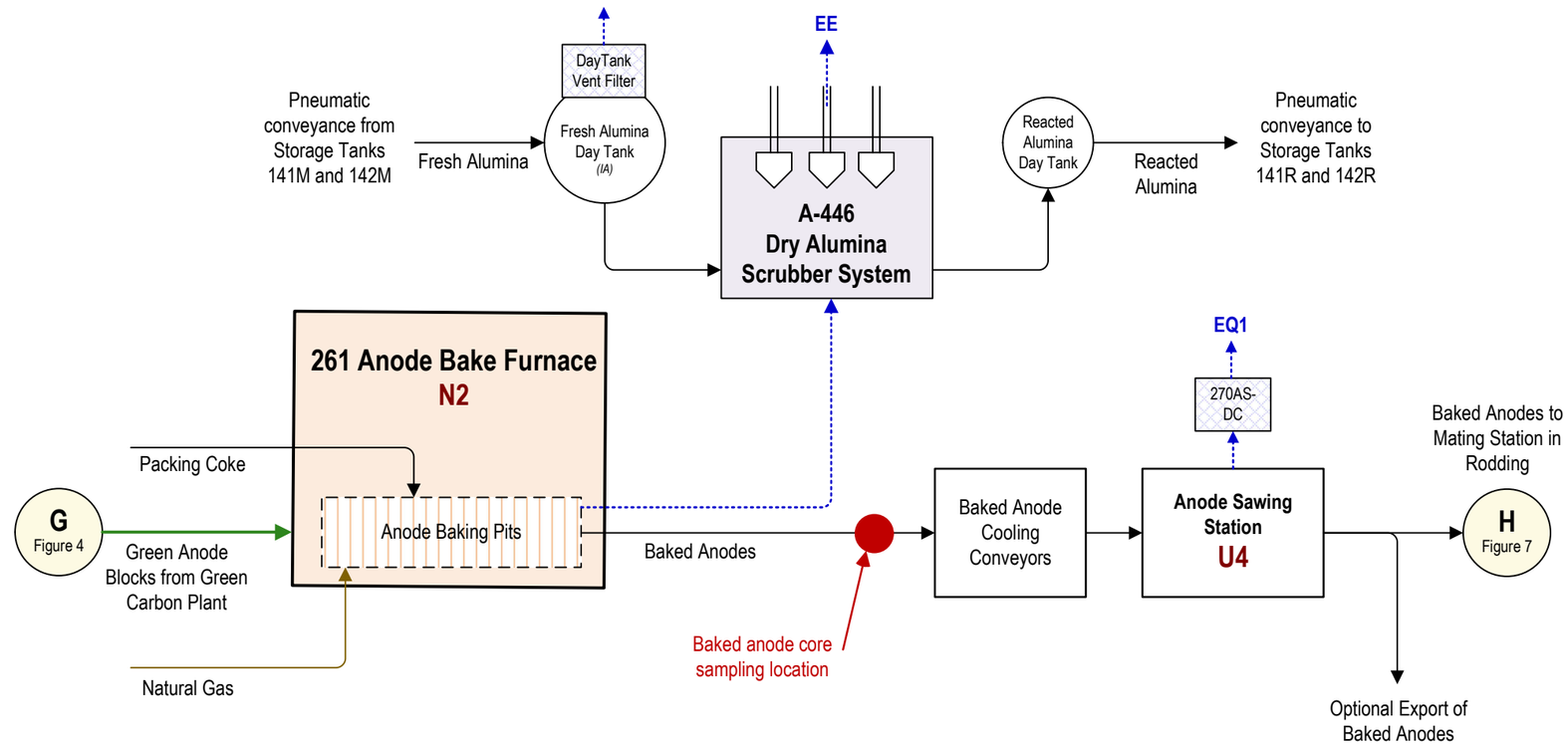
Figure 4
Green Carbon - Wet Circuit

File: Century Aluminum Sebree PFD v3.4 2024-1105 PS.vsdx

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Figure 5
Anode Bake Furnace



Legend

DC-#### are Dust Collectors

are KyEIS Source IDs (Title V EU Number)

are Century Emission Point IDs

Material Flow

Emissions Flow

Century ALUMINUM

Sebree Plant | Robards, Kentucky

Figure 5
Anode Bake Furnace

File: Century Aluminum Sebree PFD v3.4 2024-1105 PS.vsdx

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Figure 6
Anode Butts Processing and Bath Salvage

Fugitive
Oversized Anode Butt Materials from Potline
Scrap Baked and Green Anodes
Imported Anode Butt Materials
Oversized Anode Butt Crushing Operations *(IA)*
Reduced Size Anode Butts Material for Recycle

Anode Butts from Potlines
I Figure 8
EJ
CB-DC
Central Anode Butts Cleaning Station U3
Straightening Press
E2
SW-DC
Butts Shot Cleaning (South Wheelabrator) J2
Residual Bath to Landfill
Cleaned Butts
E3
232H-DC
Stripper Press
K Figure 7
Anode Rods to Rodding Area
J3 Butt Stripping/ Crushing
Butts Material
Butts Crusher (Williams Impactor)
Magnetic Separator
Cast Iron Residuals
O Figure 7
Optional Diversion of Butts Material to Backup when Butts Crusher is Down
Fugitive
Portable Backup Crusher *(IA)*
Optional Diversion of Bath Material to Backup when RB10 Crusher is Down

Bath Reclaim Material Cleaned from Butts

E1
254Y-DC
Bagged and Sold
B-2-T Butts Tank, 254Y J1
B-28-BE Bucket Elevator
Reduced Size Butts Material
B-24-VS Screens
Oversize Material
B-26-IM Impactor K5
E5
BD-6-DC
Collected fines to BF-1-T Tank
GS-2-T Green Scrap Tank
Green Scrap to BL-1-H Mix Hopper
E Figure 3
Oversize Material
B-8-BE Bucket Elevator
B-11-VS Vibrating Screens
Butts Fines
BF-1-T Butts Fines Tank
C Figure 3
Butts Fines to Green Carbon
E4
254A-DC
B-14-T Butts Tanks (130 tons) K3
N Figure 3
Dust streams to CFD-2-DC
B-19-BE Bucket Elevator
B-21-T Scale Feed Tank
D Figure 3
Butts Material to BL-1-H Mix Hopper

P1
RB10-DC
Bath Reclaim Bunker
RB10 Bath Crusher K1
BE12 Bucket Elevator
Bath and Metal Scrap from Crucible Cleaning
J Figure 8
Bath Material from Potlines
Crucible Cleaning Operations
Crucible Cleaning Storage Bin

5P
104H-BS-DC
Pickup ducts on conveyors, screens, tanks, bins, and bunkers
Conveying and Screens
Bath Tank A
Bath Tank B
Bath Tank C
Bath Tank D
Bagging for Off-site Shipment
Storage Bins and Bunkers
Coarse and fine bath reclaim material
Bath Fill Stations
Carbon Buckets
Bath Reclaim to Potlines for Cover Material

U1 Bath Transfer to Storage Processing

Legend
DC-#### are Dust Collectors
are KyEIS Source IDs (Title V EU Number)
are Century Emission Point IDs
Material Flow
Emissions Flow

Century ALUMINUM
Sebree Plant | Robards, Kentucky

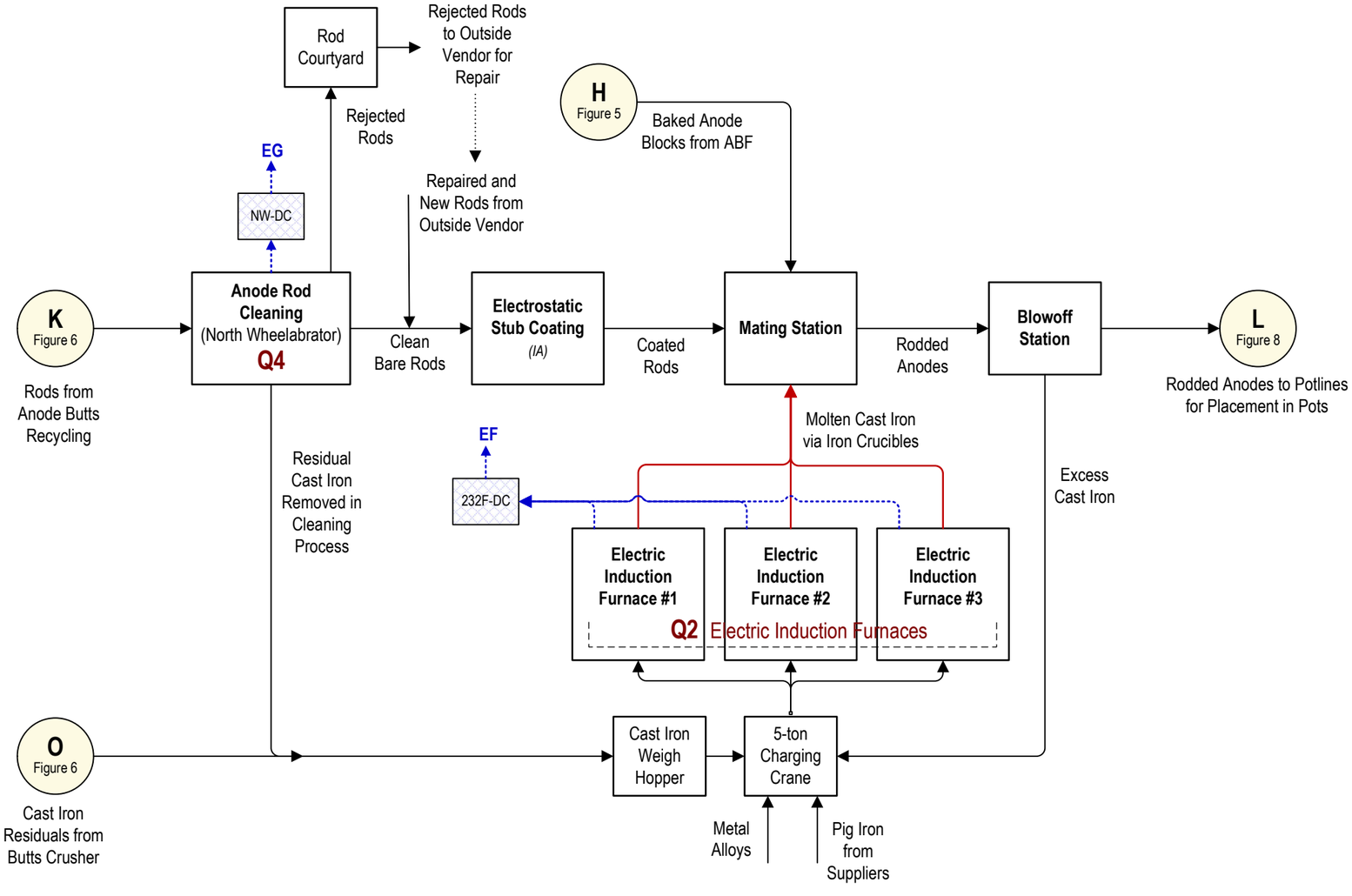
Figure 6
Anode Butts and Bath Salvage

File: Century Aluminum Sebree PFD v3.4 2024-1105 PS.vsdx

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Figure 7
Rodding



Legend

DC-#### are Dust Collectors

are KyEIS Source IDs (Title V EU Number)

are Century Emission Point IDs

Material Flow

Emissions Flow

Century ALUMINUM
Sebree Plant | Robards, Kentucky

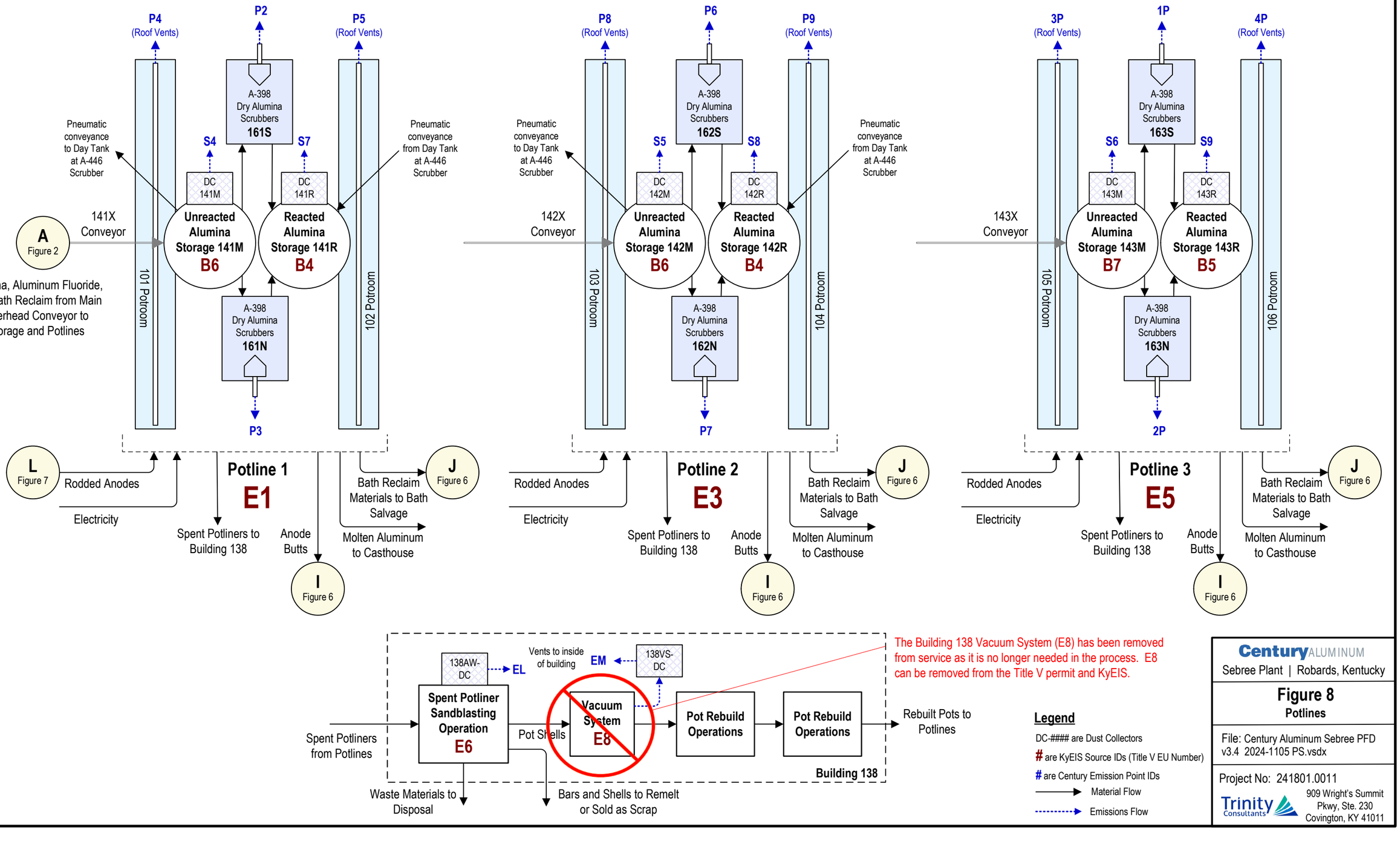
Figure 7
Rodding

File: Century Aluminum Sebree PFD v3.4 2024-1105 PS.vsdx

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Figure 8
Potlines



Century ALUMINUM
Sebree Plant | Robards, Kentucky

Figure 8
Potlines

File: Century Aluminum Sebree PFD v3.4 2024-1105 PS.vsdx

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Figure 9
Casthouse Operations

Molten Metal via Crucibles from Potlines or Remelt Furnace

Building 136

Auto Sow Casting System

Crucibles → Sow Molds (Preheaters; Natural Gas) → Sow Puller → Sows → Shipment to Customers

Manual Sow Casting Stations → Sows → Shipment to Customers

89, 90

Remelt Furnace Stack

Dross

Hold Chamber Hood

Remelt Furnace **A6**

Charge Materials

Melting Chamber Hood

Melting Chamber (Dry Hearth)

Holding Chamber (Molten)

Molten Metal via Crucibles to Holding Furnaces

Dross

Natural Gas to 4 Melting Chamber Burners

Natural Gas to 1 Holding Chamber Burner

5 Crucible Pre-Heat Stations *(IA)*

Natural Gas

I9

DL-DC

Dross Loading Operations **G8**

Dross from Holding Furnaces and Remelt Furnace

Dross Shipment via Trucks

Molten Metal via Crucibles from Potlines or Remelt Furnace

Scrap

F2 Holding Furnaces 7 to 8

F1 Holding Furnaces 1 to 6

Holding Furnace 8	I8	Flux; Molten Metal and Scrap; Natural Gas	Molten; Dross	In-Line Degasser 8 (Flux)
Holding Furnace 7	I7	Flux; Molten Metal and Scrap; Natural Gas	Molten; Dross	In-Line Degasser 7 (Flux)
Holding Furnace 6	I6	Flux; Molten Metal and Scrap; Natural Gas	Molten; Dross	In-Line Degasser 6 (Flux)
Holding Furnace 5	I5	Flux; Molten Metal and Scrap; Natural Gas	Molten; Dross	In-Line Degasser 5 (Flux)
Holding Furnace 4	I4	Flux; Molten Metal and Scrap; Natural Gas	Molten; Dross	In-Line Degasser 4 (Flux)
Holding Furnace 3	I3	Flux; Molten Metal and Scrap; Natural Gas	Molten; Dross	In-Line Degasser 3 (Flux)
Holding Furnace 2	I2	Flux; Molten Metal and Scrap; Natural Gas	Molten; Dross	In-Line Degasser 1
Holding Furnace 1	I1	Flux; Molten Metal and Scrap; Natural Gas	Molten; Dross	In-Line Degasser 1 (Flux)

Pit 3 / Pit 2 / Pit 1 → T-Bar or Slab Casting → T-Bar or Slab Cutting → Shipment to Customers

Billet Casting → Homogenizing Furnace 4 **H4** (I31; Natural Gas) / Homogenizing Furnace 3 **H3** (3I; Natural Gas) / Homogenizing Furnace 2 **H2** (2I; Natural Gas) / Homogenizing Furnace 1 **H1** (1I; Natural Gas) → Billet Sawing → Shipment to Customers

Small Form Casting → Small Form Oven #1 (IA) → Small Form Oven #2 (IA) → Small Form Oven #3 (IA) → Ingot Bundling → Shipment to Customers

Fugitive into Building

Legend

DC-#### are Dust Collectors or Baghouses

are KyEIS Source IDs (Title V EU Number)

are Century Emission Point IDs

Material Flow

Emissions Flow

Century ALUMINUM

Sebree Plant | Robards, Kentucky

Figure 9
Casthouse Operations

File: Century Aluminum Sebree PFD v3.4 2024-1105 PS.vsdx

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ATTACHMENT 3

Expanded Derivation of Proposed ABF and Potlines SO_2 Emission Limits Showing Allocations to Individual Potline Stacks and Roof Vents

1. Derivation of SO2 Emission Limits for ABF and Potlines Using Mass Balance Methodology

> The proposed SO2 emission limits are derived as documented below based on the same mass balance methodology used for calculating actual SO2 emissions on a monthly basis. Instead of using actual process rates and sulfur content data, the process capacity limits and maximum sulfur content specifications are used. Other process input variables are based on historical averages.

1.1 Anode Production Rates and Packing Coke Usage Rate

Baked anode (BA) production:	145,730	tpy	Represented capacity in V-05-088 R1 permit action.
Ratio of baked anode to green anode weight:	95.440	%	2021-2023 average; Calculated as the sum of monthly baked anode process rates divided by the sum of monthly green anode process rates from January 2021 through December 2023.
Green anode (GA) process rate:	152,693	tpy	= 145,730 tpy / 0.9544
Packing coke usage rate:	5.5	kg/mt BA	12-month average packing coke usage as of January 2024; Calculated as the sum of packing coke delivered to the ABF each month divided by the sum of the baked anode process rate each month for the past 12 months.
Packing coke usage (%):	0.55%		= 5.5 kg/mt / 1000 kg/mt
Packing coke process rate:	801.5	tpy	= 145,730 tpy x 0.0055

1.2 Anode Sulfur Contents

1.2.1 Raw Material Sulfur Contents

Pitch:	0.8%	sulfur	Pitch sulfur content limit from V-05-088 R2
Petroleum Coke:	3.0%	sulfur	Pet coke sulfur content limit from V-05-088 R2
Packing Coke:	3.0%	sulfur	Monthly average packing coke sulfur content
Green Anode to Pet Coke Sulfur Ratio:	73.11%		2021-2023 average of the monthly ratio of green anode sulfur content to the raw pet coke sulfur content. Takes into account % of recycled butts, pet coke, and pitch in anode recipe.

1.2.2 Anode Sulfur Contents

Green anode sulfur content:	2.1933%	sulfur	= 3.0% x 73.11%
Ratio of BA sulfur content to GA sulfur content:	94.72%		2021-2023 average of the monthly ratio of baked anode sulfur content to green anode sulfur content.
Baked anode sulfur content:	2.0775%	sulfur	= 2.1933% x 94.72%

1.3 ABF SO2 Emissions

1.3.1 ABF SO2 Emissions (Based on ABF Capacity)

> The sulfur input to the ABF is the sulfur in the green anodes plus the sulfur in the added packing coke.

Sulfur input rate to ABF: 3,373 tpy = (152,693 tpy x 2.1933%) + (801.5 tpy x 3.0%)

> The sulfur leaving the ABF is the sulfur in the baked anodes that are then sent to the potlines.

Sulfur output rate from ABF: 3,028 tpy = 145,730 tpy x 2.0775%

> Based on a mass balance, the sulfur released at the ABF is the sulfur input minus the sulfur output.

Sulfur released from anodes and sent to A-446: 345.5 tpy = 3,373 tpy - 3,028 tpy

> 100% of the sulfur released from the ABF is conservatively assumed to be emitted as SO2. The SO2 emissions are thus directly calculated from the sulfur release based on the molecular weight ratio between SO2 and S.

SO2 emissions from A-446 scrubber (annual total):

345.5 tpy of sulfur / 32 lb S/lbmole S x 1 lbmole SO2/lbmole S x 64 lb SO2/lbmole SO2 = 691.0 tpy

SO2 emissions from A-446 scrubber (hourly average): 691.0 tpy x 2000 lb/ton / 8760 hr/yr = **157.8 lb/hr**

1.4 Potline SO2 Emissions

1.4.1 Potline Sulfur Released (Based on Anodes Consumed)

Potlines production capacity (plantwide):	253,531	ton Al/yr	Operating limit established in V-05-088 R2
Anode consumption rate:	0.4308	t/t Al	2021-2023 average
Baked anode sulfur content:	2.0775%	sulfur	See Section 1.2.2

> The sulfur released from the potlines is directly calculated based on the sulfur content in the placed anodes and the anode consumption rate.

Total sulfur released from potlines:	2,269	tpy	= 253,531 ton Al/yr x 0.4308 t/t Al x 2.0775% S

1.4.2 Potline SO2 Emissions

> A portion of the sulfur is emitted as COS. For purposes of these mass balance calculations, Century also conservatively assumes that none of the sulfur is released as condensable particulate even though it is expected that up to 2% can be emitted in this form. Thus, the amount not emitted as COS, is assumed to be emitted as SO2.

% of anode sulfur emitted as COS:	6.25%		Assumption embedded within PMACT COS limit
% of anode sulfur emitted as CPM:	0%		Conservatively set to 0 for mass balance purposes
% of anode sulfur emitted as SO2:	93.75%		= (1- 6.25% - 0%)
SO2 emissions from potlines (annual total):	4,254	tpy	= 2,269 tpy x 93.75% x 64 lb SO2/32 lb S
SO2 emissions from potlines (hourly average):	**971**	**lb/hr**	= 4,254 tpy x 2000 lb/ton / 8760 hr/yr

1.4.3 Combined Potline and ABF SO2 Potential Emissions

Combined potlines and ABF SO2 emission rate:	4,946	tpy	= 691.0 tpy + 4,254.5 tpy (rounded to nearest ton)
Combined SO2 emission rate (hourly average):	**1,129**	**lb/hr**	= 4,946 tpy x 2000 lb/yr / 8760 hr/yr

1.4.4 Expected Normal Split of SO2 Emissions Between ABF and Potlines

Portion of total SO2 emitted from ABF:	14%		= 157.8 lb/hr from ABF / 1,129 lb/hr total
Portion of total SO2 emitted from potlines:	86%		= 971.3 lb/hr from potlines / 1,129 tpy total

1.4.5 Contributions of Each Potline to Combined Potlines Emission Rate

SO2 emissions from each potline:	1,418	tpy	= 4,254 tpy for plant / 3 potlines
	323.8	lb/hr	= 1,418 tpy x 2000 lb/yr / 8760 hr/yr
Assumed potline A-398 scrubber capture efficiency:	98%		Expected based on pot and scrubber collection ductwork design
SO2 emissions from each potline (stacks):	1,389.8	tpy	= 1,418 tpy for each potline x 98%
	317.3	lb/hr	= 323.8 lb/hr for each potline x 98%
SO2 emissions from each potline (roof vents):	28.4		= 1,418 tpy x (1-98%)
	6.5	lb/hr	= 323.8 tpy x (1-98%)

1.5 Derivation of Proposed Individual ABF and Potlines Emission Limits

1.5.1 Derivation of "Highest ABF" Scenario SO2 Emission Rates

> As calculated in Section 1.4.4 above, on average, 14% of total SO2 emissions are expected to be emitted from the ABF. However, the distribution varies monthly. Between 2021 and 2023, the ABF portion ranged from 11% to 21%. For purpose of setting an individual SO2 emission limit for the ABF, the highest annual average split for the ABF in the last three years is used.

Forecast maximum ABF portion of SO2 emissions:	21%	Highest portion of mass balance calculated SO2 emissions occurring at ABF in any year, 2021-2023
ABF and potlines combined SO2 emission limit:	1,129 lb/hr	See Section 1.4.3
Proposed SO2 limit for ABF (30-day average):	**237 lb/hr**	= 1,129 lb/hr total x 21%
Potline SO2 emissions when ABF is at its max:	892 lb/hr	= 1,129 lb/hr total - 237 lb/hr from ABF

1.5.2 Derivation of "Highest Potline" Scenario SO2 Emission Rates

> As calculated in Section 1.4.4 above, on average, 86% of total SO2 emissions are expected to be emitted from the potlines. However, the distribution varies monthly. Between 2021 and 2023, the potline portion ranged from 77.3% to 90.2% in any given month. For purpose of setting an individual SO2 emission limit for the potlines, the highest monthly average split for the potlines in the last three years is used.

Forecast maximum potline portion of SO2 emissions:	90.2%	Highest portion of mass balance calculated SO2 emissions occurring at potline in any month, 2021-2023
ABF and potlines combined SO2 emission limit:	1,129 lb/hr	See Section 1.4.3
Proposed SO2 limit for potlines (30-day average):	**1,018 lb/hr**	= 1,129 lb/hr total x 90.2%
ABF SO2 emissions when potlines are at the max:	111 lb/hr	= 1,129 lb/hr total - 1018 lb/hr from potlines
SO2 emissions from each potline at max:	339.5 lb/hr	= 1,018 lb/hr potlines total / 3 potlines
SO2 emissions from each potline at max (stacks):	332.7 lb/hr	= 339.5 lb/hr x 98%
SO2 emissions from each potline roof vent at max:	6.8 lb/hr	= 339.5 lb/hr x (1-98%)

April 25, 2025

Zachary Bittner
Metallurgical Section Supervisor
Permit Review Branch
Kentucky Division for Air Quality
300 Sower Blvd, 2nd Floor
Frankfort, KY 40601

Subject: ***Section 502(b)(10) Notification for Butts Impactor Replacement Baghouse Century Aluminum Sebree (AI #1788)***

Dear Mr. Bittner,

Century Aluminum Sebree, LLC (Century) is hereby submitting this Section 502(b)(10) change notification to cover the planned replacement of an existing baghouse serving the Anode Butts Impactor (Emission Unit K5) in the rodding area of our primary aluminum production facility near Robards, Kentucky (Sebree Plant). The facility operates under authority of Title V Permit V-19-010 R2 issued on November 11, 2019 and last revised on April 24, 2020.[1] In accordance with 401 KAR 52:020, Section 18, included in this notification is a description of the planned equipment replacement, an analysis of emission impacts, and a summary of applicable requirements.

Planned Baghouse Replacement

Background on Anode Butts Processing Operations

At the Sebree Plant, Century produces primary aluminum through the electrolytic reduction of raw alumina (Al_2O_3) in vessels termed reduction cells or "pots". Century operates three nearly identical potlines at the Sebree Plant. Each pot is constructed as a complete electrolytic circuit with anode, cathode, and electrolyte. Raw material inputs to the pots include alumina, bath, carbon anodes, and various other additives to the aluminum production process such as aluminum fluoride. The carbon anode blocks in each pot impart electricity to the contents of the pot via electrical power provided by copper rods that hold the carbon anode blocks in place as they are consumed in the chemical reaction that produces molten aluminum.

As shown in the process flow diagram provided in Attachment B (Figure 6 – Anode Butts Processing and Bath Salvage), once a carbon anode in a pot is spent, the rodded anode "butts" are transported from the potlines to the Rodding Department where they are first processed by the Central Anode Butts Cleaning process (Emission Unit U3). Here, the bath material on the surface of the spent anode is recovered and processed through a crusher to be recycled back to the potlines as cover material. After the majority of the bath material is removed, the butts are sent through the Butts Shot Cleaning (South Wheelabrator) (Emission Unit J2) operations, where any remaining excess bath material is cleaned off the carbon anodes. The anode butts material is then stripped off the copper anode rods at the Butt Stripper Press and the material is crushed in a butts crusher (Williams Impactor) and conveyed to the 254Y Butts Tank (Emission Unit J1). From

[1] A Title V permit renewal application was submitted to the Kentucky Division for Air Quality on May 10, 2024. A renewal permit is currently under preparation by the Division and is expected to be issued soon.

Century Aluminum Sebree LLC
9404 State Route 2096
Robards, KY 42452
270.521.7811
270.521.7305 (F)

the Butts Tank, the material is passed through screens and oversized material may be further size reduced in the Butt Impactor (Emission Unit K5) for further crushing prior to recycle to the Green Anode Production Area where it is used as a carbon input in making new green anodes.

Need for and Replacement of Baghouse

As shown in the process flow diagram in Attachment B, dust generated from the screening and impactor processes described are routed to the BD-6-DC baghouse system. Captured fines are returned to the Butts Fines Tank and the cleaned exhaust is vented to the atmosphere out stack E5. The existing baghouse system has reached the end of its expected functional life and is therefore scheduled to be replaced. The underlying emission unit, the Butt Impactor, is not being modified or replaced and will continue to operate in the same manner and with the same process rate capacity.

The replacement baghouse will be a Model HEWI-P pulse-jet design system manufactured by Henry M. Wood Company. The unit will be equipped with a centrifugal fan with a rating for a maximum of 10,000 acfm of flow. Particulate matter control will be achieved via a set of 56 cartridge style spun bond polyester filters from Parker Hannifin Corporation (Item Number 800-215-10). The air:cloth ratio will range between 2.6 at low flow to 5.3 at the maximum flow, which is typical and appropriate for industrial dust control applications. Although an exit loading specification is not provided by the baghouse or filter vendor, based on the unit's design characteristics, it is reasonable to expect that the baghouse will achieve an exit loading of 0.1 gr/dscf or less, consistent with the existing baghouse in place and other material handling baghouse systems at the facility.

Air Emissions Implications of Baghouse Change

The existing baghouse system has a fan with a flow rating of 4,938 acfm, based on the most recent and prior DEP7007N forms submitted in prior air permit applications.[2] Considering available equipment options and to provide the capability to provide additional draw to the screens and impactor to reduce interior dust, the new baghouse being provisioned has a design capacity of 10,000 acfm. As noted above, the replacement baghouse can be reasonably expected to achieve the same exit loading concentration as the existing baghouse. However, accounting for the higher exhaust fan flow capacity, the calculated mass emission rate at the replacement unit's higher flowrate capacity will be higher than the existing system.

At a nominal air stream temperature of 77°F, the exhaust flowrates of the existing and replacement systems are 4,855 scfm and 9,832 scfm, respectively. At a 0.1 gr/scf exit concentration, the potential PM emission rates for the existing and replacement system are 0.42 lb/hr and 0.84 lb/hr, respectively (or 1.8 tpy and 3.7 tpy, if extrapolated annually for 8,760 hours per year). Given the process rate capacity for the Anode Butt Impactor of 30 ton/hr, the emission factor represented in the KyEIS for Emission Unit K5 currently is 0.014 lb/ton (0.42 lb/hr ÷ 30 ton/hr). The corresponding emission factor for the replacement baghouse will be 0.028 lb/ton, essentially double the current factor. The two-year average actual annual production rate for Emission Unit K5, as represented in the KyEIS emission inventories for 2023 and 2024, was 32,532 tpy. Thus, the baseline emissions from K5 are 0.23 tpy. If the replacement baghouse was

[2] Based on a review of historical records, the original system installed in 1972 had a design rating of 9,100 acfm, but it appears that original system was replaced decades ago. The CAM Plan for K5 indicates that the system has an air flow rate of "approximately 12,000 acfm", but this seems to have been a typo in the text since the PM emission rates calculated in the CAM Plan correspond to the 4,938 acfm flowrate that has been represented on all recent prior 7007N forms.

conservatively assumed to operate at its maximum flowrate, which is essentially double the current baghouse flowrate, the projected actual emissions increase from the baghouse replacement would be **0.23 tpy**.

The calculated PM emission increase is only an "on-paper" value since in reality, the new baghouse will not necessarily operate at its maximum capable exhaust flowrate at all times. Further, the new baghouse may achieve better control efficiency than the older unit. Regardless, the 0.23 tpy increase is well below the Prevention of Significant Deterioration (PSD) major modification triggering threshold. Additionally, the underlying emission unit equipment is not being modified as part of this control device replacement project.

Qualification for Processing as a Section 502(b)(10) Change

Pursuant to 401 KAR 52:020 Section 3(1)(a) and Section A of the Title V permit, Century is not permitted to construct, reconstruct, or modify an emissions source without a permit or permit revision, except as provided in the administrative permit amendment, minor permit revision, off-permit change, or Section 502(b)(10) change provisions of 401 KAR 52:020. 401 KAR 52:001 defines a Section 502(b)(10) change as "*changes that contravene an express permit term and does not include changes that would violate applicable requirements or contravene federally enforceable permit terms and conditions that are monitoring (including test methods), recordkeeping, reporting, or compliance certification requirements*." Century has concluded that the installation of the replacement baghouse system meets the criteria specified in 401 KAR 52:020, Section 18(2) for processing as a Section 502(b)(10) change based on a review of the applicability criteria:

- The shutdown of the existing baghouse system and subsequent installation of a new replacement system without a permit would contravene the requirements in Section A of the existing Title V permit. However, the project will not result in a violation of any applicable requirements nor any federally enforceable compliance assurance conditions. Thus, the project falls within the definition of a Section 502(b)(10) change.
- As required by 401 KAR 52:020 Section 18(1)(a), the change will not be a modification under Title I of the Clean Air Act as this term is defined at 401 KAR 52:001 Section 1(52). This rule defines modification under Title I of the Act as "a change at a facility that would constitute a modification under 42 USC 7470 to 7492 or 42 USC 7501 to 7515." This includes PSD and non-attainment New Source Review (NSR) modifications, but does not include modifications under an applicable New Source Performance Standard (NSPS) or National Emission Standard for Hazardous Air Pollutants (NESHAP). The projected actual emissions increase from the baghouse replacement, **0.23 tpy**, are well below the NSR modification thresholds, and thus the project is not a Title I modification.
- As required by 401 KAR 52:020 Section 18(1)(b), the change is not subject to the Acid Rain Program.
- As required by 401 KAR 52:020 Section 18(1)(c), the change will not exceed emissions allowed under the permit. Emission Unit K5 is only subject to a PM emission standard of 401 KAR 61:020, which is a function of the process rate. The emission unit and its process capacity are unaffected by the baghouse replacement and the controlled emissions will continue to be far below that amount allowed by this regulation (40 lb/hr).

Required Information for a Section 502(b)(10) Change Notification

Century has provided the required items for a Section 502(b)(10) notification listed in 401 KAR 52:020, Section 18(2)(d) in this letter. Additionally, although not explicitly required, Attachment A

contains DEP7007AI, N and GG forms to facilitate the eventual incorporation of these changes into Division records when the next significant permit revision or renewal permit action is executed.

Pursuant to 401 KAR 52:020 Section 18 (2), Century is required to provide notice of the change to the Kentucky Division for Air Quality and U.S. EPA at least seven (7) workdays prior to making the change. Century expects to install the replacement baghouse in early June 2025, well after this notification timeline.

If you have any questions regarding this submittal, please do not hesitate to contact me at 270-521-6215 or christopher.goddard@centuryaluminum.com.

Sincerely,

Chris Goddard

Chris Goddard
Environmental Manager

Attachments

cc: U.S. EPA Region 4 (via CEDRI)
Attn: Air Permits Section, Air and Radiation Technology Branch
61 Forsyth St. (Mail Code 9T25)
Atlanta, GA 30303

Ms. Lori Blair, KDAQ Owensboro Regional Office

ATTACHMENT A

DEP7007 AI, N and GG Forms

Division for Air Quality

300 Sower Boulevard

Frankfort, KY 40601

(502) 564-3999

DEP7007AI

Administrative Information

___ Section AI.1: Source Information

___ Section AI.2: Applicant Information

___ Section AI.3: Owner Information

___ Section AI.4: Type of Application

___ Section AI.5: Other Required Information

___ Section AI.6: Signature Block

___ Section AI.7: Notes, Comments, and Explanations

Additional Documentation

None

___ Additional Documentation attached

Source Name: Century Aluminum Sebree, LLC

KY EIS (AFS) #: 21- 101-00029

Permit #: V-19-010 R2

Agency Interest (AI) ID: 1788

Date: 4/25/2025

Section AI.1: Source Information

Physical Location Address:	**Street:**	9404 State Route 2096				
	City:	Robards	**County:**	Henderson	**Zip Code:**	42452
Mailing Address:	**Street or P.O. Box:**	9404 State Route 2096				
	City:	Robards	**State:**	KY	**Zip Code:**	42452

Standard Coordinates for Source Physical Location

Longitude: -87.501351 (decimal degrees) **Latitude:** 37.65378 (decimal degrees)

Primary (NAICS) Category: Alumina Refining and Primary Aluminum Production **Primary NAICS #:** 331313

#

Classification (SIC) Category: Primary Production of Aluminum **Primary SIC #:** 3334

Briefly discuss the type of business conducted at this site: At the Sebree Plant, Century produces primary aluminum through the electrolytic reduction of raw alumina (Al_2O_3) in vessels termed reduction cells or "pots". Century operates three nearly identical potlines at the Sebree Plant. Raw material inputs to the pots include alumina, bath, carbon anodes, and various other additives to the aluminum production process such as aluminum fluoride. The molten aluminum produced by the reduction cells from all three potlines is sent to the casthouse to be formed into billets and T-bars, along with other products. The casthouse utilizes natural gas-fired holding furnaces to condition molten aluminum and homogenizing furnaces to condition the aluminum billets.

Description of Area Surrounding Source: ☑ Rural Area ☐ Industrial Park ☐ Residential Area ☐ Urban Area ☐ Industrial Area ☐ Commercial Area

Is any part of the source located on federal land? ☐ Yes ☑ No

Number of Employees: ~500

Approximate distance to nearest residence or commercial property: *Approximately 2,500 ft*

Property Area: Approximately 2,600 acres

Is this source portable? ☐ Yes ☑ No

What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky?

NPDES/KPDES:	☑ Currently Hold	☐ Need	☐ N/A
Solid Waste:	☑ Currently Hold	☐ Need	☐ N/A
RCRA:	☐ Currently Hold	☐ Need	☑ N/A
UST:	☐ Currently Hold	☐ Need	☑ N/A

Type of Regulated Waste Activity:

☐ Mixed Waste Generator ☑ Generator ☐ Recycler ☐ Other: _____

☐ U.S. Importer of Hazardous Waste ☐ Transporter ☐ Treatment/Storage/Disposal Facility ☐ N/A

Section AI.2: Applicant Information

Applicant Name: Chris Goddard

Title: (if individual) Environmental Manager

Mailing Address:
Street or P.O. Box: 9404 State Route 2096
City: Robards **State:** KY **Zip Code:** 42452

Email: (if individual) christopher.goddard@centuryaluminum.com

Phone: 270-521-6215

Technical Contact

Name: Same As Applicant

Title:

Mailing Address:
Street or P.O. Box:
City: **State:** **Zip Code:**

Email:

Phone:

Air Permit Contact for Source

Name: Same As Applicant

Title:

Mailing Address:
Street or P.O. Box:
City: **State:** **Zip Code:**

Email:

Phone:

Section AI.3: Owner Information

☑ **Owner same as applicant**

Name: _____

Title: _____

Mailing Address: **Street or P.O. Box:** _____

City: _____ **State:** _____ **Zip Code:** _____

Email: _____

Phone: _____

List names of owners and officers of the company who have an interest in the company of 5% or more.

Name	Position

Section AI.4: Type of Application

Current Status: ☑ Title V ☐ Conditional Major ☐ State-Origin ☐ General Permit ☐ Registration ☐ None

Requested Action: *(check all that apply)*

☐ Name Change	☐ Initial Registration	☐ Significant Revision	☐ Administrative Permit Amendment
☐ Renewal Permit	☐ Revised Registration	☐ Minor Revision	☐ Initial Source-wide OperatingPermit
☑ 502(b)(10)Change	☐ Extension Request	☐ Addition of New Facility	☐ Portable Plant Relocation Notice
☐ Revision	☐ Off Permit Change	☐ Landfill Alternate Compliance Submittal	☐ Modification of Existing Facilities
☐ Ownership Change	☐ Closure		

Requested Status: ☑ Title V ☐ Conditional Major ☐ State-Origin ☐ PSD ☐ NSR ☐ Other: _____

Is the source requesting a limitation of potential emissions? ☐ Yes ☑ No

Pollutant:	Requested Limit:	Pollutant:	Requested Limit:
☐ Particulate Matter		☐ Single HAP	
☐ Volatile Organic Compounds (VOC)		☐ Combined HAPs	
☐ Carbon Monoxide		☐ Air Toxics (40 CFR 68, Subpart F)	
☐ Nitrogen Oxides		☐ Carbon Dioxide	
☐ Sulfur Dioxide		☐ Greenhouse Gases (GHG)	
☐ Lead		☐ Other	

For New Construction:

Proposed Start Date of Construction: *(MM/YYYY)* N/A

Proposed Operation Start-Up Date: *(MM/YYYY)* N/A

For Modifications:

Proposed Start Date of Modification: *(MM/YYYY)* 6/2025

Proposed Operation Start-Up Date: *(MM/YYYY)* 6/2025

Applicant is seeking coverage under a permit shield. ☐ **Yes** ☑ **No**

Identify any non-applicable requirements for which permit shield is sought on a separate attachment to the application.

Section AI.5 Other Required Information

Indicate the documents attached as part of this application:

- ☐ DEP7007A Indirect Heat Exchangers and Turbines
- ☐ DEP7007B Manufacturing or Processing Operations
- ☐ DEP7007C Incinerators and Waste Burners
- ☐ DEP7007F Episode Standby Plan
- ☐ DEP7007J Volatile Liquid Storage
- ☐ DEP7007K Surface Coating or Printing Operations
- ☐ DEP7007L Mineral Processes
- ☐ DEP7007M Metal Cleaning Degreasers
- ☑ DEP7007N Source Emissions Profile
- ☐ DEP7007P Perchloroethylene Dry Cleaning Systems
- ☐ DEP7007R Emission Offset Credit
- ☐ DEP7007S Service Stations
- ☐ DEP7007T Metal Plating and Surface Treatment Operations
- ☐ DEP7007V Applicable Requirements and Compliance Activities
- ☐ DEP7007Y Good Engineering Practice and Stack Height Determination
- ☐ DEP7007AA Compliance Schedule for Non-complying Emission Units
- ☐ DEP7007BB Certified Progress Report
- ☐ DEP7007CC Compliance Certification
- ☐ DEP7007DD Insignificant Activities
- ☐ DEP7007EE Internal Combustion Engines
- ☐ DEP7007FF Secondary Aluminum Processing
- ☑ DEP7007GG Control Equipment
- ☐ DEP7007HH Haul Roads
- ☐ Confidentiality Claim
- ☐ Ownership Change Form
- ☐ Secretary of State Certificate
- ☑ Flowcharts or diagrams depicting process
- ☐ Digital Line Graphs (DLG) files of buldings, roads, etc.
- ☐ Site Map
- ☐ Map or drawing depicting location of facility
- ☐ Safety Data Sheet (SDS)
- ☐ Emergency Response Plan
- ☑ Other: Notification Letter

Section AI.6: Signature Block

I, the undersigned, hereby certify under penalty of law, that I am a responsible official*, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.

Henk De Coning	5/9/2025
Authorized Signature	**Date**
Henk De Coning	Sebree Plant Manager
Type or Printed Name of Signatory	**Title of Signatory**

*Responsible official as defined by 401 KAR 52:001.

Section AI.7: Notes, Comments, and Explanations

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007N

Source Emissions Profile

__ Section N.1: Emission Summary
__ Section N.2: Stack Information
__ Section N.3: Fugitive Information
__ Section N.4: Notes, Comments, and Explanations

Additional Documentation
___ Complete DEP7007AI

Source Name: Century Aluminum Sebree, LLC

KY EIS (AFS) #: 21- 101-00029

Permit #: V-19-010 R2

Agency Interest (AI) ID: 1788

Date: 4/25/2025

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
EQPT28,K5	Butt Impactor	1	Butts Impactor Dust Collector	Butts Impactor DC	BD-6-DC	E5	30	PM	2.809	Equipment Design; 0.01 gr/dscf	na	99	84.3	0.84	369.1	3.69
EQPT28,K5	Butt Impactor	1	Butts Impactor Dust Collector	Butts Impactor DC	BD-6-DC	E5	30	PM10	2.809	Equipment Design; 0.01 gr/dscf	na	99	84.3	0.84	369.1	3.69
EQPT28,K5	Butt Impactor	1	Butts Impactor Dust Collector	Butts Impactor DC	BD-6-DC	E5	30	PM2.5	1.264	EPA PM Calc Ratio for SCC (0.45)	na	99	37.9	0.38	166.1	1.66

Section N.2: Stack Information

UTM Zone: 16

Stack ID	Identify all Emission Units (with Process ID) and Control Devices that Feed to Stack	Stack Physical Data		Stack Gas Stream Data		
		Equivalent Diameter *(ft)*	Height *(ft)*	Flowrate *(acfm)*	Temperature *(° F)*	Exit Velocity *(ft/sec)*
E5	Butt Impactor	1.3	82	10,000	77	125.6

Section N.3: Fugitive Information

UTM Zone:

Emission Unit #	Emission Unit Name	Process ID	Area Physical Data		Area UTM Coordinates		Area Release Data	
			Length of the X Side *(ft)*	Length of the Y Side *(ft)*	Northing *(m)*	Easting *(m)*	Release Temperature *(°F)*	Release Height *(ft)*
Not applicable. There are no exterior fugitive sources afftected by the current project.								

Section N.4: Notes, Comments, and Explanations

Division for Air Quality

300 Sower Boulevard

Frankfort, KY 40601

(502) 564-3999

DEP7007GG

Control Equipment

Additional Documentation

___ Complete Sections GG.1 through GG.12, as applicable

___ Attach manufacturer's specifications for each control device

___ Complete DEP7007AI

Source Name: Century Aluminum Sebree, LLC

KY EIS (AFS) #: 21- 101-00029

Permit #: V-19-010 R2

Agency Interest (AI) ID: 1788

Date: 4/25/2025

Section GG.1: General Information - Control Equipment

Control Device ID #	Control Device Name	Cost	Manufacturer	Model Name/Serial #	Date Installed	Inlet Gas Stream Data For All Control Devices					Inlet Gas Stream Data For Condensers, Adsorbers, Afterburners, Incinerators, Oxidizers Only			Equipment Operational Data For All Control Devices		
						Temperature (°F)	Flowrate (scfm @ 68 °F)	Average Particle Diameter (μm)	Particle Density (lb/ft^3) or Specific Gravity	Gas Density (lb/ft^3)	Gas Moisture Content (%)	Gas Composition	Fan Type	Pressure Drop Range (in. H_2O)	Pollutants Collected/Controlled	Pollutant Removal (%)
BD-6-DC	Butts Impactor Dust Collector	na	Henry M. Wood Company	HEWI-P	06/2025	77	9,832		na	0.074	na	na	na	3.5 to 4.0	PM/PM10/PM2.5	99

Section GG.6: Filter

Control Device ID #	Identify all Emission Units and Control Devices that Feed to Filter	Identify Type of Filter Unit: Baghouse, Cartridge Collector, or Other (specify)	Identify Type of Filtering Material: Fabric, Paper, Synthetic, or Other (specify)	Total Filter Area *(ft²)*	Effective Air-to-Filter Ratio *(acfm/ft²)*	Continuous Monitoring Instrumentation (e.g. COMS, BLDS, none)	Additional Materials Introduced into the Control System (e.g. lime, carbon)		Identify Cleaning Method: Shaker, Pulse Air, Reverse Air, Pulse Jet, or Other (specify)	Identify Gas Cooling Method: Ductwork, Heat Exchanger, Bleed-in Air, Water Spray, or Other (specify)	For Ductwork:		For Bleed-in Air:	For Water Spray:
							Material	Injection Rate *(lb/hr)*			Length *(ft)*	Diameter *(ft)*	Flowrate *(scfm @ 68°F)*	Flowrate *(gal/min)*
BD-6-DC	Butt Impactor	Cartridge	Spun Bond Polyester	1,904	5.3	None	na	na	Pulse Jet	na	na	na	na	na

ATTACHMENT B

Anode Butts Processing and Bath Salvage Area
Process Flow Diagram

Figure 6
Anode Butts Processing and Bath Salvage

Fugitive
Oversized Anode Butt Materials from Potline
Scrap Baked and Green Anodes
Imported Anode Butt Materials
Oversized Anode Butt Crushing Operations *(IA)*
Reduced Size Anode Butts Material for Recycle

Anode Butts from Potlines
I Figure 8
EJ
CB-DC
Central Anode Butts Cleaning Station U3
Straightening Press
E2
SW-DC
Butts Shot Cleaning (South Wheelabrator) J2
Cleaned Butts
E3
232H-DC
Stripper Press
Residual Bath to Landfill
K Figure 7
Anode Rods to Rodding Area
J3 Butt Stripping/ Crushing
Butts Crusher (Williams Impactor)
Butts Material
Magnetic Separator
Cast Iron Residuals
O Figure 7
Optional Diversion of Butts Material to Backup when Butts Crusher is Down
Fugitive
Portable Backup Crusher *(IA)*
Optional Diversion of Bath Material to Backup when RB10 Crusher is Down
Bath Reclaim Material Cleaned from Butts

E1
254Y-DC
Bagged and Sold
B-2-T Butts Tank, 254Y J1
B-28-BE Bucket Elevator
Reduced Size Butts Material
B-24-VS Screens
Oversize Material
B-26-IM Impactor K5
E5
BD-6-DC
Collected fines to BF-1-T Tank
B-8-BE Bucket Elevator
GS-2-T Green Scrap Tank
Oversize Material
Green Scrap to BL-1-H Mix Hopper
E Figure 3
B-11-VS Vibrating Screens
Butts Fines
BF-1-T Butts Fines Tank
C Figure 3
Butts Fines to Green Carbon
E4
254A-DC
B-14-T Butts Tanks (130 tons) K3
N Figure 3
Dust streams to CFD-2-DC
B-19-BE Bucket Elevator
B-21-T Scale Feed Tank
D Figure 3
Butts Material to BL-1-H Mix Hopper

Baghouse system to be replaced in June 2025

P1
RB10-DC
Bath Reclaim Bunker
RB10 Bath Crusher K1
BE12 Bucket Elevator
Bath and Metal Scrap from Crucible Cleaning
Crucible Cleaning Operations
Crucible Cleaning Storage Bin
J Figure 8
Bath Material from Potlines

5P
104H-BS-DC
Pickup ducts on conveyors, screens, tanks, bins, and bunkers
Conveying and Screens
Bath Tank A
Bath Tank B
Bath Tank C
Bath Tank D
Bagging for Off-site Shipment
Storage Bins and Bunkers
Coarse and fine bath reclaim material
Bath Fill Stations
Carbon Buckets
Bath Reclaim to Potlines for Cover Material
U1 Bath Transfer to Storage Processing

Legend
DC-#### are Dust Collectors
are KyEIS Source IDs (Title V EU Number)
are Century Emission Point IDs
Material Flow
Emissions Flow

Century ALUMINUM
Sebree Plant | Robards, Kentucky

Figure 6
Anode Butts and Bath Salvage

File: Century Aluminum Sebree PFD v3.5 2025-0417 PS.vsdx

Project No: 251801.0031

Trinity Consultants
909 Wright's Summit Pkwy, Ste. 230
Covington, KY 41011

February 4, 2026

Michelle McCloskey
Supervisor, Permit Support Section, Permit Review Branch
Kentucky Division for Air Quality
Frankfort Regional Office
300 Sower Blvd
Frankfort, Kentucky 40601

Subject: ***Courtesy Notification of Remelt Furnace & Holding Furnaces Shutdown***
Century Aluminum Sebree (AI #1788)

Dear Ms. McCloskey:

Century Aluminum Sebree, LLC (Century) operates a primary aluminum production facility near Robards, Kentucky (Sebree Plant). The facility operates under authority of Title V Permit ID V-19-010 R2 issued by the Kentucky Division for Air Quality (KDAQ) November 11, 2019, and last revised on April 24, 2020.[1] Century is providing this courtesy notification to inform KDAQ of the permanent shutdown of the following emission units:

- Two (2) existing Holding Furnaces with In-Line Degassers. These furnaces have Century Equipment Designation Numbers I1 and I2 and are grouped under Emission Unit F1 (KyEIS Equipment ID EQPT0000000020); and
- Remelt Furnace, designated as Emission Unit A6 (KyEIS Equipment IDs COMB000000001 and COMB0000000007).

These emission units have already ceased operation and are being dismantled. Accordingly, Century requests that the Division exclude these emission units from the renewal permit that is presently under development.

If you have any questions of comments about the information presented in this notification, please contact Ryann Young at ryann.young@centuryaluminum.com.

Sincerely,

Henk de Coning

Henk De Coning, Sebree Plant Manager

Attachments

cc: Ms. Lori Blair, KDAQ Owensboro Regional Office
Ms. Amy Tempus-Doom, KDAQ Permit Review Branch

[1] A Title V permit renewal application was submitted to the Kentucky Division for Air Quality on May 10, 2024. A renewal permit is currently under preparation by the Division and is expected to be issued soon.

Century Aluminum Sebree LLC 270.521.7811
9404 State Route 2096 270.521.7305 (F)
Robards, KY 42452