UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE ADMINISTRATOR

IN THE MATTER OF:	)	
	)	
Clean Air Act Title V Operating Permit Renewal No. V-24-010	)	**PETITION FOR OBJECTION**
	)	
	)	Kentucky Air Quality Permit No. V-24-010
Issued to Century Aluminum of KY, GP	)	
	)	
Issued by the Kentucky Division for Air Quality	)	
	)	

PETITION REQUESTING THAT THE ADMINISTRATOR OBJECT TO TITLE V PERMIT RENEWAL NO. V-24-010 FOR CENTURY ALUMINUM OF KY, GP's CENTURY HAWESVILLE ALUMINUM SMELTER

INTRODUCTION

Pursuant to section 505(b)(2) of the Clean Air Act, 42 U.S.C. § 7661d(b)(2), and 40 C.F.R. § 70.8(d), Kentucky Resources Council and Environmental Integrity Project hereby petition the Administrator of the United States Environmental Protection Agency ("EPA") to object to the Clean Air Act Title V Operating Permit Renewal No. V-24-01 ("Renewal Permit") issued by the Kentucky Division for Air Quality ("KYDAQ" or the "Division") on April 15, 2025 to the Century Aluminum Hawesville Aluminum Smelter, located outside of Hawesville, Kentucky, between Louisville and Owensboro on the Ohio River directly across from Tell City, Indiana. The plant is owned and operated by Century Aluminum of KY, GP ("Century").[1]

The permit was proposed for public comment by the Kentucky Division for Air Quality on October 16, 2024, with comments due November 15, 2024. Petitioners jointly submitted comments raising all issues in this petition on November 15, 2024.[2] The Proposed Permit was issued by KYDAQ on February 23, 2025.[3] The Proposed Permit was submitted to EPA the following day. The final Renewal Permit was issued April 16, 2025.[4]

[1] A copy of the proposed permit is attached as Exhibit 1 to this Petition.
[2] A copy of Petitioners' comments is attached as Exhibit 2 to this Petition. Failure to assert as claims here any comment made to the Division on the proposed permit does not constitute agreement or assent to the responses of the Division.
[3] According to the Commonwealth of Kentucky Energy & Environment Cabinet eSearch database.
[4] The final Renewal Permit is attached as Exhibit 3 to this Petition. It is also available publicly on EPA's website at:
https://www.epa.gov/system/files/documents/2025-04/permit-v-24-010-final-4-16-2025.pdf

As required, Petitioners are filing this Petition with the Administrator via the Central Data Exchange and providing copies via email and certified U.S. mail to KYDAQ and Century.

PETITIONERS

Kentucky Resources Council (KRC) is a statewide public-interest environmental law and advocacy organization. We work to protect Kentucky's natural resources, promote policies for healthy communities, and assure that those who pollute our land, air, or water are held to account. Our members and constituents live, work, and recreate —and their children play and attend school—in areas potentially impacted by the Proposed Permit.

Environmental Integrity Project is a non-profit, non-partisan watchdog organization founded to advocate for the effective enforcement of environmental laws, with a specific focus on the Clean Air Act and large stationary sources of air pollution such as Century Hawesville. EIP has three goals: (1) to illustrate through objective facts and figures how the failure to enforce and implement environmental laws increases pollution and harms public health; (2) to hold federal and state agencies, as well as individual corporations accountable for failing to enforce or comply with environmental laws; and (3) to help local communities obtain protections guaranteed by environmental laws.

FACILITY DESCRIPTION AND PERMITTING HISTORY

Century Aluminum of Kentucky, GP ("Century") produces primary aluminum from raw alumina by applying electric current to the alumina in vessels termed reduction cells or "pots". Century operates four nearly identical potlines (Potlines #1-4) and a high purity aluminum potline (Potline #5). Each potline is composed of two potrooms that each contain 56 reduction cells for a total of 112 cells per potline.

Operations at the plant began in 1969, and originally included Potlines 1-4, Anode Bake Furnaces 1 & 2, and other support operations. Potline 5 and Anode Bake Furnace 3 began operation in 1999. In 2010, following the implementation of the amperage increase project, the production capacity of the plant increased to 250,000 tons per year from Potlines 1-4 and 66,000 tons per year from Potline 5 (for a total of 316,000 tons per year).

Though all operations at the site have been idled since August of 2022, Century has apparently provided information to the Division indicating that the facility is being maintained in an idle state, and Century has averred that the facility is not shut down and that it is maintaining a continuous intent to restart the facility at some as of yet unspecified time in the future. Statement of Basis at 5-6.[5]

Century Hawesville's prior permit, Permit V-16-011, was originally issued on May 1, 2017, and expired on May 1, 2022. The application for the current Permit, Permit V-24-010, was

[5] Note that Petitioners disagreed with this characterization and the current status of the permit in comments to DAQ. *See* Ex. 2 at 3-8, Comments 1-3. Although Petitioners do not assert those comments as claims in this petition, they also do not agree with the characterization or the Division's responses to those comments.

submitted on November 30, 2022, five months prior to expiration of the prior permit, outside of the six-month timeframe required to operate under a "permit shield," meaning the authorization to operate has terminated. Ex. 2 at 3-5; Exhibit 4, Response to Comments ("RTC") at 1-2.[6] The final permit issued to Century renews the authorization to operate, and includes various amendments, including updated emissions calculations, incorporating updated versions of the applicable federal regulations, various changes to equipment information, and to update requirements for a compliance demonstration upon the facility restarting. Exhibit 5, Statement of Basis/Summary at 5.

Century first obtained an operating permit for the facility in 1973, and an initial Title V operating permit in 1997. Significant permitting actions include an initial Prevention of Significant Deterioration (PSD) permit for the addition of Potline #5 in 1997, and a PSD modification issued in 2009. Statement of Basis at 51. The only revision to the previous permit was a minor revision made in 2018 to note additional pot shields removed, and updates to the Authorization and general Monitoring, Recordkeeping, and Reporting requirements. *Id.*

STANDARD OF REVIEW FOR TITLE V PETITIONS

Title V permits, which must list and assure compliance with all federally enforceable requirements that apply to each major source of air pollution, are the primary method for enforcing and assuring compliance with the Clean Air Act's pollution control requirements for major sources. 57 Fed. Reg. 32250, 32258 (July 21, 1992). One of the primary purposes of Title V is to "enable the source, States, EPA, and the public to understand better the requirements to which the source is subject, and whether the source is meeting those requirements. Increased source accountability and better enforcement should result." Id. at 32251.

It is the Title V permitting authority's responsibility to ensure that a proposed permit "'set[s] forth'" conditions sufficient "'to assure compliance with all applicable requirements'" of the Clean Air Act. In the Matter of Sandy Creek Services, LLC, Sandy Creek Energy Station, McLennan County, TX, Order on Petition No. III-2018-1 (June 30, 2021) ("Sandy Creek Order") at 12 (quoting 42 U.S.C. § 7661c(c)). The permitting authority's rationale for any proposed permit conditions must be clear and documented in the permit record, 40 C.F.R. § 70.7(a)(5), and "permitting authorities have a responsibility to respond to significant comments" received on a proposed permit. In the Matter of CITGO Refining and Chemicals Co., L.P., West Plant, Corpus Christi, TX, Order on Petition No. VI-2007-01 (May 28, 2009) ("CITGO Order") at 7.

EPA must object to any Title V permit that fails to include or assure compliance with all applicable requirements of the Clean Air Act. 40 C.F.R. § 70.8(c). "Applicable requirements" include any requirements of a federally enforceable SIP and any preconstruction requirements that are incorporated into the Title V permit. In the Matter of Pac. Coast Bldg. Prods., Inc., Permit No. A00011, Clark County, NV (Dec. 10, 1999) ("Pac. Coast Order") at 7 ("applicable requirements include the requirement to obtain preconstruction permits that comply with preconstruction review requirements under the Act, EPA regulations, and State Implementation Plans.")

[6] Petitioners do not assert here claims regarding this comment in this petition, but failure to assert those claims does not mean Commenters agree with the response of the Division.

If EPA does not object to a Title V permit, "any person" may petition EPA to object to a proposed permit "within 60 days after the expiration of [EPA's] 45-day review period." 42 U.S.C. § 7661d(b)(2); *see also* 40 C.F.R. § 70.8. Each objection in the petition must have been "raised with reasonable specificity during the public comment period provided for in § 70.7(h) of this part, unless the petitioner demonstrates that it was impracticable to raise such objections within such period, or unless the grounds for such objection arose after such period." 40 C.F.R. § 70.8(d). Any objection included in the petition "must be based on a claim that the permit, permit record, or permit process is not in compliance with applicable requirements or requirements [of 40 C.F.R. Part 70]." *Id.* § 70.12(a)(2).

Upon receipt of a petition, EPA "*shall* issue an objection within [60 days] if the petitioner demonstrates to the Administrator that the permit is not in compliance with the requirements of this chapter." 42 U.S.C. § 7661d(b)(2) (emphasis added); *see also* 40 C.F.R. § 70.8(c)(1) ("The Administrator will object to the issuance of any proposed permit determined by the Administrator not to be in compliance with applicable requirements or requirements under this part.").

EPA's 45-day review period ended April 10, 2025. This petition is being submitted within 60 days of the end of EPA's 45-day review and thus is timely.[7]

IDENTIFICATION OF CLAIMS

Petitioners respectfully request that the Administrator object to the Proposed Permit, and state that the Proposed Permit fails to comply with the applicable requirements in that:

1) The compliance demonstration method in the Draft Title V Permit for the SO_2 emissions limit from the anode bake furnaces #1, #2, and #3 fails to account for SO_2 emissions from the packing coke used in the anode bake furnaces;
2) The testing frequency for VOCs at Potlines 1-4 is inadequate to ensure continuous compliance with the emission limits of the Permit;
3) The testing frequency for NOx is inadequate to ensure continuous compliance with the combined emission limit for the Anode Bake Furnaces 1-3 and Potlines 1-4 (main stack and roof vent monitors combined), as well as the separate NOx limit for potline 5 and its roof monitor;
4) The permit allows Century to perform just one test of a single "representative" potline roof monitor to demonstrate compliance with multiple limits applicable to each potline roof vent 1-4 (including the hourly VOC limit), but does not explain or establish clear criteria for *how* a roof vent monitor will (or will not) be determined "representative";
5) The testing frequency is not sufficient to ensure compliance with the PM limits at the potlines main stack and the potline roof monitors

Each of these claims is further explained below.

[7] 40 C.F.R. § 70.8(d).

Claim 1: The compliance demonstration method in the Draft Title V Permit for the SO_2 emissions from the anode bake furnaces #1, #2, and #3 fails to account for SO_2 emissions from the coke used to form the anodes.

1. Applicable Requirement or Part 70 Requirements

"Each permit issued under [Title V] shall set forth inspection, entry, monitoring, compliance certification, and reporting requirements to assure compliance with the permit terms and conditions." 42 U.S.C. § 7661c(c); *see also* 40 C.F.R. § 70.6(c)(1). It is the Division's responsibility, as the relevant permitting authority, "to ensure that the [T]itle v permit 'set[s] forth' monitoring to assure compliance with all applicable requirements." Sandy Creek Order at 12 (quoting 42 U.S.C. § 7661c(c)). Further, any emission limit in a Title V permit must be enforceable as both a legal and practical matter. For a limit to be enforceable as a practical matter, a proposed permit must clearly specify how emissions will be measured or determined for purposes of demonstrating compliance with the limit. *See, e.g.*, *In the Matter of Hu Honua Bioenergy Facility, Pepeekeo, HI*, Order on Petition No. IX-2011-1 (Feb. 7, 2014) ("2014 Hu Honua Order") at 10. This requires that any proposed emission limits "be accompanied by terms and conditions that require a source to effectively constrain its operations so as to not exceed the relevant emissions threshold… whether by restricting emissions directly or through restricting specific operating parameters," and supported by monitoring, recordkeeping, and reporting requirements "sufficient to enable regulators and citizens to determine whether the limit has been exceeded and, if so, to take appropriate enforcement action*." In the Matter of Orange Recycling and Ethanol Production Facility, Pencor-Masada Oxynol, LLC*, Order on Petition No. II-2001-05 (Apr. 8, 2002) ("Pencor-Masada Order") at 7.

Determining whether monitoring contained in a title V permit is sufficient to assure compliance with any term or condition is a context-specific, case-by-case inquiry. *Id*. To aid permitting authorities and the public in this fact-specific exercise, EPA has identified a non-exhaustive list of factors that that permitting authorities "may consider as a starting point in determining appropriate monitoring" for a facility, including: (1) the variability of emissions from the unit in question; (2) the likelihood of a violation of the requirements; (3) whether add-on controls are being used for the unit to meet the emission limit; (4) the type of monitoring process, maintenance, or control equipment data already available for the emission unit; and (5) the type and frequency of the monitoring requirements for similar emission units at other facilities. *Id.* (quoting CITGO Order at 7–8). In the case of preconstruction permitting requirements derived under title I of the Act, the EPA's oversight role under title V is to both ensure that the terms and conditions derived under title I are properly included in the title V permit as "applicable requirements," and to ensure "that the title V permit contains monitoring, recordkeeping, and reporting sufficient to assure compliance with those permit terms and conditions." *In the Matter of Big River Steel, LLC*, Order on Petition VI-2013-10 (Oct. 31, 2017) ("Big River Steel Order") at 17; *see also id.* at 20 (stating EPA's review of preconstruction conditions under Title V includes review of "whether the title V permit includes adequate monitoring, recordkeeping, and reporting requirements to assure compliance with the terms and conditions of the preconstruction permit.").

"In all cases, the rationale for the selected monitoring requirements must be clear and documented in the permit record." CITGO Order at 7–8 (granting petition because permitting

authority "did not articulate a rationale for its conclusions that the monitoring requirements… are sufficient to assure compliance"); *see also* 40 C.F.R. § 70 .7(a)(5). Further, "permitting authorities have a responsibility to respond to significant comments." CITGO Order at 7; *In the Matter of Onyx Environmental Services*, Petition V-2005-1 (February 1, 2006).

2. Citation to Permit Terms

Section B, Subject Item E, Condition 2.m. of the final Renewal Permit (at page 61) provides as follows:

> The permittee shall not allow the combined emissions of SO2 from the Anode Bake Furnaces #1, #2, and #3 to exceed 139.959 lbs/hr, based on a monthly average [401 KAR 51:017]
>
> **Compliance Demonstration Method:**
> Compliance with the emission limitation for SO2 shall be demonstrated through the use of the following equation:
>
> $E_s = [(P \times A_p \times S_p \times C) + (N \times EF_s)] / H$
> Where
>
> E_s = Emission rate of SO2 in lbs/hour
> P = Monthly green anodes processed in tons/month; which is the sum of daily totals
> A_p = Weighted average pitch percentage of green anodes each month
> S_p = Weighted average sulfur percentage in the pitch received from the supplier each month
> C = Conversion factor to convert S to SO2, 2
> H = Monthly hours of operation
> N = Amount of natural gas consumed each month
> EF_s = AP-42 Emission factor for natural gas combustion, 0.06 lb/MMscf

This is essentially a mass-balance approach for accounting for SO2 emissions from the raw materials used, but the equation fails to account for all sources of sulfur. In particular, this equation only accounts for sulfur in the pitch used to form the anodes, and it fails to take into account any sulfur emitted from the packing coke used in the anode bake furnaces.

3. Part 70 Requirements Not Met, Issue Raised in Public Comment

The federal and state Title V operating permit regulations require that permits include "testing, monitoring, reporting, and recordkeeping requirements sufficient to assure compliance with the terms and conditions of the permit." *See* 40 C.F.R. 70.6(c)(1); 401 KAR 52:020, Section 10. Further, Title V operating permits are required to contain "all monitoring and analysis procedures or test methods." *See* 40 C.F.R. 70.6(c)(3)(i)(A); 401 KAR 52:020, Section 10. Federal and state Title V operating permit regulations also require that "where the applicable requirement does not require periodic testing or instrumental or noninstrumental monitoring (which may consist of recordkeeping designed to serve as monitoring), periodic monitoring

sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit" must be included in the permit. *See* 40 C.F.R. 70.6(c)(3)(i)(B); 401 KAR 52:020, Section 10. Further, "permitting authorities have a responsibility to respond to significant comments." CITGO Order at 7; *In the Matter of Onyx Environmental Services*, Petition V-2005-1 (February 1, 2006).

The Renewal Permit fails to meet the requirements of Part 70 because the compliance demonstration methodology described above, which is supposed to demonstrate compliance with the monthly SO2 emission limit applicable to the anode bake furnace, does not account for SO2 emissions from the packing coke used in the anode bake furnaces at all. Petitioners explicitly raised this issue in Comment 8.b. *See* Ex. 2 at 15-16. In particular, Petitioners specifically noted that the compliance equation only accounted for sulfur in the pitch used to form the anodes, and failed to take into account any sulfur emitted from either the packing coke used or from the coke used in forming the anodes, which has a much higher allowable sulfur content than the sulfur content of the pitch. *Id.* at 16.

The Division's Response to Comments document relabeled this comment as Comment 10 (on page 13 of the RTC), and the Division's response to this comment may be found on pages 13-14 of the RTC. As discussed below, the Division's response only partially addressed Petitioners' comment, and did not actually address the contribution to SO2 emissions from the packing coke used in the anode baking process, which is different from the coke used to form the carbon anodes.

4. Analysis of KYDAQ's Response

KYDAQ only responded to Petitioners' comment in part. KYDAQ stated that the "U.S. EPA made the same observation in a comment to the Division on the PSD permit that established the referenced SO2 limit and calculation, V-08-012," and KYDAQ reiterated the response that it apparently provided to EPA at the time, as follows:

> "The Division acknowledges U.S. EPA's comment and has provided the following response for not revising the SO2 equation in condition 2.c of the permit for the anode bake furnaces:
>
> In the carbon baking process, preformed anodes are placed in pits in the carbon baking furnaces. These pits are then heated using natural gas in flues on either side of the pits to bake the anodes. This process drives the pitch, used in the anode forming process, out of the anode and into the flues. A large part of the pitch is burned in the baking process as it enters the flues and the residual is sent to the control device.
>
> However, with respect to SO2 emissions associated with the coke used in the process, the maximum temperature experienced by the anode is still well below the calcination temperature of the coke. *The anode itself (and coke used to make it*) is not consumed in the process, but is removed from the pits intact and sent to the potlines where it is consumed as a part of the reduction process to make aluminum.

> *Thus there is not a contribution from the petroleum coke used to make the anodes in the equation for SO2 emissions*. Therefore the equation in Condition 2.c. for the anode bake furnaces is correct."

RTC at 14 (emphasis added).

However, KYDAQ's response did not address the contribution to SO2 emissions from the packing coke used in the anode baking process, which is different from the coke used to form the carbon anodes.

Century Aluminum explained in detail how packing coke is used in its anode bake furnaces to make carbon anodes in its August 13, 2015 Title V Renewal Application, which Century referred to in its 2021 Title V Renewal Application for the current Title V Permit.[8] Specifically, Century Aluminum provided the following description of the carbon bake process with respect to the use and purpose of the packing coke:

> The anode bake furnaces are below ground, natural gas (or propane)-fired ring furnaces. The exterior of each bake furnace is composed of a refractory lined concrete tub which forms the shell within which the anodes can be baked. Within the shell of the furnace are refractory brick walls known as headwalls that run perpendicular to the length of the furnace tub and form the individual furnace sections. Flues also formed within the refractory running parallel to the length of the furnace. The chambers formed at the intersections of the flues and headwalls are called "pits". The pits house the anodes during baking. A vacuum crane loads the anodes into each pit and then covers the anodes with packing coke to insulate the anodes during the baking process. The packing coke is delivered from the main 200-ton Packing Coke Silo to loading cranes that move up and down the furnace building to place the coke over the pits.
>
> Mobile firing trains consisting of a series of natural gas-fired burners supply hot combustion gases to flues running parallel to the length of the furnaces. Emissions produced as the anodes bake are drawn through the porous refractory walls of the pits and are collected with the combustion by-products. Cooling manifolds collect exhaust gas and route it through ducts to the Carbon Bake Dry Alumina Scrubber (33-0140). The induced draft fan for the Scrubber supplies the draw to large duct branches on each bake furnace that run parallel to the length of the furnace….[9]

[8] *See* Exhibit 6, Century Aluminum, Title V Renewal Application (Nov. 30, 2021) at 5 ("The most recent source-wide permit application was submitted on August 13, 2015 for the last permit renewal. Except as covered herein, the information included in that application package, including the application forms, is still complete and accurate.").

[9] *See* Exhibit 7, Century Aluminum, Title V Permit Renewal Application (Aug. 13, 2015) at 2-4.

Petroleum coke, along with pitch, are used to form the green anodes that are baked into carbon anodes in the anode baking furnaces.[10] KYDAQ's response to Petitioners' comment that "the anode itself, and the coke used to make it, is not consumed in the [anode baking process]" is referring to the petroleum coke used to make the green anodes. KYDAQ's response to comments did not address Petitioners' comment that the compliance equation for the 139.959 lbs/hr SO2 limit does not account for SO2 emissions from the packing coke used in the anode bake process.

Century Aluminum has previously indicated to KYDAQ that packing coke used in the anode bake furnace is a source of SO2 emissions. Specifically, in comments to KYDAQ on the draft Permit V-08-012 which established the 139.959 lbs/hr SO2 limit for the Anode Bake Furnaces, Century commented on KYDAQ's initial compliance demonstration equation (which was based on the difference in total sulfur content of the petroleum pitch and coke and the sulfur content of the baked anodes, divided by the batch hours) that KYDAQ's equation was not appropriate:

> Century believes that the emissions limit of 139.959 is correct, but the formula for compliance demonstration is not workable at this facility. The carbon bake facility is a batch operation consisting of a continuous firing cycle of green anodes with continuous removal of anodes as needed for production of aluminum in potlines 1 through 5. The use of batch cycles as a denominator is meaningless, since the batch cycle can be as short as 12 days and as long as twenty days. The formula appears to be one used in a Green Carbon operation to actually make anodes (batch operation). *There are other inputs to the operation that contain SO2 (packing coke, natural gas) that are not accounted for in the formula*. This formula appears to be one that may have been used somewhere else and is being mis-applied (possibly the recent ALCAN SEBREE bake furnace air permit).[11]

Century requested that KYDAQ establish a compliance formula based on monthly production of anodes produced along with the most recent anode bake furnace stack test in pounds of SO2 per ton of anode produced, divided by the monthly hours of operation, in addition to the permit requiring that monthly sulfur content of green anodes not exceed 3% sulfur by weight and that sulfur content of the pitch not exceed 0.80% sulfur by weight.[12] In the final Permit V-08-012, KYDAQ did include requirements for the sulfur content of the petroleum coke used to make the green anodes to not exceed 3.0% and the pitch to not exceed 0.8%,[13] but KYDAQ did not revise the compliance equation for the 139.959 lbs/hour in the manner requested by Century Aluminum. Instead, to account for SO2 emissions from the anode bake furnaces, KYDAQ included a formula that is essentially the same as the formula in the current proposed Title V renewal permit – that is, based on the sulfur content of the pitch used in

[10] *Id.* at 2-1 ("the green anodes are formed from petroleum coke, recycled spent anode material, and coal tar pitch, which serves as a binder.").
[11] *See* Exhibit 8, KYDAQ, Comments and Response on Draft Permit V-01-012, Century Comment 31, at 14 (emphasis added).
[12] *Id.*
[13] *See* Exhibit 9, Permit V-01-012, Century Aluminum of Kentucky, LLC (Feb. 15, 2011).

forming the green anodes and based on the sulfur content of the natural gas used to fire the anode bake furnaces.[14]

The federal and state Title V operating permit regulations require that permits include "testing, monitoring, reporting, and recordkeeping requirements sufficient to assure compliance with the terms and conditions of the permit." *See* 40 C.F.R. 70.6(c)(1); 401 KAR 52:020, Section 10. Further, Title V operating permits are required to contain "all monitoring and analysis procedures or test methods." *See* 40 C.F.R. 70.6(c)(3)(i)(A); 401 KAR 52:020, Section 10. Federal and state Title V operating permit regulations also require that "where the applicable requirement does not require periodic testing or instrumental or noninstrumental monitoring (which may consist of recordkeeping designed to serve as monitoring), periodic monitoring sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit" must be included in the permit. *See* 40 C.F.R. 70.6(c)(3)(i)(B); 401 KAR 52:020, Section 10.

The proposed Title V renewal permit for the Century Aluminum Hawesville facility does not comply with these Part 70 requirements for the 139.959 lbs/hr SO2 limit that applies to Anode Bake Furnaces #1, #2, and #3 in Section B, Subject Item E, Condition 2.m. of the proposed Title V permit V-24-010.[15] While this permit provision also refers to Condition 4 "Specific Monitoring Requirements" of the permit, which establishes sulfur content limits on the coke and pitch used of 3.0% and 0.8%, respectively, and which requires the sulfur contents of coke and pitch to be monitored, there is no requirement in the permit that establishes a sulfur content limit or that requires monitoring of sulfur content of the packing coke used.[16] Thus, the SO2 emissions limit of 139.959 lbs/hr for the anode bake furnaces is the only SO2 limit that would account for SO2 emissions due to the packing coke used in the anode bake furnaces.

There is a requirement in Condition 4 "Specific Monitoring Requirements" of the permit which requires the monitoring of monthly and 12-month rolling throughout of packing coke, but that is to assure compliance with operational limitations in Condition 1 "Operating Limitations" of the proposed Title V renewal permit.[17] Specifically, Condition 1 of the Proposed Permit V-24-010 identifies the maximum capacity of packing coke in the anode bake furnaces (1, 2, & 3) as 106,800 tons per year.[18] In the absence of a separate sulfur content limit on the packing coke used or some other methodology that explicitly accounts for the sulfur content in the compliance demonstration equation, this throughput limit will not ensure compliance with the SO2 limit of 139.959 lbs/hour of combined emissions of SO2 from the Anode Bake Furnaces #1, #2, and #3.

Indeed, in calculations of SO2 emissions from the packing coke used in the anode bake furnaces at Century Aluminum's Mt. Holly primary aluminum plant in South Carolina, Century assumed that 1) packing coke had a sulfur content of 4.5%, and 2) that 97.4% of the sulfur in

[14] *Id. See also* Ex. 1, Draft Permit V-24-010 at 61.
[15] *See* Ex. 1, Proposed Permit V-24-010 at 61.
[16] *Id.* at 65.
[17] *Id.* (Specific Monitoring Requirement 4.d).
[18] *Id.* at 55 (Section B, Subject Item E).

packing coke was emitted as SO2 from the anode bake ovens.[19] Applying those same assumptions to the 106,800 ton per year packing coke throughput limit of the Century Hawesville permit, the SO2 emissions from packing coke allowed by the packing coke throughput capacity would be 2,153.2 lbs/hour[20] – which significantly exceeds the 139.959 lbs/hour SO2 limit applicable to the anode bake furnaces at the Hawesville plant. Thus, the packing coke throughput capacity limit cannot be considered as a method of accounting for SO2 emissions from packing coke used in the anode bake furnaces.

According to the Statement of Basis for Permit V-01-012, the 139.959 lbs/hour SO2 limit is a Best Available Control Technology (BACT) limit for the Anode Bake Furnaces and was determined as follows: "Century presented a review of raw material sulfur content properties and production yield values that result in an SO2 emission rate of 139.959 lbs/hr for the Anode Bake Furnaces."[21] As discussed above, Century stated to KYDAQ that SO2 emissions from packing coke contribute to the emissions from the Anode Bake Furnaces.[22] Yet, the compliance equation in Section B for the 139.959 lbs/hour SO2 limit applicable to the Anode Bake Furnaces (1, 2, & 3) in the proposed Title V renewal permit does not account for SO2 emissions from packing coke, and no other condition in the permit would limit sulfur content of packing coke and/or otherwise account for SO2 emissions from packing coke used in the Anode Bake Furnaces at the Hawesville facility.

For all of these reasons, Petitioners request that EPA object to the proposed Title V renewal permit for the Century Aluminum Hawesville facility - because the permit does not comply with the requirements of 40 CFR 70.6(a)(1) and 70.6(a)(3) that require the Title V permit to include adequate testing, monitoring, recordkeeping, and reporting sufficient to assure compliance with 139.959 lbs/hour SO2 limit applicable to Anode Bake Furnaces 1, 2, & 3 at the Hawesville facility. Petitioners also request that EPA object to the Title V renewal permit for the Hawesville facility due to KYDAQ's failure to respond to Petitioners' comment that the compliance equation for the 139.959 lbs/hour SO2 limit applicable to the anode bake furnaces fails to account for SO2 emissions from the packing coke used in the anode bake furnaces, as is required by 40 CFR 70.7(h)(6).

[19] *See* Exhibit 10, Century Aluminum of South Carolina, Inc., Facility Sulfur Dioxide Emissions Calculation Algorithm (Feb. 1, 2022) at 3-5.

[20] Calculated as follows: 106,800 tons packing coke capacity X 4.5% S content X 1.9979 (SO2 to S atomic weight ratio) X 0.974 portion S released as SO2 from Anode Bake Oven Scrubber = 9,532.3 tons per year X 2000 lb/ton divided by 8,760 hours of operation per year = 2,153.2 lbs/hour SO2 allowed by packing coke throughput capacity limit.

[21] Exhibit 11, KYDAQ Permit Statement of Basis, Revised Proposed, Title V/PSD/Synthetic Minor/Construction/Operating Permit V-08-012, Century Aluminum of Kentucky, LLC, Hawesville, KY, December 6, 2010, at 9.

[22] Ex. 8, Comments and Response on the Draft Permit V-01-012, Century Comment 31, at 14 [emphasis added].

Claim 2: The Renewal Permit fails to include adequate testing and monitoring requirements sufficient to assure continuous compliance with the hourly VOC limit for Potlines 1-4.

1. Applicable Requirement or Part 70 Requirements

"Each permit issued under [Title V] shall set forth inspection, entry, monitoring, compliance certification, and reporting requirements to assure compliance with the permit terms and conditions." 42 U.S.C. § 7661c(c); *see also* 40 C.F.R. § 70.6(c)(1). It is the Division's responsibility, as the relevant permitting authority, "to ensure that the [T]itle v permit 'set[s] forth' monitoring to assure compliance with all applicable requirements." Sandy Creek Order at 12 (quoting 42 U.S.C. § 7661c(c)). Further, any emission limit in a Title V permit must be enforceable as both a legal and practical matter. For a limit to be enforceable as a practical matter, a proposed permit must clearly specify how emissions will be measured or determined for purposes of demonstrating compliance with the limit. *See, e.g.*, 2014 Hu Honua Order at 10. This requires that any proposed emission limits "be accompanied by terms and conditions that require a source to effectively constrain its operations so as to not exceed the relevant emissions threshold… whether by restricting emissions directly or through restricting specific operating parameters," and supported by monitoring, recordkeeping, and reporting requirements "sufficient to enable regulators and citizens to determine whether the limit has been exceeded and, if so, to take appropriate enforcement action." Pencor-Masada Order at 7.

As a general matter, "the time period associated with monitoring or other compliance assurance provisions must bear a relationship to the limits with which the monitoring assures compliance." *In the Matter of United States Steel Corporation, Clairton Coke Works Permit No. 0052-OP22*, Order on Petition Nos. III-2023-5 and III-2023-6 (Sept. 18, 2023) ("Clairton Order") at 9; *see also* 40 C.F.R. § 70.6(a)(3)(i)(B). EPA has frequently determined that a requirement for periodic stack testing alone—even on an annual basis—is generally insufficient to assure compliance with hourly or 12-month rolling limits and has repeatedly directed permitting authorities "to consider a multi-pronged monitoring approach of periodic stack testing accompanied by other clearly identified permit terms such as parametric monitoring." *In the Matter of Cove Point LNG, L.P., Cove Point LNG Terminal*, Order on Petition III-2022-14 (March 8, 2023) ("Cove Point Order") at 15-16.[23]

However, determining whether monitoring contained in a title V permit is sufficient to assure compliance with any term or condition is a context-specific, case-by-case inquiry. *Id*. To aid permitting authorities and the public in this fact-specific exercise, EPA has identified a non-exhaustive list of factors that that permitting authorities "may consider as a starting point in determining appropriate monitoring" for a facility, including: (1) the variability of emissions from the unit in question; (2) the likelihood of a violation of the requirements; (3) whether add-on controls are being used for the unit to meet the emission limit; (4) the type of monitoring process, maintenance, or control equipment data already available for the emission unit; and (5)

[23] *See also, e.g., In the Matter of Oak Grove Management Company, Oak Grove Steam Electric Station*, Order on Petition No. VI-2017-12 at 25–26 (October 15, 2021); *In the Matter of Owens-Brockway Glass Container, Inc.*, Order on Petition No. X-2020-2 at 14–15 (May 10, 2021).

the type and frequency of the monitoring requirements for similar emission units at other facilities. *Id.* (quoting CITGO Order at 7–8).

"In all cases, the rationale for the selected monitoring requirements must be clear and documented in the permit record." CITGO Order at 7–8 (granting petition because permitting authority "did not articulate a rationale for its conclusions that the monitoring requirements… are sufficient to assure compliance"); *see also* 40 C.F.R. § 70 .7(a)(5). Further, "permitting authorities have a responsibility to respond to significant comments." CITGO Order at 7; *In the Matter of Onyx Environmental Services*, Petition V-2005-1 (February 1, 2006).

2. Citation to Permit Terms

Potlines 1 through 4 are subject to an emission limit on volatile organic compounds ("VOCs") that was taken to preclude applicability of the Prevention of Significant Deterioration ("PSD") regulations in 401 KAR 51:017, Sections 8 to 16. Specifically, Section B, Subject Item C, Condition 2.h of the permit, Renewal Permit at 20, establishes an hourly limit of 30.252 lbs/hour for combined VOC emissions from potlines 1-4 (including the combined roof monitors and the control stack).

Condition 2.h specifies that compliance with this hourly emission limit for VOCs shall be demonstrated using a monthly average, which will be derived by multiplying monthly aluminum production rate (in tons/month) by an emission factor based on the results of the most recent performance test, divided by hours of operation. *Id.* Condition 2.h further specifies that the emission factor to be used in this monthly calculation will be a "combined" emission factor intended to cover the combined emissions from both the main stack (shared by all four potlines) and all four separate roof monitors for potlines 1-4. *Id.* The roof monitors are intended to capture fugitive emissions which escape the pot rooms via roof vents located in the ceiling of each potline production room.

Section B, Subject Item C, Condition 3.s.iii, Renewal Permit at 27, requires Century to perform testing for VOC emissions from the shared main stack, as well as separately for roof monitor VOC emissions, from potlines 1-4 once every 12 months. It does not actually require Century to conduct a performance test each potline roof monitor, but states rather that "[w]here similar potlines exist, the permittee may perform the roof monitor sampling on a representative potline." *Id.* Condition 3.t reiterates the annual performance testing requirement, but further states that once the results of two consecutive performance tests have demonstrated emission results that are "less than or equal to 75% of the permit limit, then no additional testing of those pollutants is required for the duration of the current permit."

In other words, compliance with the VOC limit for potlines 1-4 is "calculated monthly" using an emission factor that could potentially be based on, at most, one stack test per year for the first two years of the permit term, and at worst, one performance test per five-year permit term if two tests are less than or equal to 75% of the VOC limit. Moreover, the Renewal Permit allows for "representative sampling" of just one potline roof monitor, allowing that single performance test result to be assumed for all four potline roof monitors.

3. Part 70 Requirements Not Met, Issue Raised in Public Comment

The Clean Air Act requires that all permits "set forth . . . monitoring . . . requirements to assure compliance with the permit terms and conditions." 42 U.S.C. § 7661c(c); *see* 40 C.F.R. § 70.6(c)(1). "In all cases, the rationale for the selected monitoring requirements must be clear and documented in the permit record." CITGO Order at 7-8.

The Renewal Permit fails to meet the requirements of Part 70 because it fails to include adequate testing, monitoring, recordkeeping, or reporting requirements sufficient to assure continuous compliance with the hourly VOC limit applicable to Potlines 1-4, and because neither the Renewal Permit nor the Division's Response to Comments provide a clear or sufficient rationale for why the existing monitoring requirements are sufficient to assure compliance with this limit. As our comments pointed out, allowing Century to demonstrate compliance with the hourly VOC limit for potlines 1-4 using an emission factor that could potentially be based on one stack test per year for the first two years of the permit term, and at worst, one stack test per five-year permit term (if two tests are less than or equal to 75% of the VOC limit), was not sufficient to assure continuous compliance with the limit, particularly given that the permit allows for "representative sampling" of just one of the four potline roof monitors. Ex. 2 at 16.

As EPA has repeatedly stated, "the time period associated with monitoring or other compliance assurance provisions must bear a relationship to the limits with which the monitoring assures compliance." Clairton Order at 9; *see also* 40 C.F.R. § 70.6(a)(3)(i)(B). EPA has frequently determined that a requirement for periodic stack testing alone—even on an annual basis—is generally insufficient to assure compliance with hourly or even 12-month rolling limits and has repeatedly directed permitting authorities "to consider a multi-pronged monitoring approach of periodic stack testing accompanied by other clearly identified permit terms such as parametric monitoring." Cove Point Order at 15-16. However, the permit does not identify any parameters that could be monitored to assess Century's compliance with this VOC limit during the periods in-between performance test (let alone include any evidence regarding how those parameters might be related to VOC emissions) or include any requirement for Century to monitor those parameters or maintain them within certain operating levels.[24]

Further, neither the Division's Statement of Basis nor its Response to Comments addresses any of the five factors EPA has identified as a "starting point in determining appropriate monitoring," including (1) the variability of emissions from the unit in question; (2) the likelihood of a violation of the requirements; (3) whether add-on controls are being used for the unit to meet the emission limit; (4) the type of monitoring process, maintenance, or control equipment data already available for the emission unit; and (5) the type and frequency of the monitoring requirements for similar emission units at other facilities. CITGO Order at 7–8. As discussed further in the next section below, this is especially concerning here because the Division has not provided any analysis of the variability of emissions at these units, and potlines 1-4 have apparently only been tested once for VOCs, in August of 2021. Consequently, there is

[24] While Appendix A to the permit does contain a Compliance Assurance Monitoring plan for Potlines 1-4 requiring Century to maintain certain parameters within established operating ranges, these parameters are specifically only indicators for PM and SO2 emissions, and do not have any apparent connection to either VOC or NOx emissions. *See* Renewal Permit Appendix A, 2-1 to 2-15 (Ex. 3 at 134-148).

not enough test data for potlines 1-4 to make any real determinations regarding variability of VOC emissions at those units. However, potline and roof vent monitor 5 do have multiple stack tests for VOCs, which indicate that VOC emissions have varied dramatically, even over relatively short periods of time (sometimes over the course of just a few months), and that at least potline 5 and its associated roof monitor have reported multiple violations of their own VOC limit—suggesting that infrequent stack testing is insufficient to adequately reflect actual emissions from Potlines 1-4, and that there is a very reasonable likelihood that Potlines 1-4 could violate their own VOC emission limit.

Adequate monitoring and testing requirements are especially important here, because these VOC limits are synthetic minor limits that were taken in order to avoid major PSD applicability. As EPA has previously emphasized, "only limits that meet certain enforceability criteria may be used to restrict a facility's PTE, and the permit must include sufficient terms and conditions such that the source cannot lawfully exceed the limit." *In the Matter of Hu Honua Bioenergy, LLC,* Order on Title V Petition No. VI-2014-10 (Sept. 14, 2016) ("2016 Hu Honua Order") at 20 (further stating synthetic minor limits "must be supported by monitoring, recordkeeping, and reporting requirements sufficient to enable regulators and citizens to determine whether the limit has been exceeded and, if so, to take appropriate enforcement action") (citation, punctuation omitted). This is because "to effectively restrict a facility's PTE under the relevant major stationary source threshold, a permit's emission limits must apply at all times to all actual emissions, and **all actual emissions must be considered** in determining compliance with the respective limits." *Id*. (emphasis added); *see also* 2014 Hu Honua Order at 10-11.

Petitioners raised this issue in Comment 8.c. Ex. 2 at 16-17. The Division's Response to Comments document relabeled this comment as Comment 11 (on page 14 of the RTC document), and the Division's response to this comment may be found on pages 15-16 of the RTC.

We recommended that the Division revise the permit to require testing for VOCs and NOx at these units on at least an annual basis.

4. Analysis of KYDAQ's Response

The Division's response to this comment is identified as Response to Comment 11 on pages 15-16 of the Response to Comments document. The Division's response stated that ultimately no changes were made in response to this comment.

With regards to our comment on the VOC testing requirements for Potlines 1-4, the Division's response stated the following:

> The Division acknowledges the comment, however, no changes have been made. Regarding the VOC limit for Potlines #1 through #4, the permit requires stack testing to determine an emission factor for use in the emission calculation, which is performed monthly. This calculation is the compliance demonstration, not the stack testing to determine an emission factor. In this way, compliance is

> demonstrated every month. Furthermore, as the applicability of 401 KAR 51:017, Sections 8 to 16 is predicated on the tons per year emissions increase from a project, not the lbs/hour emissions, the established lbs/hour limit is already more stringent than it needs to be to preclude the BACT requirements of PSD for the project. The Division finds that the monthly calculation and established testing requirements are adequate to ensure PSD was precluded for the project that established them.

RTC at 15-16.

The Division's response fails to adequately address the issue raised in our comment for multiple reasons.

First, the Division's position is that more frequent testing is unnecessary because the monthly calculation, and not the periodic testing to determine the emission factor used in the calculation, is the compliance demonstration, is clearly mistaken and misses the fundamental issue raised in our comment. We understand that Century is required to "calculate" emissions on a monthly basis—the problem is that Century is only required to update the *emission factor* used in that calculation potentially once every five-year permit term.

The Division has effectively adopted the position that the *only* relevant factor to determining whether testing and monitoring is sufficient to assure continuous compliance with a limit is how frequently the permittee performs the emission calculation—regardless of how unrepresentative or outdated the actual data used to perform that calculation is. This is plainly untenable, and if accepted, would lead to emission limits that are unenforceable as both a legal and practical matter.

As noted above, EPA's regulations and past orders on Title V petitions have made clear that it is the permitting authority's obligation to ensure that the permit requires "periodic monitoring sufficient to yield *reliable data from the relevant time period* that are representative of the source's compliance with the permit." 40 C.F.R § 70.6(a)(3)(i)(B) (emphasis added). The mere fact that Century is required to perform a calculation on a monthly basis does nothing to ensure that those calculated emissions are actually representative of Century's compliance with the VOC limit over the relevant time period. To be clear, Petitioners are not arguing that the use of a monthly calculation for compliance is impermissible *per se*. As EPA has previously explained, "[a]lthough it is generally preferred that PTE limitations be as short-term as possible (e.g., not to exceed one month), EPA guidance allows permits to be written with longer term limits if they are rolled (meaning recalculated periodically **with updated data**) on a frequent basis (e.g., daily or monthly)." 2016 Hu Honua Order at 20. However, ensuring that this calculation is performed with **updated data** is crucial. The emission rate obtained from stack testing is the underlying data that forms the fundamental basis for how monthly emissions are calculated, and it is the emission rate that actually provides a snapshot of the unit's performance. A monthly calculation performed using potentially outdated stack test data provides little to no insight into a unit's present performance, and a stack test result from over five years ago certainly does not constitute "periodic monitoring sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit." 40 C.F.R § 70.6(a)(3)(i)(B).

EPA has frequently determined that a requirement for periodic stack testing alone—even on an annual basis—is generally insufficient to assure compliance with hourly or even 12-month rolling limits and has repeatedly directed permitting authorities "to consider a multi-pronged monitoring approach of periodic stack testing accompanied by other clearly identified permit terms such as parametric monitoring." Cove Point Order at 15-16; *see, e.g.,* Clairton Order at 8-11 (objecting to permit on grounds that permitting authority failed to provide a rationale or "reasoned explanation" for why stack tests performed every two, four, or five years were sufficient assure compliance with both hourly and 12-month rolling emission limits contained in the permit; "EPA has explained in previous orders that it is the permitting authority's responsibility to ensure that the title V permit itself sets forth monitoring sufficient to assure compliance with all applicable requirements"); *see also In the Matter of Northeast Maryland Waste Disposal Authority, Montgomery County Resource Recovery Facility*, Order on Petition No. III-2019-2 at 10 (Dec. 11, 2020) (objecting to permit on grounds that annual stack testing alone was insufficient to demonstrate compliance with an hourly limit for hydrochloric acid (HCl) that applied at all times). The relative infrequency of stack testing is especially problematic here because the permit does not identify any parameters that could be monitored to assess Century's compliance with this VOC limit during the periods in-between performance tests, let alone include any evidence regarding how those parameters are related to VOC emissions or requirements that Century monitor or maintain those parameters within certain operating levels.

This issue is only further exacerbated by the fact that the permit does not even require Century to test *each* potline roof monitor once every five years but rather permits Century to simply test a "representative" roof monitor and assume that emission rate for all four roof monitors. This is important because emissions from one monitor could be different from those of other monitors, and the permit does not adequately explain how the Division intends to ensure that a performance test of one monitor is in fact "representative" of the performance of the other three. Our understanding is that the roof monitor vents are tested using dozens of sampling ports located in the vents that are sampled sequentially during the stack test, and variability is likely the result of different pot operations underway for each sample location. For example, if there are more anode replacements during one set of tests than during other tests, then there are naturally going to be differences in pollutant concentrations measured at the roof vents. Petitioners also suspect that there may be some factors inherent to the potroom—such as variations in the VOC content of the carbon anodes used in the specific potroom being tested at the time of testing—that could potentially result in variations in how much VOCs are produced.

Two of the factors to consider when determining whether monitoring contained in a title V permit is sufficient to assure compliance with any term or condition are (1) the variability of emissions from the unit in question and (2) the likelihood of a violation of the requirements. Clairton Order at 9. However, the Division has not provided any information regarding variability of emissions from these units. In fact, the Division does not address any of the five factors EPA has identified as a "starting point in determining appropriate monitoring," which also include (3) whether add-on controls are being used for the unit to meet the emission limit; (4) the type of monitoring process, maintenance, or control equipment data already available for the emission unit; and (5) the type and frequency of the monitoring requirements for similar

emission units at other facilities. CITGO Order at 7–8. Though the Division failed to analyze any of these factors, Petitioners believe analysis of just the first two factors is sufficient to show that the Division has failed to provide a rationale to justify why the contemplated testing, monitoring, and recordkeeping requirements are sufficient to assure compliance with the hourly VOC limits.

The Division's Statement of Basis accompanying the permit, which includes a history of stack test results for each unit, indicates that the main stack for potlines 1-4 has only ever been tested once for VOC emissions, in August of 2021—nearly five years ago—which reported a result of 26.2 lbs/hour, roughly 87% of the permitted limit of 30.252 lb/hour. Ex. 5, Statement of Basis at 34. The Statement of Basis does not include any other VOC emission results for either the potlines 1-4 main stack, or any VOC test results for any of the roof monitors for potlines 1-4. Because the potline 1-4 main stack has apparently only been tested for VOCs a single time and the Statement of Basis provides no VOC emissions data at all for the potline 1-4 roof monitors, there is effectively no data available regarding the potential variability of VOC emissions from potlines 1-4. The Statement of Basis does report multiple VOC emission results from the potline 5 main stack and the potline 5 downcomer, however, which might be informative:

Potline 5 and Roof Vent VOC emission test results

Test Date(s)	Potline 5 Main Stack emission rate (lbs/hour)	Potline 5 downcomer (roof vent) emission rate (lbs/hour)	Combined Emission Rate (lbs/hour)
11/26/2018 - 11/28/2018	5.568	3.454	9.022
6/17/2019- 6/19/2019	13.707	9.273	22.98
10/24/2019	2.169	2.105	4.274
6/16/2020	5.034	Unknown	Unknown
8/3/2021- 8/5/2021	3.09	3.53*	6.62

*For unknown reasons, the Statement of Basis did not include the emissions data for the potline 5 roof vent for the August 2021 test, even though this was included in the original stack test. The roof vent emission data is taken from the stack test reports. Petitioners were unable to locate a public copy of the June 16, 2020 stack test.

Ex. 5, Statement of Basis at 40-42. (Red text indicates result exceeded applicable emission limit).

As the tables above show, over the course of five stack tests performed within a <three-year window, VOC emission results from the potline 5 main stack varied *significantly*, ranging from 13.707 lbs/hour to 2.169 lbs/hour (a variation of nearly 632%), while VOC emissions from the potline 5 downcomer ranged from 2.105 lbs/hour to 9.273 lbs/hour (roughly 440%) over the course of just a year. In the case of the June 2019 and October 2019 tests, emissions from the main stack swung over 11.5 lbs/hour over the course of just *four months*. This is an extreme variation in emissions over a very short time period, and a much shorter time period than could be captured even through annual stack testing—let alone a single stack test performed once every five years. If VOC emissions from potlines 1-4 demonstrate even a fraction of the variability as the emissions from potline 5 do, there is no assurance whatsoever that Century's "monthly

calculation," based on stack test results that could potentially be years out of date, could reasonably be representative of Century's compliance with the VOC limit over the relevant time period. This is especially the case as multiple of these performance demonstrated results well in excess of the applicable VOC limits for those units. For example, the June 2019 test at potline 5 reported a result of 13.707 lbs/hour (almost 186% of the hourly VOC limit of 7.384 lbs/hour for potline 5), all three tests at the downcomer demonstrated results ranging from 1268% to 5586% of the hourly VOC limit for the potline 5 roof monitor (0.166 lbs/hour), and the combined stack and potline roof monitor results for November 2018 and June 2019 tests demonstrated emissions of 9.022 lbs/hour and 22.98 lbs/hour, respectively—or roughly 120% and 304% of the units' combined VOC limit of 7.55 lbs/hour. Section B, Subject Item D, Condition 2.d (Renewal Permit at 42). The most recent stack test in August 2021 yielded a combined result of 6.62 lbs/hour—which is roughly 87.7% of the applicable limit of 7.55 lbs/hour. As noted above, the most recent (and only) stack test for VOCs at potlines 1-4 was also performed in August 2021 and also yielded an emissions rate that represented 87% of their permitted limit—which suggests that the VOC emissions at potlines 1-4 may follow similar patters as those at potline 5.

Finally, we do not understand what relevance the Division's assertion that the VOC testing requirements are adequate because "the established lbs/hour limit is already more stringent than it needs to be to preclude the BACT requirements of PSD for the project" has to our comment. The Division's opinions about the relative stringency of the established hourly VOC limit are inapposite to the discussion of whether the permit's testing and monitoring requirements are adequate to assure compliance with that limit. The point remains that the permit establishes a federally enforceable hourly VOC limit applicable to potlines 1-4—a synthetic minor limit that was taken by Century to avoid PSD requirements—and that it is the Division's duty to ensure that the permit contains adequate testing and monitoring requirements to assure compliance with that limit. For the reasons discussed in our comments and reiterated above, they are plainly insufficient.

As EPA has noted, the extent of monitoring necessary is a case and context-specific determination, and "the more variable or less well-understood the emissions the less likely that a single stack test will reflect the operating conditions (and emissions) between stack tests, and the greater the need for more frequent stack testing or parametric monitoring between stack tests." *In the Matter of BP Products North America,* order on Petition No. V-2021-9 (Mar. 4, 2022) at 20. In light of the extreme variability of VOC emissions exhibited at these units by Century's prior stack tests, it is clear that a requirement to perform one stack test every five years is plainly inadequate to assure compliance with the hourly VOC emission limit at potlines 1-4. The Division's response sidesteps these concerns, and instead merely reiterates its mistaken position that calculating emissions on a monthly basis (even if the calculation is based on outdated emission factors) is sufficient monitoring by itself. For all the reasons explained above, it is plain that the Division has failed to demonstrate that the Renewal Permit contains sufficient monitoring and testing to assure continuous compliance with this limit.

Claim 3: The permit fails to include adequate testing and monitoring requirements sufficient to assure continuous compliance with the 12-month rolling average emission limit for NOx from Potline 5, or the 12-month rolling combined NOx emission limit for Potlines 1-4 (stack and roof monitors) and the Anode Bake Furnaces 1-3.

1. Each permit issued under Part 70 must set forth testing, monitoring, reporting, and recordkeeping requirements sufficient to assure compliance with all of the permit's terms and conditions.

   See Claim 2, paragraph (1) above.

2. Citation to Permit Terms

Anode bake furnaces 1, 2, and 3, and Potlines 1-4 (control stack and roof monitors) are subject to a combined NOx limit of 268.67 tons per year on a 12-month rolling basis. Section D, Condition 3, Ex. 3, Renewal Permit at 113. This limit was taken to preclude applicability of the PSD regulations in 401 KAR 51:017. Condition D.3 further specifies that compliance with this combined emission limit shall be demonstrated using a monthly average, which will be derived from a calculation using an emission factor based on the results of the most recent performance test for the anode bake furnaces (combined) and the potline 1-4 stack and roof monitors (combined) multiplied by monthly aluminum production rate (in tons/month) over monthly hours of operation reported. *Id.*

Emissions from anode bake furnaces 1-3 are routed to the carbon bake dry alumina scrubber and then emitted from a combined stack (designated Emission Point 41b). Section B, Subject Item E, Condition 3.i.iv, Renewal Permit at 64, requires Century to test for NOx emissions from the anode bake process at the combined stack only once within the five-year permit term.

For potlines 1-4, Section B, Subject Item C, Condition 3.s.iv, Renewal Permit at 27, requires Century to perform testing for NOx emissions from the combined stack, as well as for the separate fugitive emissions from the roof monitors (which are not vented to the main stack), only once within the five-year permit term. As with VOCs, it does not actually require Century to stack test each potline roof monitor, but states rather that "[w]here similar potlines exist, the permittee may perform the roof monitor sampling on a representative potline." *Id.*

Potline 5 (control stack and roof monitor) is subject to a NOx limit of 36 tons per year based on a 12- month rolling total, to preclude applicability of PSD regulations in 401 KAR 51:017, Sections 8 to 16. Section B, Subject Item D, Condition 2.e, Renewal Permit at 42. Condition 2.e further states that compliance with these emission limits shall be demonstrated using a monthly average, which will be derived from a calculation using an emission factor based on the results of the most recent performance test for each of the stack and roof monitor, multiplied by monthly aluminum production rate (in tons/month) over monthly hours of operation reported. *Id.* Section B, Subject Item D, Condition 2.m.iv, Renewal Permit at 46, requires Century to perform stack testing for NOx emissions only once within the 5-year permit term.

Taken together, these requirements mean that Century's compliance with the combined 12-month rolling NOx limit for emissions from all three anode bake furnaces and potlines 1-4 is "calculated monthly" using emission factors that are based on only one test per five-year permit term. Moreover, the Renewal Permit allows for "representative sampling" of just one potline roof monitor, allowing that single performance test result to be assumed for all four potline roof monitors. Similarly, compliance with the 12-month rolling NOx limit for emissions from both potline 5 and potline 5's roof monitor is "calculated monthly" using emission factors based on only one test per five-year permit term.

3. Part 70 Requirements Not Met, Issue Raised in Public Comment

The Renewal Permit fails to meet the requirements of Part 70 because it fails to include adequate testing, monitoring, recordkeeping, or reporting requirements sufficient to assure continuous compliance with the 12-month rolling NOx limit applicable to Anode bake furnaces 1, 2, and 3, and Potlines 1-4, and the 12-month rolling NOx limit applicable to Potline 5, and because neither the Renewal Permit nor the Division's Response to Comments provide a clear or sufficient rationale for why the existing monitoring requirements are sufficient to assure compliance with these limits.

Petitioners raised this issue in Comment 8.c. *See* Ex. 2 at 16-17. The Division's Response to Comments document relabeled this comment as Comment 11, RTC at 14, and the Division's response to this comment may be found on pages 15-16 of the RTC. As our comments pointed out, a requirement to perform a single stack test per five-year permit term for NOx emissions from potline 5 is plainly insufficient to assure continuous compliance with the 12-month rolling NOx emission limit. Similarly, we stated that the requirement to perform a single stack test per five-year permit term for the combined emissions from the anode bake furnaces and Potlines 1-4 is plainly insufficient to assure continuous compliance with the combined, 12-month rolling NOx emission limits applicable to these units—especially since (again) the permit does not even require Century to test each potline roof monitor once per five years, but rather allows Century to test a "representative" roof monitor once every five years.

As EPA has repeatedly stated, "the time period associated with monitoring or other compliance assurance provisions must bear a relationship to the limits with which the monitoring assures compliance." Clairton Order at 9; *see also* 40 C.F.R. § 70.6(a)(3)(i)(B). EPA has frequently determined that a requirement for periodic stack testing alone—even on an annual basis—is generally insufficient to assure compliance with hourly or even 12-month rolling limits and has repeatedly directed permitting authorities "to consider a multi-pronged monitoring approach of periodic stack testing accompanied by other clearly identified permit terms such as parametric monitoring." Cove Point Order at 15-16 (objecting to permit on grounds that agency had failed to demonstrate that a requirement to perform a stack test on one turbine every five years was sufficient to demonstrate compliance with either hourly or annual project-wide PM and PM_{10} limits, due in part to permit's failure to include any parametric operating requirements that could be used to assure compliance during periods in-between stack tests).

In its recent order granting a petition to object to the Title V permit for the Edgar Thomson Plant in Allegheny County, EPA concluded that the permit was deficient because the

Allegheny County Health Department ("ACHD") had failed to adequately demonstrate in the permit record that a requirement to perform stack testing every two years for PM and every four years for CO and VOC was sufficient to assure continuous compliance with either hourly or 12-month rolling annual emission limits in the permit. *In the Matter of U.S. Steel Corp., Edgar Thomson Plant*, Order on Petition No. 111-2023-15 (Feb. 7, 2024) ("Edgar Thomson Order"), at 10-11. EPA's objection rested in large part on its determination that while ACHD had attempted to address each of the five factors enumerated in CITGO, it had failed to provide a sufficient rationale to justify why the contemplated testing, monitoring, and recordkeeping requirements were sufficient to assure compliance, and that ACHD's justifications largely rested on unexplained conclusions that were not adequately explained in the permit record. *Id*. at 12-18. Unlike in Edgar Thompson, where ACHD at least attempted to analyze each of the five CITGO factors, here the Division has not provided *any* analysis in the permit record of any of the five factors. This is especially concerning since, as Petitioners have demonstrated above, the (limited) testing at this facility indicates that significant variability in emissions from these units and that multiple units at this facility have in fact exceeded their limits for VOCs.

Our comments further emphasized that more frequent testing was especially important for the anode bake furnaces, because most of the NOx emissions from those units are a result of fuel combustion in the furnace, and consequently, NOx emission levels can vary significantly—even on an hourly basis—and is highly dependent on the composition of the fuel being combusted and the condition of the furnace burners. More frequent NOx testing of the anode bake furnaces is thus necessary to ensure that the furnace burners are optimized for clean combustion and that any needed maintenance can be more readily determined. We also noted that the permit as currently drafted failed to account for NOx emissions from the anode bake furnaces during furnace startup and shutdown, which is an issue because the anode bake furnaces are typically run as a batch process, and thus are started up and shut down relatively frequently (particularly in comparison to aluminum Potlines which are typically operated on a constant basis).

We recommended that the Division revise the permit to require testing for NOx at these units on at least an annual basis.

4. Analysis of KYDAQ's Response

With regards to our comment on the NOx testing requirements for the anode bake furnaces, potlines 1-4, and potline 5, the Division's response stated the following:

> Regarding the NOx limits for Potlines #1 through #5 and the Anode Bake Furnaces, while the stack testing to determine emission factors is only required once per permit term, the calculation to determine compliance with the rolling 12-month emission limit occurs every month, ensuring continuous compliance. All of the units with these preclusion limits for NOx are continuous operations – even the anode bake furnaces are operated in such a way that at any given time, one furnace may be baking anodes, another might be starting up or shutting down, and another may be loaded or unloaded. This results in an operation that, since all of the furnaces are exhausted to a shared stack, can be fully accounted for during testing

events because these operations overlap during normal operation. The Division finds that the monthly calculation and established testing requirements are adequate to ensure PSD was precluded for the project that established them.

RTC at 16.

The Division's response fails to adequately address the issue raised in our comment, for much the same reasons as its response to the VOCs issue above.

The Division reiterates its position that more frequent stack testing for NOx emissions from at any of these units is unnecessary because Century is required to "calculate" emissions on a monthly basis, and that this requirement to calculate emissions on a monthly basis itself assures continuous compliance with the permitted limits. Again, the issue we raised (and which the Division's response does not address) is that because Century is only required to perform a stack test once every five years, the *emission factor* used in that calculation will only be updated once every five-year permit term. The monthly compliance calculation is meaningless if it is based on outdated data, and one stack test every five years alone (and in the case of the potline roof monitors, only one test of a "representative potline" per five years) plainly does not constitute "periodic monitoring sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit." 40 C.F.R § 70.6(a)(3)(i)(B). Aside from its own mistaken assertion, the Division has not provided any rationale for its selected monitoring requirements, let alone addressed any of the five CITGO factors EPA has identified as a "starting point in determining appropriate monitoring." However, Petitioners believe analysis of just the first two factors is sufficient to show that the Division has failed to provide a rationale to justify why the contemplated testing, monitoring, and recordkeeping requirements are sufficient to assure compliance with the NOx limits.

Our comments further emphasized that more frequent testing was especially important for the anode bake furnaces, because most of the NOx emissions from those units are a result of fuel combustion in the furnace, and consequently, NOx emission levels can vary significantly. The available NOx emission test results provided for the anode bake furnaces in the Statement of Basis accompanying the permit reinforces this concern:

Anode Bake Furnaces 1-3 NOx emission test results

Test Date(s)	Test Result
6/5/2018- 6/7/2018	6.562 lbs/hour
5/30/2019 – 6/1/2019	11.846 lbs/hour
6/1/2020- 6/4/2020	14.885 lbs/hour

Statement of Basis at 29-32

As the table above shows, over the course of three stack tests performed within a relatively short two-year window, NOx emission results from the anode bake furnace process ranged anywhere from 6.562 lbs/hour to 14.885 lbs/hour. Commenters believe it is clear that one stack test performed every five years cannot reasonably satisfy the requirement for "reliable data

from the relevant time period that are representative of the source's compliance with the permit" and is plainly insufficient to assure continuous compliance with the annual NOx limit, given the high variability in NOx emissions over a mere two-year window demonstrated by these prior stack test results.

Finally, the Division's Statement of Basis indicates that the main stack for potlines 1-4 has only ever been tested once for NOx emissions, in August of 2021—nearly five years ago—which reported a result of 1.20 lbs/ton. Ex. 5, Statement of Basis at 34. The Statement of Basis and other permit materials do not include any estimates of 12-month rolling combined NOx emissions from the anode bake furnaces and potlines 1-4, so it is difficult to assess the likelihood of violation with the aggregate 12-month limit based on the limited info provided. However, assuming an emission rate of 14.886 lbs/hour for the anode bake furnaces and multiplying the 1.2 lbs/ton emission rate for the potlines 1-4 by their maximum permitted throughput of 250,000 would yield an estimated combined 12-month emissions of roughly 215.2 tons/year—which is roughly 80% of the permitted limit of 268.67 tons/year for the units combined. (14.886 lbs/hour x 8,760 hours / 2000 lbs) + (1.2 lbs/ton x 250,000 tons/ 2000 lbs).

The Statement of Basis does not include any other NOx emission results for either the potlines 1-4 main stack or any of the roof monitors for potlines 1-4. Because the potline 1-4 main stack has apparently only been tested for NOx a single time, there is effectively no data available regarding the potential variability of NOx emissions from potlines 1-4. The Statement of Basis does report a few NOx emission results from the potline 5 main stack and the potline 5 downcomer, however, which might be informative:

Potline 5 and roof vent NOx emission test results

Test Date(s)	Potline 5 Main Stack emission rate (lbs/hour)	Potline 5 downcomer (roof vent) emission rate (lbs/hour)	Combined Emission Rate (lbs/hour)
11/26/2018 - 11/28/2018	6.635 lbs/hour	91.98	98.615
6/17/2019 – 6/19/2019	2.471 lbs/hour	0.110	2.581

Statement of Basis at 40-42.

As the tables above show, over the course of two stack tests performed within a mere 6 months of each other, NOx emissions from the potline 5 main stack varied from 2.471 lbs/hour to 6.635 lbs/hour, while NOx emissions from the potline 5 downcomer ranged from as low as 0.110 lbs/hour to a staggering **91.98 lbs/hour**.[25] This is a startling variation in emissions over just a six-month period, which could not possibly be captured through annual stack testing—let

[25] As with the anode bake furnaces above, neither the November 2018 nor the June 2019 stack test reports include an analysis of what factors contribute to NOx formation at potline and roof monitor 5, nor do they include any suggested explanation for the wildly different NOx results. Neither the statement of basis nor other permit materials address this wild variation in emission results either. Consequently, Petitioners do not have enough information to evaluate possible causes for these significant variations.

alone a single stack test performed once every five years. As noted above, a quick napkin calculation using the only NOx emission test result available for potlines 1-4 yielded a rough estimate of emissions at 80% of the permitted limit. If NOx emissions from potlines 1-4 demonstrate even a fraction of the variability as the emissions from potline 5 do, there is a very realistic possibility emissions could be much higher. This potential variability also means that there is no assurance whatsoever that Century's "monthly calculation," based on stack test results that could potentially be years out of date, could possibly be representative of Century's actual NOx emissions over the relevant time period.

In light of the extreme variability of NOx emissions exhibited at these units by Century's prior performance tests, it is clear that a requirement to perform one stack test every five years is plainly inadequate to assure compliance with the NOx emission limit for these units. The Division's response sidesteps these concerns, and instead merely reiterates its mistaken position that calculating emissions on a monthly basis (even if the calculation is based on outdated emission factors) is sufficient monitoring by itself. For all the reasons explained above, it is plain that the Division has failed to demonstrate that the Renewal Permit contains sufficient monitoring and testing to assure continuous compliance with this limit.

Claim 4: The Renewal Permit fails to establish clear criteria for when sampling for compliance with the permit's emission limits can be based on a "representative potline" at potlines 1-4.

1. Applicable Requirement or Part 70 Requirements

It is the Title V permitting authority's responsibility to ensure that a proposed permit "'set[s] forth'" conditions sufficient "'to assure compliance with all applicable requirements'" of the Clean Air Act. Sandy Creek Order at 12 (quoting 42 U.S.C. § 7661c(c)). This includes a requirement that all limits be enforceable as a practical and legal matter. For a limit to be enforceable as a practical matter, a proposed permit must clearly specify how emissions will be measured or determined for purposes of demonstrating compliance with the limit. *See, e.g.*, 2014 Hu Honua Order at 10. This requires that any proposed emission limits "be accompanied by terms and conditions that require a source to effectively constrain its operations so as to not exceed the relevant emissions threshold… whether by restricting emissions directly or through restricting specific operating parameters," and supported by monitoring, recordkeeping, and reporting requirements "sufficient to enable regulators and citizens to determine whether the limit has been exceeded and, if so, to take appropriate enforcement action." Pencor-Masada Order at 7.

Further, one of the primary purposes of Title V is to "enable the source, States, EPA, and the public to understand better the requirements to which the source is subject, and whether the source is meeting those requirements. Increased source accountability and better enforcement should result." 57 Fed. Reg. 32250, 32251 (July 21, 1992). Accordingly, "[i]n all cases, the rationale for the selected monitoring requirements must be clear and documented in the permit record." CITGO Order at 7–8 (granting petition because permitting authority "did not articulate a rationale for its conclusions that the monitoring requirements… are sufficient to assure compliance"); *see also* 40 C.F.R. § 70 .7(a)(5). Further, "permitting authorities have a

responsibility to respond to significant comments." CITGO Order at 7; *In the Matter of Onyx Environmental Services*, Petition V-2005-1 (February 1, 2006).

2. Citation to Permit Terms

Section B, Subject Item C, Condition 3.s.i-v, Renewal Permit at 26-27, allows for testing of compliance with the emission limits established pursuant to 401 KAR 51:017 for PM, PM_{10}, $PM_{2.5}$, Condensable PM, SO_2, VOC, NO_X, and CO to be based on a representative potline "where similar potlines exist." Nothing in the permit, the statement of basis, or any of the other permit materials either provides an explanation of precisely *how*, or using what criteria or under what conditions, either Century or KYDAQ will establish that a performance test for one potline roof monitor may appropriately be considered representative (or non-representative) of the performance of the other potline roof monitors.

3. Part 70 Requirements Not Met, Issue Raised in Public Comment

Petitioners raised this issue in Comment 10. *See* Ex. 2 at 19-20. The Division's Response to Comments document relabeled this comment as Comment 14 (on page 18 of the RTC document), and the Division's response to this comment may be found on page 19 of the RTC.

Our comments stated that KDEP should not allow for use of testing at only one potline without establishing a specific approval process, establishing clear criteria for determining that a potline roof monitor test is representative of the other three potlines, or establishing clear conditions regarding how the representative potline was operated during the time of the testing and including specific recordkeeping and reporting to ensure that the other potlines are actually operated in the same manner on a continuous basis as purportedly represented by the single performance test. Ex. 2 at 19. As our comments emphasized, a clear, defined criteria and procedure are especially important because the limits for VOCs and NOx applicable to potlines 1-4 and their roof monitors were established under the PSD regulations (and again, taken to avoid major PSD review), and thus these limits reflected BACT and also modeled emission rates including emissions for short term average NAAQS. *Id*.

4. Analysis of KYDAQ's Response

In its response to this comment, KYDAQ noted that it was making a minor change to clarify that the "representative testing" provision is applicable to the roof monitoring testing at Potlines 1-4 only, and not the main stack (which all four potlines share). RTC at 19. With regards to the roof monitor testing, the Division's response stated the following:

> For roof monitor testing, the Division opted to allow Century to test a representative potline because conducting roof monitor testing is very labor intensive and time consuming compared to testing the main stack. The Division has, however, required that each potline be equipped with a roof monitor testing manifold, such that a different potline would be tested each time that a test occurs. The Division verifies this through review and approval of the test plan and compliance test protocols submitted to the Division. The PMP plan in Appendix B set standards for normal

operation, including the number of pot shields that may be removed at any given time. This helps ensure that the "representative testing" is actually representative.

The permittee, if seeking to test only a "representative potline", must include the demonstration or "representativeness" in the submitted compliance test protocol. The Division reviews each test protocol, and if the Division does not concur with the assertion that the potline being tested is "representative" of the other operational potlines at the time of the test, the source will be required to conduct additional testing. Additionally, the source is required to monitor the operational parameters of the potline being tested during the test. With the data gathered during the test along with the monitoring and recordkeeping requirements included in the permit for all of the potlines, it can be determined whether the potlines are being operated in a similar manner on an ongoing basis.

RTC at 19.

The Division's response fails to adequately address the issue raised in our comment, for several reasons.

First, the Division's statement that the Parametric Monitoring Plan ("PMP") in Appendix B establishes "standards for normal operation" and "ensure[s] that the 'representative testing' is actually representative" is not entirely accurate. While Appendix B does contain a PMP for Potlines 1-4 requiring Century to maintain certain parameters within established operating ranges, these parameters are specifically established as indicators for *Total Fluoride* emissions, and the parameters identified relate primarily to operation of the electrostatic precipitator and scrubber system—which were specifically designed to scrub for fluoride emissions. Renewal Permit at 188-199 (Appendix B from 23-34). The parameters identified do not have any immediately apparent connection to either VOC or NOx emissions from potlines 1-4 or their roof vents, and neither the PMP nor any of the other permitting materials suggest that these parameters are in fact related to VOC and/or NOx emissions, let alone identify specific levels that may be considered "representative" for VOC and/or NOx. Similarly, as noted previously the Compliance Assurance Monitoring plan for Potlines 1-4 in Appendix A includes only PM and SO2, and does not address either VOC or NOx emissions. *See* Renewal Permit Appendix A, 2-1 to 2-15 (Ex. 3 at 134-148). Further, the permit does not contain any provision explaining how, let alone requiring, any of the identified parameters in either the PMP or CAM plans could be used to determine compliance with the VOC or NOx emission limits at potlines 1-4.

The Division's statement that the Division will be able to determine the "representativeness" of any given roof monitor, because performance tests must include "the operational parameters of the potline being tested" and there are "monitoring and recordkeeping requirements included in the permit for all of the potlines," ultimately clarifies very little. As an initial matter, we note that it is not clear which specific "monitoring and recordkeeping requirements… for all the potlines" that the Division's vague response is specifically referring to. Section B, Subject Item C, Condition 4 broadly requires Century to monitor daily weight of aluminum produced (4.b-c), perform twice daily visual observations of opacity (4.e), monitor monthly "amount any type of process weight added to each emissions unit and the operating

parameters of each control device" (for the PM ESPs specifically) (4.g), and to generally monitor the parameters identified in the PMP (4.i). Condition 5(e)(i) reiterates the requirement that Century maintain records of daily aluminum production, while Condition 5(e)(ii) requires Century to maintain "[r]ecords 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"—which again, does not actually define what parameters would satisfy this condition and thus is not informative.

Regardless of which specific monitoring and reporting conditions the Division is referring to, the Division's answer again misses the fundamental point, which is that the permit currently does not define any procedure for how a claim of representativeness will be evaluated—not even contain the basic outline in the Division's response (as vague and unenforceable as it is)—and does not actually identify any explicit criteria or parameters that can be used for evaluating what constitutes "representative" operating levels. One of the primary purposes of Title V is to "enable the source, States, EPA, and the public to understand better the requirements to which the source is subject, and whether the source is meeting those requirements." 57 Fed. Reg. 32250, 32251 (July 21, 1992). To this end, a limit must be enforceable as a practical matter, which includes a requirement that it is supported by monitoring, recordkeeping, and reporting requirements "sufficient to enable regulators and citizens to determine whether the limit has been exceeded and, if so, to take appropriate enforcement action." Pencor-Masada Order at 7. "In all cases, the rationale for the selected monitoring requirements must be clear and documented in the permit record." CITGO Order at 7–8 (granting petition because permitting authority "did not articulate a rationale for its conclusions that the monitoring requirements… are sufficient to assure compliance"); *see also* 40 C.F.R. § 70.7(a)(5).

The permit's current procedure (or lack of one) for determining representativeness of a given potline roof monitor, which more or less boils down to a vague, conclusory statement that the Division will determine whether a test is representative based on (undefined) criteria, is not enforceable as a practical matter and does not provide either the public or regulators with the information necessary to ascertain *how* these decisions will be made. As stated in prior sections, it is the Division's duty to actually identify the operating parameters that might be relevant to this determination, and to "ensure that the Permit clearly identifies what those variables are, and how the relevant variables interact, for purposes of calculating emissions and demonstrating compliance with the emission limits." Edgar Thomson Order at 18. For all the reasons above, the Division must revise the permit to establish clear criteria for determining that a potline roof monitor test is representative of the other three potlines, including specific recordkeeping and reporting to ensure that the other potlines are operated in the same manner on a continuous basis as purportedly represented by the single performance test.

Claim 5: The testing frequency is not sufficient to ensure compliance with the PM limits at the potlines main stack and the potline roof monitors.

1. Applicable Requirement or Part 70 Requirements

See Claim 2, paragraph (1), above.

2. Citation to Permit Terms

All of the potline roof monitors for Potlines 1-4 are subject to PM, PM10, and PM2.5 emission limits that appear to be BACT limits issued under Kentucky's PSD regulations in 401 KAR 51:017. The permit allows testing at just one representative roof monitor for the four potlines, to be conducted annually.

Emissions limits are set for potlines 1-4 at Section B., Subject Item C., Sections 2.a., and 2.g. The limits contained in 2.a. are set on a pound of particulate matter per ton of aluminum produced basis, as required for center-worked prebake three ("CWPB3") potlines for compliance with the national emissions standards for hazardous air pollutants ("NESHAP") at 40 C.F.R. § 63.843(a)(2)(vi). Section 2.g. contains separate limits for total particulate matter, coarse particulate matter smaller than 10 microns ("PM10"), and fine particulate matter smaller than 2.5 microns ("PM2.5") for compliance with 401 KAR 51:017, Prevention of significant deterioration of air quality. These limits are set on a pound per hour basis, on a monthly average, with limits for each potline for PM and PM10, and for potlines 1-4 combined for PM, PM10, and PM2.5.

Section B., Subject Item C., Sections 3.d., 3.f., and 3.h. contain testing provisions from the NESHAP for PM, which requires semi-annual monitoring at each roof monitor. Section 3.s.i., however, contains separate testing requirements for total PM, as well as PM10 and PM2.5, for compliance with the emissions limits set pursuant to 401 KAR 51:017. This provision requires that "[t]he permittee shall conduct a performance test for particulate emissions (filterable PM, PM10, PM2.5 and Condensable Particulate) *once every 12 months* during the life of permit V-24-010" (emphasis added). It further allows testing on a single representative potline.

3. Part 70 Requirements Not Met, Issue Raised in Public Comment

The limits set for compliance with 401 KAR 51:017 are on an hourly basis. As stated in comments, the Division must require PM, PM10, and PM2.5 testing at all potline roof monitors on a semi-annual basis, as is already required under the aluminum plant NESHAP standard, to ensure compliance with 401 KAR 51:017 as well. As EPA has repeatedly stated, "the time period associated with monitoring or other compliance assurance provisions must bear a relationship to the limits with which the monitoring assures compliance." Clairton Order at 9; *see also* 40 C.F.R. § 70.6(a)(3)(i)(B). Additionally, as EPA has noted, the extent of monitoring necessary is a case and context-specific determination, and "the more variable or less well-understood the emissions the less likely that a single stack test will reflect the operating conditions (and emissions) between stack tests, and the greater the need for more frequent stack

testing or parametric monitoring between stack tests." *In the Matter of BP Products North America,* order on Petition No. V-2021-9 (Mar. 4, 2022) at 20.

Particulate emissions from the potlines can vary greatly over the potline operations. Emissions that escape through the potline roof monitors can be due to, among other things, pot shields that are not properly aligned after opening, due to too many pot shields open at the same, due to a pot becoming unstable (i.e., a "sick pot"), or due to damaged pot shields. While the CAM plan discusses the plant's daily and weekly "informal inspections" to ensure the shields are in adequate alignment and condition to obtain proper collection efficiency of plant gases, the CAM plan also states that "[g]iven the large number of cells per potline (112) with each cell containing 20 shields, it is not practical to conduct formal inspections on a daily basis." This is why more frequent testing than 1-2 times per five-year permit term is necessary for the PM emissions from the Potline roof monitors. More frequent testing of emissions from the roof monitors will help to detect if there are problems with the pot shields or operational problems that need to be addressed. The NSPS for aluminum plants requires testing of the Potline groups on a monthly basis. 40 C.F.R. §60.194(c). The aluminum plant NESHAP allows a less frequent testing requirement, but still requires semi-annual testing of each Potline roof monitor emissions and annual testing of the Potline control stack emissions. 40 C.F.R. § 63.847(d)(1). KYDAQ must require a testing frequency for the PM BACT limits that is at least as frequent as required under the NESHAP rules.

This specific issue was raised in Petitioners' public comments on the permit at Comment 8.d. *See* Ex. 2 at 17-18. The Division responded to this comment (relabeled as Comment 12), stating:

> Regarding the frequency of roof monitor testing, as the commenter states, the permittee is already required to conduct testing on the roof monitors for PM on a semi-annual basis to demonstrate compliance with the NESHAP. The permit does not need to reiterate this requirement to use the data from these tests to verify compliance with the BACT emission limits for PM as well. It is expected that the permittee will do so, and they have done so in the Past.

RTC at 17.

4. Analysis of KYDAQ's Response

The Division's response is deficient for two reasons. First, the Division cannot simply "expect" that Century will use the semi-annual tests for PM required by 40 C.F.R. § 63.847(d)(1) for purposes of compliance with the PM, PM10, and PM2.5 BACT limits as well. As made clear above, it is the very purpose of a Title V permit to make explicit the monitoring, recordkeeping, and reporting requirements expected of the permittee. It is inapposite that the Company has used the NESHAP testing to demonstrate BACT compliance in the past, in the absence of a requirement that they do so in the future.

Second, the permit in fact contains an explicit provision to the contrary. After laying out the requirements for testing for PM pursuant to the NESHAP at the roof monitors on a semi-annual basis at Section B., Subject Item C., Sections 3.d., 3.f., and 3.h., the permit states that testing for purposes of demonstrating compliance with 401 KAR 51:017 *shall* be conducted "once every 12 months" at Section 3.s.i. Further, that section allows testing of a single "representative potline," without any of the additional protective requirements for alternative methods at every other potline contained in the NESHAP and Section 3.h. of the permit. In effect, the permit allows for testing of any given potline for PM, PM10, and PM2.5 once every 4 years to verify compliance with a lbs/hour limit. The only justification given in response to the Petitioners' comment pointing this out is that the permit does not need to reiterate the testing requirements of the NESHAP, which the Division "expects" the Company to use for compliance despite a permit provision explicitly to the contrary. EPA should object to this provision and require the Division to make explicit its "expectation" that the Company conduct at least semi-annual testing for PM, PM10, and PM2.5 at the roof monitor for each potline.

CONCLUSION

For the reasons stated above, EPA must object to the Renewal Permit. As clearly raised in Petitioner's Comments, the Renewal Permit fails to include adequate testing, monitoring, recordkeeping, or reporting requirements sufficient to assure continuous compliance with the hourly and 12-month rolling limits for multiple pollutants applicable to numerous emission units located at the facility. Accordingly, Petitioners respectfully request that EPA object to the issuance of the Renewal Permit and require that:

(1) The Division revise the permit to include adequate testing, monitoring, recordkeeping, or reporting requirements sufficient to assure compliance with the hourly and annual limits applicable to units identified above, and;

(2) Supplement the permit record to clearly provide the Division's rationale for the selected monitoring requirements that Division includes in an amended permit.

Signed this 9th day of June, 2025

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List of Enclosed Exhibits

Exhibit Number	Description
1	Proposed Draft Permit V-24-010
2	KRCEIP Comments on Permit V-24-010 (Nov. 15, 2024)
3	Final Renewal Permit V-24-010 (Apr. 16, 2025)
4	Comments and Response Document Permit V-24-010
5	Statement of Basis & Summary for Final V-24-010
6	Century Aluminum, Title V Renewal Application, Source ID 21-091-00004; Agency Interest #1634; Permit V-16-011 R1), November 30, 2021
7	Century Aluminum, Title V Permit Renewal Application, Century Aluminum of KY – Hawesville Operations (AI # 1634), August 13, 2015
8	KDEP, Comments and Response on the Draft Permit V-01-012
9	Permit V-01-012, Century Aluminum of Kentucky, LLC (Feb. 15, 2011)
10	Century Aluminum of South Carolina, Inc., Facility Sulfur Dioxide Emissions Calculation Algorithm (Feb. 1, 2022)
11	KDEP, Permit Statement of Basis, Revised Proposed, Title V/PSD/Synthetic Minor/Construction/Operating Permit V-08-012, Century Aluminum of Kentucky, LLC, Hawesville, KY, (Dec. 6, 2010)