

ALLEGHENY COUNTY HEALTH DEPARTMENT AIR QUALITY PROGRAM

June 30, 2023

SUBJECT: Reasonable Available Control Technology (RACT III) Determination
ATI Flat Rolled Products Holdings, LLC
100 River Road
Brackenridge, PA 15014-1597
Allegheny County

Title V Operating Permit No. 0059

TO: JoAnn Truchan, P.E.
Program Manager, Engineering

FROM: Michael Dorman
Air Quality Engineer

I. Executive Summary

ATI Flat Rolled Products Holdings, LLC (ATI) – Brackenridge Plant is defined as a major source of NO_x and VOC emissions and was subjected to a Reasonable Achievable Control Technology III (RACT III) review by the Allegheny County Health Department (ACHD) required for the 2015 Ozone National Ambient Air Quality Standard (NAAQS). The findings of the review established that the ATI Flat Rolled Products Holdings, LLC (ATI) – Brackenridge Plant is subject to both presumptive RACT III and case-by case RACT III requirements and the requirements are summarized below.

Table 1 Technically and Financially Feasible Control Options Summary for NO_x/VOC

Unit ID	Emissions Unit	Financially Feasible Control Option	Current NO _x /VOC PTE	RACT Reduction	Revised NO _x /VOC PTE	Annualized Control Cost (\$/yr)	Cost Effectiveness (\$/ton NO _x /VOC removed)
There are no additional technically and financially feasible control options available for NO _x or VOC reduction from RACT II to RACT III.							

These findings are based on the following documents:

- RACT analysis performed by ATI Flat Rolled Products Holdings, LLC (ATI) – Brackenridge Plant (2022-12-21 RACT III.pdf) – Submitted on December 23, 2022
- RACT II permits Nos. 0059-I009 (issued 4/16/2020), 0059-I009a (amended 12/3/2020), and 0059-I008d (amended 4/21/2021) (EPA approval on August 19, 2022, 87 FR 50951)

II. Regulatory Basis

On October 26, 2015, the US EPA revised the ozone NAAQS. To meet the new standards, ACHD requested all major sources of NO_x (potential emissions of 100 tons per year or greater) and all major sources of VOC (potential emissions of 50 tons per year or greater) to reevaluate NO_x and/or VOC RACT for incorporation into Allegheny County's portion of the PA SIP. ACHD has also incorporated by reference 25 Pa. Code, §§129.111-115 under Article XXI, §2105.08 ("RACT III").

This document is the result of ACHD's determination of RACT submitted by the subject source and supplemented with additional information as needed by ACHD. The provisions of RACT III will replace those of the previous RACT I and RACT II.

As part of the RACT regulations codified in 25 Pa. Code §§ 129.111—129.115 (relating to additional RACT requirements for major sources of NO_x and VOCs for the 2015 ozone NAAQS) (RACT III), ACHD has adopted the Pennsylvania Department of Environmental Protection's established method under § 129.114(i) (relating to alternative RACT proposal and petition for alternative compliance schedule) for an applicant to demonstrate that the alternative RACT compliance requirements incorporated under § 129.99 (relating to alternative RACT proposal and petition for alternative compliance schedule) (RACT II) for a source that commenced operation on or before October 24, 2016, and which remain in force in the applicable operating permit continue to be RACT under RACT III as long as no modifications or changes were made to the source after October 24, 2016. The date of October 24, 2016 is the date specified in § 129.99(i)(1) by which written RACT proposals to address the 1997 and 2008 8-hour ozone National Ambient Air Quality Standard (NAAQS) were due to the Department from the owner or operator of an air contamination source located at a major NO_x emitting facility or a major VOC emitting facility subject to § 129.96(a) or (b) (relating to applicability).

The procedures to demonstrate that RACT II is RACT III are specified in § 129.114(i)(1)(i), 129.114(i)(1)(ii) and 129.114(i)(2), that is, subsection (i), paragraphs (1) and (2). An applicant may submit an analysis, certified by the responsible official, that the RACT II permit requirements remain RACT for RACT III by following the procedures established under subsection (i), paragraphs (1) and (2).

Paragraph (1) establishes cost effectiveness thresholds of \$7,500 per ton of NO_x emissions reduced and \$12,000 per ton of VOC emissions reduced as "screening level values" to determine the amount of analysis and due diligence that the applicant shall perform if there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis. Paragraph (1) has two subparagraphs.

Subparagraph (i) under paragraph (1) specifies that the applicant that evaluates and determines that there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis and that each technically feasible air cleaning device, air pollution control technology or technique evaluated for the alternative RACT requirement or RACT emission limitation approved by the Department (or appropriate approved local air pollution control agency) under § 129.99(e) had a cost effectiveness equal to or greater than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced shall include the following information in the analysis:

- A statement that explains how the owner or operator determined that there is no new pollutant specific air cleaning device, air pollution control technology or technique available.
- A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously evaluated under RACT II.
- A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique in the previous bullet and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under RACT II.
- A statement that an evaluation of each economic feasibility analysis summarized in the previous bullet demonstrates that the cost effectiveness remains equal to or greater than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced.

Subparagraph (ii) under paragraph (1) specifies that the applicant that evaluates and determines that there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis and that each technically feasible air cleaning device, air pollution control technology or technique evaluated for the alternative RACT requirement or RACT emission limitation approved by the Department (or appropriate approved local air pollution control agency) under § 129.99(e) had a cost effectiveness less than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced shall include the following information in the analysis:

- A statement that explains how the owner or operator determined that there is no new pollutant specific air cleaning device, air pollution control technology or technique available.
- A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously evaluated under RACT II.
- A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique in the previous bullet and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under RACT II.
- A statement that an evaluation of each economic feasibility analysis summarized in the previous bullet demonstrates that the cost effectiveness remains less than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced.
- A new economic feasibility analysis for each technically feasible air cleaning device, air pollution control technology or technique.

Paragraph (2) establishes the procedures that the applicant that evaluates and determines that there is a new or upgraded pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis shall:

- Perform a technical feasibility analysis and an economic feasibility analysis in accordance with § 129.92(b) (relating to RACT proposal requirements).
- Submit that analysis to the Department (or appropriate approved local air pollution control agency) for review and approval.

The applicant shall also provide additional information requested by the Department (or appropriate approved local air pollution control agency) that may be necessary for the evaluation of the analysis submitted under § 129.114(i).

III. Facility Description

ATI Flat Rolled Products Holdings, LLC (ATI) – Brackenridge Plant is located at 100 River Road, Brackenridge, Allegheny County, PA, is a producer of specialty metals, irons, and steels, including ingots, slabs, and coils. Emissions from the source are primarily the result of combustion from furnaces, pre-heaters, dryers, torch-cutting, boilers, and ancillary operations. The last full compliance evaluation (FCE) at ATI was conducted on September 27, 2022. The facility currently is deemed out of compliance due to the failed compliance testing of EAF #1 and EAF #2 relative to the specific permit limits of Installation Permit #1006. This issue is being addressed by additional and ongoing stack testing requirements negotiated between EPA – Region III and ATI in order to establish new emission factors.

There were no modifications or changes made to the facility after October 24, 2016. There have been no changes to this facility since the RACT II permits No. IP-I009, IP-I009a and IP-I008d were issued on April 16, 2020 (amended

December 3, 2020), and April 21, 2021, respectively.
 ATI is a major source of VOC and NO_x emissions.

Table 2 is a list of sources subject to § 129.114(i). The RACT II determination assures compliance with RACT III requirements:

Table 2 Facility Sources Subject to Case-by-Case RACT III

Source ID	Description	Rating	NO _x PTE (TPY)	VOC PTE (TPY)	Case-by-Case Limit (RACT II)	Case-by-Case Limit (RACT III)	RACT II as RACT III
P002	Argon-Oxygen Decarburization Vessel (AOD)	100 tons/hr	9.62	7.17	Good Engineering Practice	No change from RACT II requirements (129.114(i)(1)(i))	Y
139	Miscellaneous Painting		--	10.4	Good Engineering Practice and limit on VOC in coatings	No change from RACT II requirements (129.114(i)(1)(i))	Y

Table 3 lists emission units that are exempt from RACT III and the referenced citations.

Table 3 Facility Sources Exempt from RACT III per PA Code 129.111

Source ID	Description	Rating	NO _x PTE (TPY)	VOC PTE (TPY)
RACT Exempt pursuant to §129.111(c) – PTE NO _x < 1 TPY; PTE VOC < 1 TPY				
013	Continuous Caster Torch Cutter No. 1, NG	1.174 MMBtu/hr	0.39	0.021
	Continuous Caster Torch Cutter No. 2, NG	1.174 MMBtu/hr	0.39	0.021
	Continuous Caster Torch Cutter No. 3, NG	1.174 MMBtu/hr	0.39	0.021
FP-01A	HRPF - Emergency Fire Pump	376 hp	0.398	0.398
FP-01B	HRPF - Emergency Fire Pump	376 hp	0.398	0.398
RACT Exempt pursuant to §129.111(a) – source standards exist				
140	Parts Cleaners			Negligible

The following units specified in Table 4 are natural gas-fired boilers or natural gas-fired combustion sources with a rated heat input capacity <20 MMBtu/hr, emergency standby engines operating less than 500 hours per year, electric arc furnaces, sources with capacity factor less than 5%, sources with NO_x potential to emit <5 tons per year and/or sources with VOC potential to emit <2.7 tons per year. These units will comply with the Presumptive RACT requirement pursuant to §129.112 (c); install, maintain and operate in accordance with manufacturer's specifications and good operating practices.

Table 4 Facility Sources Subject to Presumptive RACT III per PA Code 129.112

Source ID	Description	Rating	NO _x PTE (TPY)	VOC PTE (TPY)	RACT III Basis for Presumptive
112-114	F1 (EAF)	536,267 tons/year	114.89	17.40	§129.112(c)(11)
109-111	F2 (EAF)	536,267 tons/year	114.89	17.40	§129.112(c)(11)
0014	Continuous Caster Tundish Preheater No. 1	2.5 MMBtu/hr	1.21	0.065	§129.112(c)(4)
	Continuous Caster Tundish Preheater No. 2	2.5 MMBtu/hr	1.21	0.065	§129.112(c)(4)
0010	Horizontal EAF Ladle Preheater	4.5 MMBtu/hr	2.15	0.12	§129.112(c)(4)
007	Vertical EAF Ladle Preheater No. 1	10.5 MMBtu/hr	5.05	0.275	§129.112(c)(4)

Source ID	Description	Rating	NO _x PTE (TPY)	VOC PTE (TPY)	RACT III Basis for Presumptive
	Vertical EAF Ladle Preheater No. 2	10.5 MMBtu/hr	5.05	0.275	§129.112(c)(4)
009	Amer Horiz AOD Ladle Preheaters No. 1	8 MMBtu/hr	3.83	0.21	§129.112(c)(4)
	Amer Horiz AOD Ladle Preheaters No. 2	8 MMBtu/hr	3.83	0.21	§129.112(c)(4)
	Amer Horiz AOD Ladle Preheaters No. 3	8 MMBtu/hr	3.83	0.21	§129.112(c)(4)
008	Bloom Horiz AOD Ladle Preheaters No. 4	15 MMBtu/hr	7.0	0.72	§129.112(c)(4)
	Bloom Horiz AOD Ladle Preheaters No. 5	15 MMBtu/hr	7.0	0.72	§129.112(c)(4)
	Bloom Horiz AOD Ladle Preheaters No. 6	15 MMBtu/hr	7.0	0.72	§129.112(c)(4)
	Bloom Horiz AOD Ladle Preheaters No. 7	15 MMBtu/hr	7.0	0.72	§129.112(c)(4)
0011	AOD Vessel Preheater	6 MMBtu/hr	2.89	0.16	§129.112(c)(4)
0033	Plate Burner/Torch Cutters No. 1 & No. 2, NG	6 MMBtu/hr	2.89	0.16	§129.112(c)(4)
0034	Misc. Space Heaters/Misc. NG usage	< 20 MMBtu/hr each	76.75	4.22	§129.112(c)(4)
EG-01	HRPF - Emergency Generator No. 1	2,250 KW	3.19	3.19	§129.112(c)(10)
EG-02	HRPF - Emergency Generator No. 2	2,000 KW	2.82	2.82	§129.112(c)(10)
S207A	HRPF - Active Hot Box No. 1	10 MMBtu/hr	2.3	0.163	§129.112(c)(4)
S207B	HRPF - Active Hot Box No. 2	10 MMBtu/hr	2.3	0.163	§129.112(c)(4)
S207C	HRPF - Active Hot Box No. 3	10 MMBtu/hr	2.3	0.163	§129.112(c)(4)
S222	Plasma Cutter	30,000 Tons/year	3.46	n/a	§129.112(c)(1)
S059	Loftus Soaking Pit No.11	26 MMBtu/hr	12.48	0.70	§129.112(c)(9))
S060	Loftus Soaking Pit No.12	26 MMBtu/hr	12.48	0.70	§129.112(c)(9))
S061	Loftus Soaking Pit No.13	26 MMBtu/hr	12.48	0.70	§129.112(c)(9)
S062	Loftus Soaking Pit No.14	26 MMBtu/hr	12.48	0.70	§129.112(c)(9)
S063	Loftus Soaking Pit No.15	26 MMBtu/hr	12.48	0.70	§129.112(c)(9)
S064	Loftus Soaking Pit No.16	26 MMBtu/hr	12.48	0.70	§129.112(c)(9)

Table 5 shows natural gas-fired combustion units with rated heat input capacities equal to or greater than 20 MMBtu/hr each and less than 50 MMBtu/hr. These units will comply with the Presumptive RACT requirement pursuant to §129.112(b); biennial combustion tune-up. However, *annual* RACT tune-ups / inspections are existing permit requirements for these sources.

Table 5 Facility Sources Subject to Presumptive RACT III per PA Code 129.112

Source ID	Description	Rating	NO _x PTE (TPY)	VOC PTE (TPY)	RACT III Basis for Presumptive
S097	No. 3 Dept Boiler No.1	34 MMBtu/hr	16.34	0.90	§129.112(b)(1)(i)
S098	No. 3 Dept Boiler No.2	34 MMBtu/hr	16.34	0.90	§129.112(b)(1)(i)

Table 6 are sources that have demonstrated to meet NO_x LAER and will comply with 129.112(k) based on CEMS (WBFs) or annual tune-ups / portable analyzer tests (CB1-4 (fugitive/exhaust indoors)). Annual RACT inspections are existing permit requirements for CB1-4.

Table 6 Facility Sources Subject to Presumptive RACT III per PA Code 129.112

Source ID	Description	Rating	NO _x PTE (TPY)	VOC PTE (TPY)	RACT III Basis for Presumptive
S201	WBF No. 1	465 MMBtu/hr	142.57	11.00	§129.112(k)
S202	WBF No. 2	465 MMBtu/hr	142.	11.00	§129.112(k)
S212	Car Bottom Furnace No. 1	21.2 MMBtu/hr	8.17	0.46	§129.112(k)
S213	Car Bottom Furnace No. 2	21.2 MMBtu/hr	8.17	0.46	§129.112(k)
S214	Car Bottom Furnace No. 3	21.2 MMBtu/hr	8.17	0.46	§129.112(k)
S215	Car Bottom Furnace No. 4	21.2 MMBtu/hr	8.17	0.46	§129.112(k)

Table 7 shows the facility sources that were idled or permanently shut down.

Table 7 Facility Sources Idled or Permanently Shutdown

Source ID	Description	Rating	NO _x PTE (TPY)	VOC PTE (TPY)
0012	AOD Mold Dryers (24 dryers)	48 MMBtu/hr	21.12	1.20
0029	No. 3 B&P Coil Preheater 16 MMBtu	16 MMBtu/hr	n/a	n/a
0030	No. 3 B&P Strip Dryer	2 MMBtu/hr	0.70	0.039
0025	No. 1 A&P Strip Dryer	2 MMBtu/hr	0.70	0.039
0027	No. 2 A&P Kolene Heater	5 MMBtu/hr	2.15	0.12
0028	No. 2 A&P Strip Dryer	2 MMBtu/hr	0.70	0.039
NA	Emergency Generator - No. 3 Dept WWTP (500 hr/yr)	200 KW	2.08	0.17
S057	Loftus Soaking Pit No. 9 (idled with GOES)	26 MMBtu/hr	12.48	0.70
S058	Loftus Soaking Pit No. 10 (idled with GOES)	26 MMBtu/hr	12.48	0.70
S065	Loftus Soaking Pit No. 17 (idled with GOES)	26 MMBtu/hr	12.48	0.70
S066	Loftus Soaking Pit No. 18 (idled with GOES)	26 MMBtu/hr	12.48	0.70
S067	Loftus Soaking Pit No. 19 (idled with GOES)	26 MMBtu/hr	12.48	0.70
S068	Loftus Soaking Pit No. 20 (idled with GOES)	26 MMBtu/hr	12.48	0.70
S069	Loftus Soaking Pit No. 21 (idled with GOES)	26 MMBtu/hr	12.48	0.70
S070	Loftus Soaking Pit No. 22 (idled with GOES)	26 MMBtu/hr	12.48	0.70
S071	Loftus Soaking Pit No. 23 (idled with GOES)	26 MMBtu/hr	12.48	0.70
S091A	No. 1 A&P Annealing Furnace	49 MMBtu/hr	23.70	1.31
S092A	No. 2 A&P Annealing Furnace	44 MMBtu/hr	21.16	1.18
125	No. 3 B&P H2SO4-HF/HNO3 Pickling	39 tons/hr	55.63	n/a
125	No. 1 A&P HNO3/HF Pickling	3 tons/hr	67.80	n/a
125	No. 2 A&P HNO3/HF Pickling	17 tons/hr	48.49	n/a

IV. RACT III Determination

Argon – Oxygen Decarburization (AOD) Vessel

The Argon – Oxygen Decarburization (AOD) vessel has no controls for NO_x or VOCs. The possible NO_x control options comprised Selective Catalytic Reduction (SCR), Selective Non-Catalytic Reduction (SNCR), and Flue Gas Recirculation (FGR). The possible VOC control options included Thermal Oxidation, Absorption (scrubbing), Carbon Adsorption, Catalytic Oxidation, Inertial Separation, or Condensation. As identified below there are no technically feasible controls for NO_x and no economically feasible controls for VOCs.

Therefore, ACHD determined that RACT II for emissions from the AOD is to operate the source in accordance with the manufacturer’s specifications and with good operating practices. The AOD is currently subject to RACT I and RACT II requirements. The AOD is not currently subject to any NSPS, MACT or NESHAP requirements. A review of the RBLC along with current industry practice and knowledge revealed that no emissions control technologies, which were not previously evaluated, are available, and the RACT cost-effectiveness was deemed to be economically infeasible. Since the AOD commenced operation before October 24, 2016, has not been modified, and is subject to RACT II requirements under 25 Pa Code § 129.99 (e), which satisfy § 129.114 (c), this source meets the requirements for § 129.114 (i). The current RACT II requirements, as stated in Permit No. 0059-I009, are identified in Table 8.

Table 8 AOD Vessel RACT II Requirements from Permit No. 0059-I009

Permit Condition	RACT Permit Requirements
V.B.1.a	Continue to comply with all regulatory and Permit requirements. (2102.04.b.5)
V.B.1.b	The permittee shall not conduct, or allow to be conducted, AOD process operations unless the pollution control system is on-line, properly maintained and operated according to the following conditions: (2102.04.b.5, 40 CFR §60.272a(a), 40 CFR §63.10686(b)(1), 25 Pa. Code §129.99) <ol style="list-style-type: none"> 1. Emissions from the AOD during process operations shall be exhausted to baghouse C006; and 2. The differential pressure across the baghouse shall not exceed 15 inches w.c.
V.B.2	The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.14 above entitled “Emissions Testing.” (§2103.12.h.1, §2108.02)
V.B.3.a	The permittee shall perform monthly operational status inspections of the equipment that is important to the performance of the total capture system and baghouse C006 for the AOD. These inspections shall include observations of the physical appearance of the equipment. Any deficiencies shall be noted, and proper maintenance performed. (§2103.12.i, 2102.04.b.5, 40 CFR 60.274a(d) , 25 Pa. Code §129.100)
V.B.3.b	The permittee shall have instrumentation to continuously monitor the differential pressure drop across each compartment of the C006 Canopy baghouse during operation of the AOD. Said instrumentation shall be properly operated, calibrated and maintained according to manufacturer’s specifications. (§2103.12.i, §2102.04.b.5, 25 Pa. Code §129.100)
V.B.3.c	The permittee shall monitor production on a monthly and 12-month basis. (§2103.12.i, 2102.04.b.5, 25 Pa. Code §129.100)
V.B.4.a	The permittee shall record and maintain the following data for the AOD and associated control equipment: (§2102.04.b.5, §2103.12.j, 40 CFR §60.276a, 40 CFR 63.10685, 25 Pa. Code §129.100) <ol style="list-style-type: none"> 1. Monthly operational status inspections; 2. Monthly and 12-month production for the AOD; and 3. Records of operation, maintenance and inspections
V.B.4.b	The permittee shall record all instances of non-compliance with the conditions of this permit upon occurrence along with corrective action taken to restore compliance. (§2103.12.j, §2103.12.h.1, 25 Pa. Code §129.100)
V.B.4.c	Records shall be retained by the facility for at least five (5) years. These records shall be made available to the Department upon request for inspection and/or copying. (§2103.12.j, 40 CFR §60.276(a), 25 Pa. Code §129.100)

Permit Condition	RACT Permit Requirements
V.B.5.a	The permittee shall report the following information semiannually to the Department in accordance with General Condition III.15 above. The reports shall contain all required information for the time period of the report: (§2103.12.k, 25 Pa. Code §129.100) <ol style="list-style-type: none"> Monthly and 12-month data required to be recorded for Condition V.B.4.a above; and Non-compliance information required to be recorded by Condition V.B.4.b above.
V.B.5.b	Reporting instances of non-compliance in accordance, does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8 above if appropriate. (§2103.12.k)
V.B.5.c	The permittee shall report the following information semiannually to the Department in accordance with General Condition III.15 above. The reports shall contain all required information for the time period of the report: (§2103.12.k, 25 Pa. Code §129.100)
V.B.6.a	The AOD shall be: (§2102.04.b.5, 25 Pa. Code §129.99, RACT Order No. 260, Condition 1.3) <ol style="list-style-type: none"> Operated in such a manner as not to cause air pollution that exceeds the permitted limits; Operated and maintained in a manner consistent with good operating and maintenance practices; and Operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this permit.

For the analysis required under § 129.114 (i)(1)(i), the facility's review of the RBLC is searched along with current industry and knowledge identified no emissions control technologies, which were not previously evaluated, are available, and the RACT cost-effectiveness was deemed to be economically infeasible. Therefore, RACT III for the AOD shall be continued compliance with the requirements listed above and contained in the current RACT II permit.

Table 9 summarizes the RACT III technical analysis performed for AOD NO_x control options. As evident from this table, no control option was deemed to be technically feasible, so no further economic analysis is needed as per Table 10.

Table 9 RACT III Top-Down Technical Analysis (NO_x) for Argon – Oxygen Decarburization (AOD) Vessel

Control Options		
Control Technology	Typical Control Effectiveness	Technical feasibility
Selective Catalytic Reduction (SCR)	40 – 90 %	No (See Note 1)
Selective Non-Catalytic Reduction (SNCR)	25 – 70 %	No (See Note 1)
Flue Gas Recirculation (FGR)	10 – 50 %	No (See Note 1)
1. SCR is infeasible for application at the AOD for the following reasons: a) The AOD effluent varies greatly in flow rate, temperature, and pollutant concentrations. This is due to the violent nature of the process caused by the process gases (Ar and O ₂) being blown into the hot metal. b) The temperature of the exhaust emissions often exceeds the operating range of the catalyst. c) Metals and other particulates in the effluent would blind the catalyst, making it ineffective in reducing NO _x .		
2. SNCR is infeasible for reducing NO _x at the AOD for many of the same reasons as that of the SCR. The highly variable gas stream prohibits maintaining the near stable gas conditions required for effective SCNR operation. Additionally, the great variations in exhaust gas pollutant concentration make it difficult to maintain the proper stoichiometric ratio of the reducing agent, resulting in an undesirable level of ammonia slip and/or reduced efficiency.		
3. FGR is considered infeasible for application at the AOD because the AOD does not utilize a burner.		

Table 10 RACT III Economic Analysis (NO_x) for Argon – Oxygen Decarburization (AOD) Vessel

Control Technology	Estimated Control %	Emission Reduction (tons/yr)	Controlled Emissions (tons/yr)	Total Annualized Costs (\$/yr)	Total Cost Effectiveness (\$/ton)	Incremental Cost Effectiveness (\$/ton)	Potential for Adverse or Additional Environmental Impacts
Not Applicable							

Table 11 and Table 12 summarize the technical and economical analysis performed for RACT III AOD VOC control options analysis.

Table 11 RACT III Top-Down Analysis (VOCs) for Argon - Oxygen Decarburization (AOD) vessel.

Control Options		
Control Technology	Typical Control Effectiveness	Technical feasibility
Thermal Oxidation		
Regenerative	95 – 98 %	Yes
Recuperative	95 – 98 %	Yes
Afterburner	95 – 98 %	Yes
Absorption (Scrubbing)	90 – 95 %	Yes
Carbon Absorption	90 – 95 %	No – See Note 1
Catalytic Oxidation	90 – 95 %	No – See Note 2
Inertial Separation	60 – 80 %	No – See Note 3
Condensation	50 – 90 %	No – See Note 4
1. Particulate in the effluent will foul the carbon beds. 2. Particulate in the effluent will foul the catalyst. 3. Applicable for removal of liquid droplets only. 4. Not feasible due to high VOC inlet loading requirements. Requires > 5,000 ppm.		

Table 12 RACT III Technically Feasible VOC Control Cost Comparisons for the AOD

Control Technology	Estimated Control %	Emission Reduction (tons/yr)	Controlled Emissions (tons/yr)	Total Annualized Costs (\$/yr)	Total Cost Effectiveness (\$/ton)	Incremental Cost Effectiveness (\$/ton)	Potential for Adverse or Additional Environmental Impacts
Thermal Oxidation							
Regenerative	96	35	1	\$17,354,140	\$502,145	NA	
Recuperative	96	35	1	\$31,443,304	\$909,818	NA	
Afterburner	96	35	1	74,754,506	\$2,163,035	NA	
Absorption (Scrubbing)	93	33	3	\$30,358,972	\$906,779	\$906,779	Requires disposal/reuse of captured VOCs
Baseline (No Control)	0	-	36.0		-	-	-

Miscellaneous Painting

The source includes miscellaneous painting/coating operations for maintenance and safety painting purposes (such as handrails, machine safety guards, walkways, etc.). Paint usage is tracked, and estimated VOC emissions are reported annually. Emissions of VOC from the painting operations are estimated at 10.4 tons per year based on a maximum paint usage of 4,000 gallons per year and a maximum annual average VOC content of 5.2 lbs/gallon.

The RACT II analysis did not identify any technically feasible options for VOC control beyond a limit on paint VOC content and work practice standards. The facility’s reviews of similar types of coating operations did not reveal any new technologies. The current RACT II requirements, as stated in Permit No. 0059-I009, are identified in Table 13.

Table 13 Miscellaneous Paints RACT II Requirements from Permit No. 0059-I009

Permit Condition	RACT Permit Requirements
V.E.1.b	The permittee shall perform miscellaneous painting/coating activities utilizing paints/coatings with a maximum VOC content per gallon equal to or less than 7.0 pounds per gallon, less water and exempt solvents, after adjustment to a

Permit Condition	RACT Permit Requirements
	standard solvent density of 7.36 pounds per gallon and a solids basis. The 12-month rolling average of VOCs of all paint used for this purpose shall be no greater than 5.2 pounds per gallon, less water and exempt solvents, after adjustment to a standard solvent density of 7.36 pounds per gallon and a solids basis. (RACT Order No. 260, Condition 1.10, 25 Pa. Code §129.99)
V.E.1.c	Emissions from Miscellaneous Paints, based on an annual usage of 4,000 gallons per 12-month period, shall not exceed the emissions limitations in Table V-E-1 below (§2103.12.a.2.B, 25 Pa. Code §129.99)
V.E.3.a	The permittee shall monitor the following data for miscellaneous paints: (§2102.04.b.5, §2103.12.i, RACT Order No. 260, Condition 1.10, 25 Pa. Code §129.100) <ol style="list-style-type: none"> 3. Quantity of paints/coatings used at the facility (monthly, 12-month); 4. Density of paints/coatings used at the facility (monthly, 12-month); 5. Water content of paints/coatings used at the facility (monthly, 12-month); and 6. Weight percent of VOCs per gallon of paints/coatings used at the facility. (monthly, 12-month).
V.E.4.a	The permittee shall record the following data for miscellaneous paints: (§2102.04.b.5, §2103.12.j, RACT Order No. 260, Condition 1.10, 25 Pa. Code §129.100) <ol style="list-style-type: none"> 1. Quantity of paints/coatings used at the facility (monthly, 12-month); 2. Density of paints/coatings used at the facility (monthly, 12-month); 3. Water content of paints/coatings used at the facility (monthly, 12-month); and 4. Weight percent of VOCs per gallon of paints/coatings used at the facility. (monthly, 12-month).
V.E.5.a	The permittee shall report the following information semiannually to the Department in accordance with General Condition III.15 above. The reports shall contain all required information for the time period of the report: (§2103.12.k, 25 Pa. Code §129.100) <ol style="list-style-type: none"> 1. Quantity of paint and coatings used at the facility in gallons (monthly, 12-month); and 2. Weight percent of VOCs per gallon of paints/coatings used at the facility. (monthly, 12-month).
V.E.6.a	The permittee shall apply paint and coatings in a manner that minimizes VOC emissions. (§2102.04.b.5, §2105.83.h, 25 Pa. Code §129.99)
V.E.6.b	This shall be accomplished by: (§2102.04.b.5, §2105.83.h, RACT Order No. 260, Condition 1.10) <ol style="list-style-type: none"> 1. Storing all VOC-containing industrial cleaning solvents and paints, paint brushes, used shop towels and related waste materials in closed and sealed containers; 2. Ensuring that mixing and storage containers used for VOC-containing industrial cleaning solvents, paints and related waste materials are kept closed at all times except when depositing or removing these materials; and 3. Minimizing spills of VOC-containing industrial cleaning solvents, paints and related waste materials and cleaning up spills immediately.

V. RACT III New Technology

There are no new technically or economically feasible controls for NO_x or VOC emissions for the AOD or Miscellaneous Painting.

VI. RACT II as RACT III

The conditions listed in Table 15 below supersede the relevant conditions of Plan Approval Order and Agreement #260 (RACT I), issued December 19, 1996 and RACT II. The RACT III conditions are at least as stringent as those from RACT II. Other RACT I conditions listed in Table 15 below not affected by RACT III remain in effect.

The “Top-down” analyses for NO_x and VOCs in RACTIII, for the AOD, indicate that there are no technically feasible controls for NO_x or economically feasible controls for VOCs for this source.

Application of RACT III requirements did not result in any emissions reduction for NO_x or VOCs.

Table 14 RACT II as RACT III Summary

Unit ID	New source or change to existing source?	Pollutant	(RACT II) PTE (tpy)	RACT III PTE (tpy)	RACT II VOC	RACT III VOC	RACT III Same as RACT II?
AOD	No	VOC	7.17	7.17	cbc	cbc	Y
		NO _x	9.62	9.62			
Misc. Paints	No	VOC	10.4	10.4	cbc	cbc	Y
TOTAL		VOC	17.57	17.57			
		NO_x	9.62	9.62			

VII. RACT III Summary and Revised RACT III Permit Conditions

The Department has analyzed the facility’s proposal for considering RACT II requirements as RACT III and also performed an independent analysis. Based on the information provided by the facility and independently verified by the Department, ACHD has determined that the RACT II requirements satisfy the RACT III requirements. The RACT III requirements are identical to the RACT II requirements and are as stringent as RACT II.

Table 15 RACT I, RACT II, and RACT III Summary

Unit ID	Permit Condition No.	RACT I Requirement	RACT II Requirement	RACT III Requirement
P002: AOD	(V.B.1.a)		NA	NA
P002: AOD	(V.B.1.b.1)		§129.99	§129.114(d)
P002: AOD	(V.B.1.b.2)		§129.99	§129.114(i)
P002: AOD	(V.B.2)		NA	NA
P002: AOD	(V.B.3.a)		§129.100	§129.115
P002: AOD	(V.B.3.b)		§129.100	§129.115
P002: AOD	(V.B.3.c)		§129.100	§129.115
P002: AOD	(V.B.4.a)		§129.100	§129.115
P002: AOD	(V.B.4.b)		§129.100	§129.115
P002: AOD	(V.B.4.c)		§129.100	§129.115
P002: AOD	(V.B.5.a)		§129.100	§129.115
P002: AOD	(V.B.5.c)		§129.100	§129.115
P002: AOD	(V.B.6.a.1)	RACT Order #260 1.3	§129.99	§129.114(i)
P002: AOD	(V.B.6.a.2)	RACT Order #260 1.3	§129.99	§129.114(i)
P002: AOD	(V.B.6.a.3)	RACT Order #260 1.3	§129.99	§129.114(i)
Misc. Paints	(V.E.1.b)	RACT Order #260 1.10	§129.99	§129.114(i)
Misc. Paints	(V.E.1.c)		§129.99	§129.114(i)
Misc. Paints	(V.E.3.a)	RACT Order #260 1.10	§129.100	§129.114(i)
Misc. Paints	(V.E.4.a)	RACT Order #260 1.10	§129.100	§129.114(i)
Misc. Paints	(V.E.5.a)		§129.100	§129.114(i)
Misc. Paints	(V.E.6.a)	RACT Order #260 1.10	§129.99	§129.114(i)
Misc. Paints	(V.E.6.b)		§129.99	§129.114(i)