

RACT III PROPOSAL

Initial Notification & Alternative RACT Proposal



Global Advanced Metals USA Inc / Boyertown, PA

Prepared By:

Matthew Page – Managing Consultant
Joseph Maiale – Consultant

TRINITY CONSULTANTS

211 Welsh Pool Rd
Suite 238
Exton, PA 19341

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1. EXECUTIVE SUMMARY

Global Advanced Metals USA Inc (GAM) owns and operates a facility (Boyertown Facility) that processes and manufactures various tantalum products in Douglass Township, Montgomery County, Pennsylvania. GAM is currently permitted under Title V Operating Permit #46-00037, issued on August 19, 2019 and amended November 2022. The facility is a major VOC emitting facility and a minor source of NO_x as defined in Title 25 of the Pennsylvania Code, Chapter 121.1 (25 Pa Code 121.1).

The Pennsylvania Department of Environmental Protection (PADEP) published 25 Pa Code, Chapter 129: Additional RACT Requirements for Major Sources of NO_x and VOCs for the 2015 Ozone NAAQS (the “RACT III Rule”) in the Pennsylvania Bulletin on November 12, 2022 (52 Pennsylvania Bulletin 6960). RACT is defined in 25 Pa Code 121.1 as “the lowest emission limit for VOC or NO_x that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.” The RACT III standards apply to existing major NO_x and major VOC emitting facilities throughout Pennsylvania. Existing major facilities include those facilities which are major sources of NO_x and/or VOC that commenced operation on or before August 3, 2018, and existing minor facilities which become major sources of NO_x and/or VOC after August 3, 2018. The RACT III Regulation provides three options for compliance, as applicable:

- ▶ Compliance Option 1: Presumptive RACT pursuant to 25 Pa Code §129.112;
- ▶ Compliance Option 2: Facility-wide or system-wide NO_x averaging pursuant to 25 Pa Code §129.113; and
- ▶ Compliance Option 3: Alternative RACT proposal pursuant to 25 Pa Code §129.114.

GAM is submitting this application to satisfy all notification and reporting requirements for the Boyertown facility per 25 Pa Code, Chapter 129: Additional RACT Requirements for Major Sources of NO_x and VOCs for the 2015 Ozone NAAQS (the “RACT III Rule”). This application report is organized into the following sections to address the appropriate requirements:

- ▶ Section 2 – Initial Notification
- ▶ Section 3 – Alternative RACT Proposal
- ▶ Section 4 – Responsible Official Certification

2. INITIAL NOTIFICATION

This section of the report serves as the written notification, specified in 25 Pa Code §129.115(a), that describes how GAM proposes to comply with the requirements of 25 Pa Code §129.111-129.115. This report is being submitted to the appropriate regional manager by December 31st, 2022 to satisfy the requirements of 25 Pa Code §129.115(a)(1).

2.1 Emission Unit and RACT III Compliance Strategy

The permitted emission sources at the Boyertown facility include boilers, emergency generators, processing buildings, and ancillary emission sources. In accordance with 25 Pa Code §129.111(a)(1), sources are subject to RACT III requirements if they commenced operation prior to August 3, 2018. All sources at the Boyertown facility were installed prior to this date and hence those sources are subject to RACT. The proposed RACT III compliance strategy for each emission unit at the Boyertown Facility is provided in Table 2-1. This table serves to identify the air contamination sources at the facility and identify the applicable RACT requirements or exemption status as specified in 25 Pa Code §129.115(a).

GAM is submitting the following information as part of the RACT III initial notification requirements:

- ▶ 25 Pa Code §129.115(a)(1) – Submit the initial notification by December 31, 2022.
 - This initial notification has been submitted prior to December 31, 2022.
- ▶ 25 Pa Code §129.115(a)(2) – Identify the air contamination sources in 25 Pa Code §129.111(a) as subject to a RACT requirement or exempt.
 - See Table 2-1 below.
- ▶ 25 Pa Code §129.115(a)(3) – Identify the air contamination sources in 25 Pa Code §129.111(b) as subject to a RACT requirement or exempt.
 - Not applicable, GAM is an existing major source of VOC and Minor for NO_x.
- ▶ 25 Pa Code §129.115(a)(4) – Identify the air contamination sources in 25 Pa Code §129.111(c) which are exempt
 - See Table 2-1 below.
- ▶ 25 Pa Code §129.115(a)(5) – Provide a description of each air contamination source listed in 25 Pa Code §129.115(a)(2) including, description, make, model and location, applicable RACT requirement, how the unit will comply with RACT III, and reason for exemption (if applicable).
 - See Table 2-1 below and the source descriptions in Section 2.2.
- ▶ 25 Pa Code §129.115(a)(6) – Provide a description of each air contamination source listed in 25 Pa Code §129.115(a)(3) including, description, make, model and location, applicable RACT requirement, how the unit will comply with RACT III, and reason for exemption (if applicable).
 - Not applicable, the facility is an existing major source of VOC and is not subject to (a)(3).
- ▶ 25 Pa Code §129.115(a)(7) – Provide a description of each air contamination source listed in (a)(4) including, description, make, model and location and information sufficient to demonstrate that the source has a PTE less than 1 tpy of NO_x or 1 tpy of VOC, as applicable.
 - See Table 2-1 below.

Table 2-1. Emission Sources at GAM and RACT III VOC Compliance Strategy

Emission Source ID From the Permit	Source Description	RACT III Rule VOC Compliance Strategy ^a
031	SUPERIOR BOILER 1	Presumptive VOC RACT per §129.112(d) and §129.112(b)
032	SUPERIOR BOILER 2	Presumptive VOC RACT per §129.112(d) and §129.112(b)
034	JOHNSTON BOILER 3	Presumptive VOC RACT per §129.112(d) and §129.112(b)
050	UNITS BURN GAS 1 SUBCATEGORY (<5 MMBTU/HR)	Presumptive RACT per §129.112(c)(4)
040	EXISTING EMERGENCY SI RICE (<=500HP)	Presumptive RACT per §129.112(c)(10)
041	EXISTING EMERGENCY CI RICE (<=500HP)	Presumptive RACT per §129.112(c)(10)
042	EXISTING EMERGENCY CI RICE (>500HP)	Presumptive RACT per §129.112(c)(10)
044	NEW EMERGENCY SI ICE	Presumptive RACT per §129.112(c)(10)
101	TANTALUM RECYCLE DIGESTION (B-87)	Exempt. Source does not emit VOC
102	TANTALUM SALTS PROCESS (B-19)	Alternative VOC RACT Proposal per §129.114(i)
109	TA ACID LEACHING/DRYING (B-47/101)	Presumptive RACT per §129.112(c)(2)
111	WIRE CLEANING PROCESS (B-58)	Presumptive RACT per §129.112(c)(2)
115	POWDER PACKAGING & MILLING OPERATIONS	Exempt. Source does not emit VOC
123	ORE DIGESTION (B-73)	Exempt. Source does not emit VOC
124	EXTRACTION PROCESS (B-74)	Alternative VOC RACT Proposal per §129.114(i)
126	SODIUM REDUCTION PROCESS (B-49)	Exempt. Source does not emit VOC
201	WASTEWATER TREATMENT PLANT	Alternative VOC RACT Proposal per §129.114(i)
210	RAFFINATE SOLIDIFICATION PROCESS	Presumptive RACT per §129.112(c)(2)
36-1	BLDG. 36/101	Exempt. Source does not emit VOC

^a Compliance with the presumptive limits must begin on January 1, 2023.

2.2 Source Descriptions and Applicable Limits

The following section provides source descriptions for each unit at the Boyertown facility as well as the applicable Presumptive RACT III emission limits. The information provided in this section is required under

25 Pa Code §129.115(a)(5), §129.115(a)(6), and §129.115(a)(7). Each of the sources listed in Table 2-1 is located within the Boyertown facility at 1223 County Line Rd, Boyertown, PA 19512.

2.2.1 Source ID 031: Superior Boiler 1

Source ID 031 a Superior, Model MFRS 2641 boiler located at the Boyertown facility. This boiler is authorized to fire No. 2 Fuel Oil and natural gas. The unit has a rated heat input of 25.1 MMBtu/hr.

The boiler is subject to the presumptive VOC limits established in 25 Pa Code §129.112(b), where the boiler must have a tune-up conducted biennially. This boiler is already subject to annual tune-ups per Section D, Source ID 031, Condition #001 of the current Title V Operating Permit. Compliance with this permit condition ensures compliance with the presumptive RACT.

This boiler is also subject to the presumptive VOC limits established in 25 Pa Code §129.112(d) and as such GAM “shall install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices for the control of the VOC emissions from the combustion unit” per Section E, Group 02 (Boiler MACT), Condition #006 of the current Title V Operating Permit.

2.2.2 Source ID 032: Superior Boiler 2

Source ID 032 a Superior, Model/Serial Number 56605904 boiler located at the Boyertown facility. This boiler is authorized to fire No. 2 Fuel Oil and natural gas. The unit has a rated heat input of 50.3 MMBtu/hr.

The boiler is subject to the presumptive VOC limits established in 25 Pa Code §129.112(b), where the boiler must have a tune-up conducted biennially. This boiler is already subject to annual tune-ups per Section D, Source ID 032, Condition #002 of the current Title V Operating Permit. Compliance with this permit condition ensures compliance with the presumptive RACT.

This boiler is also subject to the presumptive VOC limits established in 25 Pa Code §129.112(d) and as such GAM “shall install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices for the control of the VOC emissions from the combustion unit” per Section E, Group 02 (Boiler MACT), Condition #006 of the current Title V Operating Permit.

2.2.3 Source ID 034: Johnston Boiler 3

Source ID 033 a Johnston, Model/Serial Number 10110-01 boiler located at the Boyertown facility. This boiler is authorized to fire No. 2 Fuel Oil and natural gas. The unit has a rated heat input of 62.8 MMBtu/hr.

The boiler is subject to the presumptive VOC limits established in 25 Pa Code §129.112(b), where the boiler must have a tune-up conducted biennially. This boiler is already subject to annual tune-ups per Section D, Source ID 033, Condition #011 of the current Title V Operating Permit. Compliance with this permit condition ensures compliance with the presumptive RACT.

This boiler is also subject to the presumptive VOC limits established in 25 Pa Code §129.112(d) and as such GAM “shall install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices for the control of the VOC emissions from the combustion unit” per Section E, Group 02 (Boiler MACT), Condition #006 of the current Title V Operating Permit.

2.2.4 Source ID 050: Units Burn Gas 1 Subcategory

Source ID 505 represent a small process heater located at The Boyertown facility. This is a natural gas fired unit with a rated capacity of <5.0 MMBtu/hr. Make and model are not applicable to this source.

As specified in Table 2-1, the heater is subject to the presumptive RACT specified in 25 Pa Code §129.112(c)(4) because the unit has a gross heat input less than 20 MMBtu/hr. As such, this source will comply with the requirements of 25 Pa Code §129.112(c) where GAM “shall install, maintain and operate the source in accordance with the manufacturer’s specifications and with good operating practices” per Source ID 050, Condition #005 (NESHAP Subpart DDDDD requirement) in the current operating permit.

2.2.5 Source ID 040: Existing Emergency SI Rice

Source ID 040 is for four (4) Onan, Model GGFD-5622463, 80GGHC-67, 85KR/6R8/12A, and GGKD-5620418 emergency generators located at The Boyertown facility. These are natural gas fired generators with horsepower of 47, 101, 107, and 201 HP.

As specified in Table 2-1, these generators are subject to the presumptive RACT specified in 25 Pa Code §129.112(c)(6). These units are each internal combustion engines rated at less than 500 bhp (gross). As such, this source will comply with the requirements of 25 Pa Code §129.112(c) where GAM “shall install, maintain and operate the source in accordance with the manufacturer’s specifications and with good operating practices” per Section E, Group 6 (Engines), Condition #002 in the current operating permit.

2.2.6 Source ID 041: Existing Emergency CI Rice

Source ID 041 is for a GMC/O'Brien, Model 4.6-0-815 and a Katolight, Model SED350FRJ4 emergency generators located at the Boyertown facility. These are diesel fired generators with horsepower of 268 and 335 HP, respectively.

As specified in Table 2-1, these generators are subject to the presumptive RACT specified in 25 Pa Code §129.112(c)(6). These units are each internal combustion engines rated at less than 500 bhp (gross). As such, this source will comply with the requirements of 25 Pa Code §129.112(c) where GAM “shall install, maintain and operate the source in accordance with the manufacturer’s specifications and with good operating practices” per Section E, Group 6 (Engines), Condition #002 in the current operating permit.

2.2.7 Source ID 042: Existing Emergency CI Rice

Source ID 042 is for a Caterpillar, Model SR4 emergency generator located at the Boyertown facility. This is a diesel fired generator with a horsepower of 671 HP.

As specified in Table 2-1, this generator is subject to the presumptive RACT specified in 25 Pa Code §129.112(c)(10). This unit is currently limited to 500 hours in a 12-month rolling period per the current Title V permit. As such, this source will comply with the requirements of 25 Pa Code §129.112(c) where GAM “shall install, maintain and operate the source in accordance with the manufacturer’s specifications and with good operating practices” per Section E, Group 6 (Engines), Condition #002 in the current operating permit.

2.2.8 Source ID 044: New Emergency SI ICE

Source ID 044 is for a Cummins, Model GGLB-5764653 emergency generator located at the Boyertown facility. This is a natural gas fired generator with a horsepower of 201 HP.

As specified in Table 2-1, this generator is subject to the presumptive RACT specified in 25 Pa Code §129.112(c)(10). This unit is currently limited to 500 hours in a 12-month rolling period per the current Title V permit. As such, this source will comply with the requirements of 25 Pa Code §129.112(c) where GAM “shall install, maintain and operate the source in accordance with the manufacturer’s specifications and with good operating practices” per Section E, Group 6 (Engines), Condition #002 in the current operating permit.

2.2.9 Source ID 101: Tantalum Recycle Digestion (B-87)

Source ID 101 is for the tantalum recycle digestion process that takes place inside Building 87 at the Boyertown facility. This source represents all emission generating units associated with the process inside the building. Makes and models are not applicable to these sources.

As specified in Table 2-1, this source is exempt from RACT requirements as this source does not emit VOC.

2.2.10 Source ID 102: Tantalum Salts Process (B-19)

Source ID 102 is for the tantalum salts process that takes place inside Building 19 at the Boyertown facility. This source represents all emission generating units associated with the process inside the building. Makes and models are not applicable to these sources.

As specified in Table 2-1, this source is requesting an alternative compliance proposal as there are no presumptive limits associated with the source and potential to emit is greater than 2.7 tpy VOC. This source is petitioning to comply with the alternative compliance proposal specified in 25 Pa Code §129.114(i) which is detailed in Section 3 of this application.

2.2.11 Source ID 109: TA Acid Leaching/Drying (B-47/101)

Source ID 109 is for the tantalum acid leaching and drying process that takes place inside Buildings 47 and 101 at the Boyertown facility. This source represents all emission generating units associated with the process inside the buildings. Makes and models are not applicable to these sources.

As specified in Table 2-1, this source is subject to the presumptive RACT specified in 25 Pa Code §129.112(c)(2). The potential to emit for this source is less than 2.7 tpy VOC. As such, this source will comply with the requirements of 25 Pa Code §129.112(c) where GAM “shall install, maintain and operate the source in accordance with the manufacturer’s specifications and with good operating practices.”

2.2.12 Source ID 111: Wire Cleaning Process (B-58)

Source ID 111 is for the wire cleaning process that takes place inside Building 58 at the Boyertown facility. This source represents all emission generating units associated with the process inside the building. Makes and models are not applicable to these sources.

As specified in Table 2-1, this source is subject to the presumptive RACT specified in 25 Pa Code §129.112(c)(2). The potential to emit for this source is less than 2.7 tpy VOC. As such, this source will comply with the requirements of 25 Pa Code §129.112(c) where GAM “shall install, maintain and operate the source in accordance with the manufacturer’s specifications and with good operating practices.”

2.2.13 Source ID 115: Powder Packaging & Milling Operations

Source ID 115 is for the powder packaging and missing operations that takes place at the Boyertown facility. This source represents all emission generating units associated with the process. Makes and models are not applicable to these sources.

As specified in Table 2-1, this source is exempt from RACT requirements as this source does not emit VOC.

2.2.14 Source ID 123: Ore Digestion (B-73)

Source ID 123 is for the ore digestion process that takes place inside Building 73 at the Boyertown facility. This source represents all emission generating units associated with the process inside the building. Makes and models are not applicable to these sources.

As specified in Table 2-1, this source is exempt from RACT requirements as this source does not emit VOC.

2.2.15 Source ID 124: Extraction Process (B-74)

Source ID 124 is for the extraction process that takes place inside Building 74 at the Boyertown facility. This source represents all emission generating units associated with the process inside the building. Makes and models are not applicable to these sources.

As specified in Table 2-1, this source is requesting an alternative compliance proposal as there are no presumptive limits associated with the source and potential to emit is greater than 2.7 tpy VOC. This source is petitioning to comply with the alternative compliance proposal specified in 25 Pa Code §129.114(i) which is detailed in the Section 3 of this application.

2.2.16 Source ID 126: Sodium Reduction Process (B-49)

Source ID 126 is for the sodium reduction process that takes place inside Building 49 at the Boyertown facility. This source represents all emission generating units associated with the process inside the building. Makes and models are not applicable to these sources.

As specified in Table 2-1, this source is exempt from RACT requirements as this source does not emit VOC.

2.2.17 Source ID 201: Wastewater Treatment Plant

Source ID 201 is for the wastewater treatment plant and process at the Boyertown facility. This source represents all emission generating units associated with the process. Makes and models are not applicable to these sources.

As specified in Table 2-1, this source is requesting an alternative compliance proposal as there are no presumptive limits associated with the source and potential to emit is greater than 2.7 tpy VOC. This source is petitioning to comply with the alternative compliance proposal specified in 25 Pa Code §129.114(i) which is detailed in Section 3 of this application.

2.2.18 Source ID 210: Raffinate Solidification Process

Source ID 210 is for the raffinate solidification process at the Boyertown facility. This source represents all emission generating units associated with the process. Makes and models are not applicable to these sources.

As specified in Table 2-1, this source is subject to the presumptive RACT specified in 25 Pa Code §129.112(c)(2). The potential to emit for this source is less than 2.7 tpy VOC. As such, this source will comply with the requirements of 25 Pa Code §129.112(c) where GAM “shall install, maintain and operate the source in accordance with the manufacturer’s specifications and with good operating practices.”

2.2.19 Source ID 36-1: Bldg. 36/101

Source ID 36-1 is for processed inside Buildings 36 and 101 at the Boyertown facility. This source represents all emission generating units, including speed mills, pin crushers, and a tray loader associated with the process. Makes and models are not applicable to these sources.

As specified in Table 2-1, this source is exempt from RACT requirements as this source does not emit VOC.

3. ALTERNATIVE RACT PROPOSAL

As stated in Section 2, Initial Notification, there is no presumptive VOC RACT III standard for a tantalum salt process (Source ID 102), extraction process (Source ID 124), and wastewater treatment facility (Source ID 201). Thus, the Boyertown facility is submitting an alternative RACT proposal for Source IDs 109, 124 and 201. In addition, GAM is also submitting this alternative analysis for miscellaneous fugitive emissions from the ethanol storage and transfer operations associated with Building 47/101 (miscellaneous source). An alternative RACT II proposal was submitted for these sources in October 2016. Thus, GAM is proposing to comply with the streamlined alternative RACT requirements in 25 Pa Code §129.114(i).

In order to submit under the streamlined requirements of §129.114(i), the source may not have been modified. Two modifications, in the form of plan approvals, have taken place since the RACT II proposal submitted in 2016. First, GAM submitted a plan approval for an acid wash process for Source ID 109. This was approved under Plan Approval No. 46-0037AD which has since been rolled into the Title V Operating Permit. This modification did not result in any changes to NO_x or VOC emissions. In addition, GAM submitted a plan approval for the installation of a vacuum belt filter in Building 23 (Source ID 118). This was approved under Plan Approval No. 46-0037AE. Construction for this additional piece of equipment is still ongoing and the project will not result in any changes to NO_x or VOC from the source. As both modifications were for sources that do not emit NO_x or VOC there have been no changes to the applicability of RACT requirements to any of the sources at the Boyertown facility. Thus, GAM believes that they qualify for the streamlined alternative RACT requirements in 25 Pa Code §129.114(i).

Under 25 Pa Code §129.114(i), GAM may submit an analysis to the Department, certified by the responsible official, that demonstrates compliance with approved alternative RACT requirements or limitations under 25 Pa Code §129.99(e) assure compliance with the provisions of 25 Pa Code §129.99(a)-(c) and (e)-(h). This section of the report serves as this analysis and is being submitted to the Department before December 31, 2022 as to comply with 25 Pa Code §129.114(i).

GAM has determined that there are no additional technically feasible or cost-effective control technologies available at the time of submittal. This was the same conclusion that was determined for GAM's RACT II submittal under 25 Pa Code §129.99(e). A summary of all possible controls and their feasibility is provided in Table 3-1. A summary of the RACT II analyses along with descriptions for technically infeasible controls can be found following this table.

Table 3-1. Feasibility Analysis for Control Technologies for GAM RACT II Submittals

Control Technology	Technical Feasibility	Economic Feasibility	Cost, if Technically Feasible^a (\$/ton VOC)
Source ID 102: Tantalum Salts Process (B-19)			
MIBK Recovery	Installed	N/A	N/A
Good Operating Practices	Installed	N/A	N/A
Thermal Oxidation	Infeasible	N/A	N/A
Catalytic Oxidation	Infeasible	N/A	N/A
Adsorption	Infeasible	N/A	N/A
Absorption	Infeasible	N/A	N/A
Biofiltration	Infeasible	N/A	N/A
Condensation	Infeasible	N/A	N/A
Material Substitution	Infeasible	N/A	N/A
Source ID 124: Extraction Process (B-74)			
MIBK Recovery	Installed	N/A	N/A
Good Operating Practices	Installed	N/A	N/A
Thermal Oxidation	Infeasible	N/A	N/A
Catalytic Oxidation	Infeasible	N/A	N/A
Adsorption	Infeasible	N/A	N/A
Absorption	Infeasible	N/A	N/A
Biofiltration	Infeasible	N/A	N/A
Condensation	Infeasible	N/A	N/A
Material Substitution	Infeasible	N/A	N/A
Source ID 201: Wastewater Treatment Plant			
Good Operating Practices	Installed	N/A	N/A
Liquid Phase Carbon Adsorption	Feasible	Infeasible	\$21,900
Steam Stripping	Feasible	Infeasible	\$180,066
Thermal Oxidation	Feasible	Infeasible	\$18,148, \$75,499, and \$70,424 ^a
Biofiltration	Feasible	Infeasible	\$26,400
Biodegradation	Infeasible	N/A	N/A
Air Stripping	Infeasible	N/A	N/A
Catalytic Oxidation	Infeasible	N/A	N/A
Flare	Infeasible	N/A	N/A
Vapor Phase Carbon Adsorption	Infeasible	N/A	N/A
Absorption	Infeasible	N/A	N/A

Control Technology	Technical Feasibility	Economic Feasibility	Cost, if Technically Feasible ^a (\$/ton VOC)
Condensation	Infeasible	N/A	N/A
Misc. Source: Fugitive Emissions from Ethanol Storage and Transfer Associated with Building 47/101			
Good Operating Practices	Installed	N/A	N/A
Capture and Control	Infeasible	N/A	N/A

- a. Three scenarios were evaluated for thermal oxidation where they are used to control VOC from the lagoons (\$18,148/ton VOC removed), from the holding tanks (\$75,499/ton VOC removed), and from the work tanks (\$70,424/ton VOC removed).

The following summarizes the findings for the RACT control analyses for RACT II. There is no change to the assessments for any of these technologies for RACT III as compared to RACT II.

► **Source ID 102: Tantalum Salts Process (B-19)**

Tantalum fractions containing trace amounts of MIBK from Building 74 are transferred to building 19 where the tantalum salts are created through heating and crystallization. VOC emissions from this process occur due to the heating of the solution which contains trace amounts of MIBK. The exhaust stream from the heating also contains HF acid. This stream is sent to a packed bed scrubber where HF is removed to a concentration of approximately 20 ppm and the MIBK is exhausted.

GAM determined that MIBK recovery and good operating practices are RACT for Source ID 102. GAM currently utilizes an MIBK recovery system in Building 74 that achieves an efficiency of at least 75% as required by the current Title V Operating Permit. GAM also uses good operating practices in Building 19. No other controls were determined to be technically feasible for this process. The following controls were evaluated and found to be technical infeasible:

- Thermal Oxidation: VOC concentrations in the exhaust stream were determined to be too low to achieve the required heat content needed for a thermal oxidizer; therefore, this technology was determined to be technically infeasible.
- Catalytic Oxidation: The presence of HF acid in the exhaust stream would result in catalyst fouling and deactivation; therefore, this technology was determined to be technically infeasible.
- Adsorption: Carbon and other commercially available adsorption materials cannot withstand the corrosive properties of HF-laden gas stream; therefore, this technology was determined to be technically infeasible.
- Absorption: Due to the low water solubility of MIBK, VOC control through wet scrubbing (absorption) is ineffective; therefore, this technology was determined to be technically infeasible.
- Biofiltration: The presence of halogens in the exhaust stream, will limit or destroy the microbes needed for the biofiltration process; therefore, this technology was determined to be technically infeasible.

- Condensation: The presence of HF acid in the exhaust stream would result in deterioration of condensation and piping; therefore, this technology was determined to be technically infeasible.
- Material Substitution: There are no known substitutions for MIBK in a tantalum extraction process; therefore, material substitution was determined to be technically infeasible.

► **Source ID 124: Extraction Process (B-74)**

Tantalum extraction takes place in Building 74. In this building, an acid solution from the ore digestion process in Building 73 is fed to the process. MIBK is then used to extract tantalum salts from solution. VOC emissions from this process occur due to the transfer and storage of MIBK. Small fractions of MIBK are lost as either fugitive emissions within the building or are collected and sent to the Building 74 wet scrubber where they are emitted through the stack.

GAM determined that MIBK recovery and good operating practices are RACT for Source ID 124. GAM currently utilizes an MIBK recovery system in Building 74 that achieves an efficiency of at least 75% as required by the current Title V Operating Permit. GAM also uses good operating practices in Building 74. No other controls were determined to be technically feasible for this process. As the exhaust streams characteristics are similar for Building 19 (Source ID 102) and Building 74 (Source ID 124), the same technical feasibility assessed for Building 19, above, applies to Building 74.

► **Source ID 201: Wastewater Treatment Plant**

Process wastewater is collected from various processes at the facility and sent to the onsite wastewater treatment plant (WWTP) which consists of various tanks and two open lagoons. At the WWTP, acids are neutralized, and solids are removed. VOC emissions from this process are released as fugitives from these sources.

GAM determined that good operating practices are RACT for Source ID 201. GAM currently utilizes good operating practices for the WWTP per the current Title V Operating Permit. No other controls were determined to be technically feasible for this process. The following controls were evaluated and found to be technical infeasible:

- Biodegradation: Biodegradation involves the use of microbes to breakdown organic compounds in the wastewater using aerobic or anaerobic digestion. The presence of alcohol in the wastewater stream will inhibit the growth of bacterial essential to biodegradation; therefore, this technology was determined to be technically infeasible.
- Air Stripping: Air Stripping is dependent on the rate of transfer of pollutants from liquid to air. MIBK, methanol, and ethanol present in the wastewater stream have low solubility to air making air stripping ineffective; therefore, this technology was determined to be technically infeasible.
- Catalytic Oxidation: The presence of MIBK in the exhaust stream will result in poisoning or unplugging of the oxidation catalyst; therefore, this technology was determined to be technically infeasible.

- Flare: The VOC concentration in the WWTP exhaust stream is not high enough to achieve the minimum required heat content for operation of a flare; therefore, this technology was determined to be technically infeasible.
- Vapor Phase Carbon Adsorption: The presence of particulate matter, acid gasses and polymerized substances in the exhaust streams can cause plugging of adsorption media and reduce VOC control effectiveness; therefore, this technology was determined to be technically infeasible.
- Absorption: No net reduction in VOC would be expected from the addition of an absorption system; therefore, this technology was determined to be technically infeasible.
- Condensation: The concentration of VOC in the exhaust streams of the WWTP are too low to operate a condensation system; therefore, this technology was determined to be technically infeasible.

► **Misc. Source: Fugitive Emissions from Ethanol Storage and Transfer (Associated with Building 47/101)**

Specially denatured alcohol (SDA) is used for milling the tantalum powder. GAM assumes that fugitive emissions occur as a result of the transferring and storage of the fresh and spent SDA. The emissions from this process are not associated with any Source IDs part of the Title V Operating permit but are reported as a miscellaneous source in the annual AIMS report. GAM as determined that the potential emissions from these transfers are greater than 2.7 tpy VOC.

GAM determined that good operating practices are RACT for this miscellaneous source. GAM currently utilizes good operating practices requirements for Source ID 109, Condition #007(e) of the current Title V operating permit. By complying with good operating practices for Building 47/101 as specified in this condition, GAM will comply with good operating practices for miscellaneous fugitives associated with that equipment. No other controls were determined to be technically feasible for this process. The following controls were evaluated and found to be technical infeasible:

- Capture and Control: To control and capture VOCs associated with this process would be to control fugitive emissions from numerous ethanol totes. Due to the transient nature of this storage and transfer operation, capturing these emissions in complex and has numerous engineering challenges. GAM has evaluated controls such as adsorption, oxidation, and biofiltrations which all come with inherent complications; therefore, this technology was determined to be technically infeasible.

As shown in Table 3-1, GAM has concluded there are no upgrades or new equipment available as they will comply with 25 Pa Code §129.114(i)(1). In addition, each technically feasible control was determined to have a cost above \$12,000 per ton VOC. As such, GAM will comply with 25 Pa Code §129.114(i)(1)(i). GAM is including the following information as required by 25 Pa Code §129.114(i)(1)(i):

(a) 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.

GAM performed a search in the Clean Air Technology Center – RACT/BACT/LAER Clearinghouse. No new technologies were found in the results that were not already considered in GAM's RACT II analysis. See Table 3-1 for the list of controls assessed. Further, GAM has installed the “top ranked” controls on each of these sources.

- (b) *A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously identified and evaluated under § 129.92(b)(1)–(3) included in the written RACT proposal submitted under § 129.99(d) and approved by the department or appropriate approved local air pollution control agency under § 129.99(e).*

See Table 3-1 for a list of assessed control technologies and their feasibility. All of the above control technologies were evaluated by PADEP in support of GAM's alternative RACT II analysis for Source IDs 102, 124, 201 and miscellaneous ethanol storage and transfer.

- (c) *A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique listed in clause (b) and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under § 129.99(d) or as calculated consistent with the "EPA air pollution control cost manual" (sixth edition), EPA/452/b-02-001, January 2002, as amended.*

See Table 3-1. Cost analyses were performed for liquid phase carbon adsorption, steam stripping, thermal oxidation, and biofiltration for the wastewater treatment plant. Each one of these controls costed above \$12,000 per ton VOC making these controls economically infeasible.

- (d) *A statement that an evaluation of each economic feasibility analysis summarized in clause (c) 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.*

If a cost analysis were performed again for the controls mentioned in clause (c), the calculated cost would be higher than those previously determined. This is due to inflation and the increased cost of materials and labor. For this reason, GAM has determined that liquid phase carbon adsorption, steam stripping, thermal oxidation, and biofiltration would continue to have a cost effectiveness above \$12,000 per ton of VOC.

- (e) *Additional information requested by the department or appropriate approved local air pollution control agency that may be necessary for the evaluation of the analysis.*

This analysis is in reference to the alternative RACT II submittal. For any additional information from this analysis, please refer to GAM's October 2016 submittal.

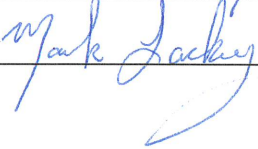
4. RESPONSIBLE OFFICIAL CERTIFICATION

The analysis submitted under 25 Pa Code 129.114(i) in Section 3, Alternative RACT Proposal, requires certification by the responsible official. This section of the report serves as this certification.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: MARK LACKEY

Title: VP Global Operations

Signed: 

Date: December 19 2022