State of Utah

GARY R. HERBERT
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Department of
Environmental Quality

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Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQE-IN103460058-20

September 28, 2020

Jerome Dozol
Kennecott Utah Copper, LLC
4700 Daybreak Parkway
South Jordan, UT 84095

Dear Mr. Dozol:

Re: Intent to Approve:
Modification to Approval Order DAQE-AN0103460057-20 to Add an Emergency Generator Engine, Start a New Tellurium Recovery Process, and Update CHP Unit Operations
Project Number: N103460058

The attached document is the Intent to Approve (ITA) for the above-referenced project. The ITA is subject to public review. Any comments received shall be considered before an Approval Order (AO) is issued. The Division of Air Quality is authorized to charge a fee for reimbursement of the actual costs incurred in the issuance of an AO. An invoice will follow upon issuance of the final AO.

Future correspondence on this ITA should include the engineer's name, **Ms. Catherine Wyffels,** as well as the DAQE number as shown on the upper right-hand corner of this letter. Ms. Catherine Wyffels, can be reached at (385) 306-6531 or cwyffels@utah.gov, if you have any questions.

Sincerely,

Jon C. Black
Jon Black (Sep 28, 2020 16:42 MDT)

Section Manager NSR, Manager
New Source Review Section

JLB:CW:sa

cc: Salt Lake County Health Department
Donald "DJ" Law

STATE OF UTAH
Department of Environmental Quality
Division of Air Quality

INTENT TO APPROVE
DAQE-IN103460058-20
Modification to Approval Order DAQE-AN0103460057-20 to Add an Emergency Generator Engine, Start a New Tellurium Recovery Process, and Update CHP Unit Operations

Prepared By
Ms. Catherine Wyffels, Engineer
(385) 306-6531
cwyffels@utah.gov

Issued to
Kennecott Utah Copper LLC - Smelter & Refinery

Issued On
September 28, 2020

Jon Black (Sep 28, 2020 16:42 MDT)

New Source Review Section Manager
Section Manager NSR

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GENERAL INFORMATION

CONTACT/LOCATION INFORMATION

Owner Name
Kennecott Utah Copper, LLC

Source Name
Kennecott Utah Copper LLC - Smelter & Refinery

Mailing Address
4700 Daybreak Parkway
South Jordan, UT 84095

Physical Address
12000 West 2100 South
Magna, UT 84044

Source Contact
Name Jenny Esker
Phone (801) 569-6494
Email jenny.esker@riotinto.com

UTM Coordinates
399000 m Easting
4508000 m Northing
Datum NAD27
UTM Zone 12

SIC code 3331 (Primary Smelting & Refining of Copper)

SOURCE INFORMATION

General Description
The Refinery, located near the Smelter, receives anode copper produced at the Smelter and uses an electrolytic process to obtain the high purity cathode copper. The copper anodes from the smelter are submerged in tanks containing an electrolyte solution in batch operations. An electric current is applied to the tank for a ten-day period during which copper ions migrate from the anode to form a cathode of 99.99% pure copper. Precious metals (gold and silver) are recovered from the electrolytic refining slimes removed from the tanks in a series of hydrometallurgical operations. The Refinery copper refining process requires steam to maintain electrolyte temperatures and prevent the degradation of the electrolyte tanks as well as support the precious metals process. To supply steam, the Refinery operates a Combined Heat and Power (CHP) unit as a primary source of steam and maintains two (2) Tankhouse Boilers (Boilers #1 and #2) as backup steam production units.

NSR Classification
Minor Modification at Major Source

Source Classification
Located in Northern Wasatch Front O3 NAA, Salt Lake City UT $PM_{2.5}$ NAA, Salt Lake County SO_2 NAA
Salt Lake County
Airs Source Size: A

Applicable Federal Standards

NSPS (Part 60), A: General Provisions
NSPS (Part 60), Dc: Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
NSPS (Part 60), KKKK: Standards of Performance for Stationary Combustion Turbines
MACT (Part 63), A: General Provisions
MACT (Part 63), CCCCCC: NESHAP for Source Category: Gasoline Dispensing Facilities
Title V (Part 70) Major Source

Project Description

Kennecott Utah Copper (KUC) has requested approval to (1) add a new natural gas-fired emergency generator engine; (2) start a new tellurium recovery process in the precious metal facility; and (3) update CHP unit operations. The Title V operating permit for this source will be amended to incorporate the changes to this AO.

New Emergency Generator Engine

KUC has proposed to install a Generac Model QT150 engine, rated at 150 kW. The engine will be natural gas-fired and will meet the requirements in 40 CFR 60 Subpart JJJJ.

Tellurium Recovery Process

KUC plans to install a tellurium recovery process at the precious metals facility to replace a decommissioned process. The precious metals facility process utilizes electrolytic slimes used in the refining of copper anodes to cathodes. Once the copper refining stage is complete, the slimes are further processed to recover precious metals such as gold, silver, selenium, and lead present in the solution. Slimes are moved through a series of chemical processes to capture the precious metals and the remaining materials, referred to as precious metals bleeds, are sent to the Smelter Hydromet building for treatment and either reprocessing at the Smelter or transfer to the Tailings Impoundment. The tellurium recovery process will be installed to process precious metals bleeds before they are sent to the Hydromet.

The tellurium recovery process consists of enclosed tanks that are operated in batches to recover copper telluride. Each tank is sealed, heated with direct inject steam, and agitated to promote the formation of solids. Once the reaction is complete, the liquids are sent to a filter press and stored as bleeds and the solids are collected from the bottom of the tank and placed in drums as saleable products. The filter press will handle wet materials so there will be no emissions associated with material handling for this process.

There are no emissions associated with the process. The tanks are heated to 200^{o}F, which is below the boiling point of sulfuric acid.

CHP Unit

KUC has also requested to update emissions associated with the existing CHP unit, which has operated since 2012. Steam for the Refinery is primarily supplied by the CHP unit. Boiler(s) are used as backup steam production units. The CHP unit consists of a turbine and a generator, followed by supplemental duct burner and a heat recovery steam generator (HRSG). Under normal operations, the CHP unit operates in a configuration with the turbine and supplemental duct burner producing power and steam and this mode is referred to as total electric generator (TEG) firing mode. In the event of maintenance activities or an upset condition, the supplemental duct burners and the HRSG are operated in the absence of the turbine and the turbine generator. In this configuration, the supplemental duct burner is operated with fresh air. This mode of operation is referred to as "fresh air firing mode".

During periods of maintenance or emergency operations, different modes of operation are needed to ensure the process steam demand is met. KUC evaluated three (3) different modes of operations: (1) CHP unit in TEG firing mode; (2) CHP Unit fresh air firing mode; and (3) boilers only. KUC estimated emissions for all operating modes and used the mode with the maximum emissions rates for each pollutant to recalculate the PTE. This will give KUC operational flexibility in the operations during a maintenance or emergency conditions.

KUC has also de-rated the CHP unit supplemental duct burner and changed emission estimates to include the maximum rating under high heating value (HHV).

SUMMARY OF EMISSIONS

The emissions listed below are an estimate of the total potential emissions from the source. Some rounding of emissions is possible.

Criteria Pollutant	Change (TPY)	Total (TPY)
Ammonia	0	0.61
CO_2 Equivalent	-46963	56632.00
Carbon Monoxide	-6.66	30.18
Lead	0	0.49
Nitrogen Oxides	12.58	36.88
Particulate Matter - PM_{10}	-0.30	24.48
Particulate Matter - $PM_{2.5}$	-3.85	20.92
Sulfur Dioxide	4.51	8.95
Volatile Organic Compounds	-2.30	5.61

Hazardous Air Pollutant	Change (lbs/yr)	Total (lbs/yr)
Arsenic Compounds (CAS #ARF750)	0	60
Generic HAPs (CAS #GHAPS)	2620	3400
Hydrochloric Acid (Hydrogen Chloride) (CAS #7647010)	0	1920
Lead (CAS #7439921)	0	980
Selenium & Compounds (CAS #253)	0	3100
Sulfuric Acid (CAS #7664939)	0	10420
	Change (TPY)	**Total (TPY)**
Total HAPs	1.31	9.94

PUBLIC NOTICE STATEMENT

The NOI for the above-referenced project has been evaluated and has been found to be consistent with the requirements of UAC R307. Air pollution producing sources and/or their air control facilities may not be constructed, installed, established, or modified prior to the issuance of an AO by the Director.

A 30-day public comment period will be held in accordance with UAC R307-401-7. A notification of the ITA will be published in the Salt Lake Tribune and Deseret News on September 30, 2020. During the public comment period the proposal and the evaluation of its impact on air quality will be available for the public to review and provide comment. If anyone so requests a public hearing within 15 days of publication, it will be held in accordance with UAC R307-401-7. The hearing will be held as close as practicable to the location of the source. Any comments received during the public comment period and the hearing will be evaluated. The proposed conditions of the AO may be changed as a result of the comments received.

SECTION I: GENERAL PROVISIONS

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO.

I.1	All definitions, terms, abbreviations, and references used in this AO conform to those used in the UAC R307 and 40 CFR. Unless noted otherwise, references cited in these AO conditions refer to those rules. [R307-101]
I.2	The limits set forth in this AO shall not be exceeded without prior approval. [R307-401]
I.3	Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved. [R307-401-1]
I.4	All records referenced in this AO or in other applicable rules, which are required to be kept by the owner/operator, shall be made available to the Director or Director's representative upon request, and the records shall include the two-year period prior to the date of the request. Unless otherwise specified in this AO or in other applicable state and federal rules, records shall be kept for a minimum of five (5) years. [R307-401-8]
I.5	At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this AO, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Director which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded. [R307-401-4]
I.6	The owner/operator shall comply with UAC R307-107. General Requirements: Breakdowns. [R307-107]
I.7	The owner/operator shall comply with UAC R307-150 Series. Emission Inventories. [R307-150]
I.8	The owner/operator shall submit documentation of the status of construction of the new emergency generator engine (II.A.21) to the Director within 18 months from the date of this AO. This AO may become invalid if construction is not commenced within the specified dates or if construction is discontinued for 18 months or more. To ensure proper credit when notifying the Director, send the documentation to the Director, attn.: NSR Section. [R307-401-18]

SECTION II: PERMITTED EQUIPMENT

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO.

II.A THE APPROVED EQUIPMENT

II.A.1	**Plant wide** Electrolytic Copper Refinery, Precious Metals Refinery and CHP Unit

II.A.2	**Electrolytic Refining Tanks** Copper anodes produced at the smelter are immersed in heated electrolyte, a solution of sulfuric acid and copper sulfate, in polymer concrete tanks in the tankhouse building. Copper cathodes are produced by an electrolytic refining process.
II.A.3	**Electrolyte Purification Liberator (REF 001)** A small amount of electrolyte is circulated from the electrolytic tanks to the liberator electrowinning process, used to control concentration of copper in solution. The electrolyte purification demister pad collects mist emitted from the liberator.
II.A.4	**Cathode Wash (REF 004)** Cathodes are transported from the "tankhouse" by transfer cars to the Machine and Product Control (MPC) building where they are washed. Acid mist produced is collected through local hooding and passed through demister pads.
II.A.5	**Anode Scrap Wash (REF 005)** Spent anodes are transported from the "tankhouse" by transfer cars to the MPC building where they are washed. Acid mist produced is collected through local hooding and passed through demister pads.
II.A.6	**Hydrometallurgical Precious Metals Recovery** Unit ID: REF 006 Gold, silver, selenium, copper telluride, and lead salts are recovered in a series of hydrometallurgical processes. Acidic gases from the gold, silver, selenium, and lead salts processes are collected, scrubbed with a soda ash solution, and exhausted through the sodium based scrubber. No emissions are associated with the copper telluride recovery process.
II.A.7	**Soda Ash Silo (REF 011)** Soda ash for feeding sodium based scrubber is stored in a silo. Air displaced in the silo during soda ash loading is passed through a baghouse.
II.A.8	**Hydrometallurgical Silver Production (REF 007)** Ammonium hydroxide is used to leach silver from a solid mixture. Ammonia is recovered and regenerated in a closed loop system. H_2SO_4 is used to precipitate the silver chloride salt. Ammonia vapor from this process is ducted to an acidic scrubber.
II.A.9	**Precious Metals Filter Presses (REF 008)** Product lead carbonate and crude selenium are dewatered in filter presses, which are vented during emptying and cleaning through the precious metals filter press baghouse.
II.A.10	**Selenium Crushing and Packaging (REF 009)** Either purified (retorted and condensed) selenium is crushed, sized, and packaged for shipment or filtered crude selenium is packaged for shipment. This system vents to a baghouse.

II.A.11	**Gold/Silver Recovery (REF 010)** Following leaching and solvent extraction processes, gold and silver are melted in furnaces to produce bullion. Emissions from drying of precious metals sands and from metals volatilized during melting processes are vented to a baghouse.
II.A.12	**Refinery Laboratory Sample Preparation** A laboratory induction furnace is hooded and vented inside the MPC building.
II.A.13	**Fueling Station Storage Tank (REF SA-1)** Capacity: 2,500 gallons Content: Unleaded Gasoline
II.A.14	**Refinery Volatile Organic Liquid Storage Tanks** Capacity: Two (2) 37,000-gallon tanks and one (1) 500-gallon tank Content: Fuel oil
II.A.15	**Refinery Cold Solvent Degreasers (REFi 201)** Organic solvent is used in degreasing tanks for small parts washing. The cold solvent degreasers have a total throughput of approximately 25 gallons solvent per year.
II.A.16	**Refinery Paint Shop** Paint shop surface coating with organic solvent evaporation from stripping. Annual usage equals approximately 23 gallons per year of paint primer and 106 gallons per year of paint.
II.A.17	**Miscellaneous Natural Gas-Fired Equipment** Natural gas-fired equipment including water heaters or comfort heaters that are each individually rated at less than 5 MMBTU/hr. This equipment is listed for informational purposes only.
II.A.18	**Refinery Cooling Towers** Two (2) water cooling towers are in operation at the refinery.
II.A.19	**Emergency Generator - Communications System** Unit ID: REF COM GEN Maximum Rating: 75 bhp Fuel: LPG
II.A.20	**Emergency Generator - Precious Metals Plant** Unit ID: REFi 210 Maximum Rating: 487.5 hp Fuel: Diesel
II.A.21	**Emergency Generator #2 - Precious Metals Plant** Maximum Rating: 150 kW Manufacture Date: 2020 Fuel: Natural Gas

II.A.22	**Tankhouse Boiler #1 (North) - To be decommissioned** Unit ID: REF 003 Rating (natural gas): 82 MMBTU/hr Rating (fuel oil): 79 MMBTU/hr oil Fuel: Natural Gas/Diesel NSPS/MACT Applicability: 40 CFR 60 Subpart Dc
II.A.23	**Tankhouse Boiler #2 (South) (REF 002)** Rating (natural gas): 85 MMBTU/hr Rating (fuel oil): 82 MMBTU/hr Fuel: Natural Gas/Diesel NSPS/MACT Applicability: 40 CFR 60 Subpart Dc
II.A.24	**Combined Heat and Power (CHP) Unit (REF CHP)** Solar Turbines, Inc. Taurus 70-10301S Axial turbine with CB Energy for duct burner with Turbine Electric Generator (TEG), supplemental duct burner and Heat Recovery Steam Generator (HRSG) Fuel: Natural Gas Operating Mode Ratings: (1) TEG Firing: 100 MMBtu/hr (LHV) and 110.3 MMBtu/hr (HHV) (2) Fresh Air Firing: 45 MMBtu/hr (LHV) and 49.9 MMBtu/hr (HHV)

SECTION II: SPECIAL PROVISIONS

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO.

II.B REQUIREMENTS AND LIMITATIONS

II.B.1	**Stack Testing Requirements for Electrolytic Copper Refinery, Precious Metals Refinery and CHP Unit**
II.B.1.a	Emissions to the atmosphere from the indicated emission points for the Electrolytic Copper Refinery and Precious Metals Refinery shall not exceed the following rates and concentrations: A. Electrolyte Purification Liberator w/Demister Pads H_2SO_4 0.46 lbs/hr 0.004 grains/dscf B. Cathode Wash with Demister Pads H_2SO_4 0.12 lbs/hr 0.0008 grains/dscf C. Anode Scrap Wash with Demister Pads H_2SO_4 0.02 lbs/hr 0.0008 grains/dscf

	D. Hydrometallurgical Precious Metals Recovery Scrubber SO_2 1.7 lbs/hr Pb 0.02 lbs/hr HCl 0.22 lbs/hr 0.003 grains/dscf H_2SO_4 0.36 lbs/hr 0.005 grains/dscf E. Hydrometallurgical Silver Production Scrubber H_2SO_4 0.22 lbs/hr 0.009 grains/dscf NH_3 0.14 lbs/hr F. Gold/Silver Recovery Baghouse PM_{10} (filterable) 0.43 lbs/hr 0.010 grains/dscf G. Tankhouse Boiler #1 (Boiler to be decommissioned by December 26, 2020) NO_x 4.75 lbs/hr each boiler CO 3.00 lbs/hr each boiler Tankhouse Boiler #2 NO_x 1.5 lbs/hr 9 ppmvd @ 3%O_2 CO 3.00 lbs/hr H. CHP Unit TEG Firing Mode NO_x 5.96 lbs/hr CO 6.43 lbs/hr Fresh Air Firing Mode NO_x 7.49 lbs/hr CO 2.5 lbs/hr [R307-401]
II.B.1.b	Stack testing to show compliance with the emission limitations for the Refinery stated in the above condition shall be performed as specified below: Pollutant Test Status Test Frequency A. Electrolyte Purification Liberator w/Demister Pads H_2SO_4 * Every three (3) years B. Cathode Wash with Demister Pads H_2SO_4 * Every three (3) years C. Anode Scrap Wash with Demister Pads H_2SO_4 * Every three (3) years D. Hydrometallurgical Precious Metals Recovery Scrubber SO_2 * Every three (3) years Pb * Every three (3) years HCl * Every three (3) years H_2SO_4 * Every three (3) years

	E.	Hydrometallurgical Silver Production Scrubber		
		H_2SO_4	*	Every three (3) years
		NH_3	*	Every three (3) years
	F.	Gold/Silver Recovery Baghouse		
		PM_{10}	*	Every three (3) years
	G.	Tankhouse Boiler #1 (Boiler to be decommissioned by December 26, 2020)		
		NO_x	*	Every three (3) years
		CO	*	Every three (3) years
		Tankhouse Boiler #2		
		NO_x	**	Every three (3) years
		CO	**	Every three (3) years
	H.	CHP Unit		
		TEG Firing Mode		
		NO_x	*	Every 12 months
		CO	*	Every 12 months
		Fresh Air Firing Mode		
		NO_x	***	Every 12 months
		CO	***	Every 12 months

* Initial test has been performed.

** Initial test shall be performed as soon as possible and in no case later than 180 days after startup.

*** Initial test shall be performed no later than 180 days after issuance of this AO.

For testing frequency of every three (3) years, testing must be performed every third year and in the same calendar quarter in which the most recent test was performed.

For testing frequency of every 12 months, testing shall be done at least every 12-months based on the date of the last stack test and no more than 14 calendar months following the previous performance test.

If the test results are less than 60.0% of the limit specified in Condition II.B.1.a for three (3) consecutive tests, then KUC may petition the Director to perform the test at a less frequent rate. If at any time a test is performed that is greater than 60% of the limit specified in Condition II.B.1.a, then testing will resume to their original testing frequencies (every 12 months for the CHP unit and every three (3) years for all other sources) for three (3) consecutive tests. After three (3) consecutive tests with the test results less than 60.0%, KUC may repetition the Director for less frequent testing. A reduced test frequency is not allowed for the Tankhouse Boiler #2 since this source is included in Part H of the Utah SIP. For the CHP Unit (TEG Firing Mode), KUC may petition the Director to perform the test every calendar year as allowed by Part H of the Utah SIP.

[R307-165, R307-401]

II.B.1.c	The following test methods and requirements shall be used when testing for the limitations listed above: A. Notification Notification of the date, time, place of test and a copy of the test protocol shall be provided at least 30 days prior to the test. A pretest conference shall be held if directed

by the Director. The source test protocol shall be approved by the Director prior to performing the test(s). The source test protocol shall outline the proposed test methodologies, stack to be tested, and procedures to be used.

B. Sample Location
The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, or other method as approved by the Director. An Occupational Safety and Health Administration- or Mine Safety and Health Administration-approved access shall be provided to the test location.

C. Volumetric Flow Rate
40 CFR 60, Appendix A, Method 2 or other EPA-approved testing method acceptable to the Director

D. NO_x
40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D, or 7E or other EPA-approved testing method acceptable to the Director

E. CO
40 CFR 60, Appendix A, Method 10 or other EPA-approved testing method acceptable to the Director

F. PM_{10}
For stacks in which no liquid drops are present, the following methods shall be used: 40 CFR 51, Appendix M, Methods 201 or 201a or other EPA-approved testing method acceptable to the Director. The back half condensable particulate emissions shall also be tested using 40 CFR 51, Appendix M Method 202, or other EPA-approved testing method acceptable to the Director. All particulate captured using Method 202 shall be considered PM_{10}. For filterable emission limits, condensable particulate emissions shall not be used for compliance.

G. H_2SO_4
40 CFR 60, Appendix A, Method 8 or other EPA-approved testing method acceptable to the Director

H. NH_3
An EPA-approved testing method acceptable to the Director

I. Lead
40 CFR 60, Appendix A, Method 12 or other EPA-approved testing method acceptable to the Director

J. HCl
40 CFR 60, Appendix A, Method 26 or 26A or other EPA-approved testing methods acceptable to the Director

K. SO_2
40 CFR 60, Appendix A, Method 6, 6A, 6B, or 6C or other EPA-approved testing method acceptable to the Director

L. Calculations
To determine mass emission rates (lbs/hr, etc.), the pollutant concentration as determined by the appropriate methods above, shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Director to give the results in the specified units of the emission limitation.

	M. Source Operation For a new source, the production rate during all compliance testing shall be no less than 90% of the production capacity of the equipment. If the maximum production capacity has not been achieved at the time of the test, the following procedure shall be followed: (1) Testing shall be at no less than 90% of the production rate achieved to date. (2) If the test is passed, the new maximum allowable production rate shall be 110% of the tested achieved rate. This new allowable maximum production rate shall remain in effect until successfully tested at a higher rate. (3) The owner/operator shall request a higher production rate when necessary. Testing at no less than 90% of the higher rate shall be conducted. A new maximum production rate (110% of the new rate) will then be allowed if the test is successful. This process may be repeated until the maximum AO production rate is achieved. For an existing source, the production rate during all compliance testing shall be no less than 90% of the maximum production achieved in the previous three (3) years N. Results The results of stack testing shall be submitted to the Director within 60 days of completion of the testing. Reports shall clearly identify results as compared to permit limits and indicate compliance status. [R307-401-8]
II.B.1.d	The following operational limits shall not be exceeded: A. Natural gas consumption from the CHP Unit and Tankhouse Boiler #2 shall not exceed 966,228 MMBtu per rolling 12-month period. B. After installation of the upgraded burner in Tankhouse Boiler #2, natural gas consumption from the Tankhouse Boiler #1 shall not exceed 100 MMscf per rolling 12-month period. [R307-401]
II.B.1.d.1	To determine compliance with a rolling 12-month total, no later than 20 days after the end of each month, a new 12-month total shall be calculated using data from the previous 12 months. Monthly calculations shall be made no later than 20 days after the end of each calendar month based on natural gas fuel purchasing records or flow meter. The records of consumption shall be kept on a monthly basis. Records of consumption shall be kept for all periods when the facility is in operation. [R307-401-8]
II.B.1.d.2	The owner/operator may exceed the natural gas consumption limit in Tankhouse Boiler #1 only if the burner in this boiler is upgraded to meet a NO_x emissions rate of less than or equal to 30 ppmvd. The owner/operator shall notify the Director prior to exceeding this consumption limit and upgrading the burner. [R307-401-8]
II.B.2	**Visible Emissions**
II.B.2.a	Visible emissions from the following emission points at the refinery and the CHP shall not exceed the following opacity values: A. Electrolyte Purification Liberator Exhaust 15%

	B. Cathode Wash Exhaust C. Anode Scrap Wash Process Exhaust D. All Scrubber Exhausts E. All Baghouses F. Soda Ash Silo Exhaust Vent Filter G. Fugitive Emissions H. Fugitive Dust from Paved Roads and Stripped Areas I. Diesel-Fired Emergency Generator Engines J. Propane or Natural Gas-Fired Emergency Generator Engines K. Boiler Stack(s) L. CHP Unit (Turbine and Duct Burner) M. All other Emissions [R307-170-9, R307-309]	15% 15% 15% 10% 10% 15% 20% on-site 10% property boundary 20% 10% 10% 10% 10%
II.B.2.a.1	Opacity observations of emissions from stationary sources shall be conducted according to 40 CFR 60, Appendix A, Method 9. [R307-201]	
II.B.3	**Roads and Fugitives**	
II.B.3.a	All roads, service yards, and permanent parking lots associated with refining operations shall be paved. Methods of control shall include, but not be limited to, sweeping and water flushing of the affected areas. [R307-205]	
II.B.3.b	Control of fugitive dust from disturbed or stripped areas is required at all times (24 hours per day every day) for the duration of the operation at these areas. Methods of control of fugitive emissions from these areas shall include, but not be limited to, water treatments or chemical treatments. [R307-205]	
II.B.4	**Fuels**	
II.B.4.a	The owner/operator shall use natural gas as the primary fuel and #2 fuel oil or better as a backup fuel in the Tankhouse Boilers. [R307-401]	
II.B.4.b	The owner/operator shall limit fuel oil usage in each Tankhouse Boiler to 48 hours per calendar year for periodic testing, maintenance, or operator training. There is no time limit on the use of fuel oil in the boiler during periods of natural gas curtailment, natural gas supply interruption, or startups. Records documenting fuel oil usage shall be kept in a log. If the boiler exceeds the 48-hour limit of fuel oil usage, the requirements in 40 CFR 63 Subpart JJJJJJ shall apply. [40 CFR 63 Subpart JJJJJJ, R307-401-8]	
II.B.4.c	The owner/operator shall only combust diesel fuel (e.g. fuel oil #1, #2, or diesel fuel oil additives) that meets the definition of ultra-low sulfur diesel (ULSD), which has a sulfur content of 15 ppm or less. [R307-401-8]	

II.B.4.c.1	To demonstrate compliance with the ULSD fuel requirement, the owner/operator shall maintain records of diesel fuel purchase invoices or obtain certification of sulfur content from the diesel fuel supplier. The diesel fuel purchase invoices shall indicate the diesel fuel meets the ULSD requirements. [R307-401-8]
II.B.4.d	The owner/operator shall only use natural gas as a fuel in the CHP unit and the Emergency Generator Engine #2 - Precious Metals. [R307-401]
II.B.4.e	The owner/operator shall only use LP as a fuel in the communications emergency generator. [R307-401]
II.B.5	**Monitoring**
II.B.5.a	The pressure drop for the Selenium Crushing and Packaging Baghouse shall not be less than 1.0 inch of water column (iwc) or more than 6.0 iwc. [R307-401]
II.B.5.a.1	The owner/operator shall make at least one (1) pressure drop observation per month. The observation shall be made during typical operating conditions. The pressure drop shall be monitored with instruments located such that an inspector/operator can safely read the output at any time. The instrument(s) shall be calibrated in accordance with the manufacturer's instructions at least once each year. If the pressure drop remains out of range for greater than 48 operating hours from the initial out of range reading, it shall be considered a deviation from the condition in this AO. The owner/operator shall record the results of the pressure drop observation once each month. [R307-401-8]
II.B.5.b	The owner/operator shall maintain pressure drops and liquid flow rates for each scrubber listed below within the following ranges. A. Hydrometallurgical Precious Metals Recovery Scrubber: Pressure Drop = 5 - 15 iwc Liquid Flow Rate = greater than 100 gpm B. Hydrometallurgical Silver Production Scrubber: Pressure Drop = 0.75 - 4 iwc Liquid Flow Rate = greater than 60 gpm [R307-401-8
II.B.5.b.1	The owner/operator shall install, calibrate, maintain, and operate monitoring devices for the continuous measurement of the pressure drop of the gas stream and the scrubbing liquid flow rate through each scrubber. The instruments that measure scrubbing liquid flow rate and gas stream pressure drop shall be installed such that an inspector/operator can safely read the output at any time. The owner/operator shall make at least one (1) pressure drop and one (1) liquid flow observation per calendar day for each scrubber listed above that operated during that day. If the pressure drop or liquid flow rate deviates from the listed ranges, the owner/operator shall immediately investigate the cause and initiate corrective action to return the scrubber to proper operating parameters. If the pressure drop or the liquid flow rate remains out of range for greater than 48 operating hours from the initial out of range reading, it shall be considered a deviation from this AO condition. The gas stream pressure drop reading shall be accurate to one (1) iwc and the scrubbing liquid flow rate shall be accurate to five (5) gallons per minute. The observation shall be made during typical operating conditions. The instrument(s) shall be calibrated according to the manufacturer's instruction at least semi-annually (every six (6) months), except for those instruments that are sealed by the manufacturer and cannot be calibrated. Additionally, the pressure drop and liquid flow rate for each scrubber shall be observed and recorded at the time of any compliance stack testing.

	For each unit, if pressure drop and liquid flow rate observations are within range for eight (8) consecutive weeks, the observation frequency shall be reduced to a weekly basis. If pressure drop or liquid flow rate observations are not within range during any weekly observation, the frequency shall revert back to once per calendar day for the emission unit that was out of range. An operator's log or computer recording shall be maintained to demonstrate compliance with the above monitoring requirements. [R307-401]
II.B.6	**Boiler Requirements**
II.B.6.a	The owner/operator shall decommission Tankhouse Boiler #1 by December 26. 2020. The owner/operator shall notify the Director when the decommissioning of Tankhouse Boiler #1 is completed. Notification shall be submitted within 30 days of decommission. [R307-401-8]

PERMIT HISTORY

This Approval Order shall supersede or will be based on the following documents:

Incorporates	Additional Information dated May 19, 2020
Is Derived From	NOI dated April 23, 2020
Supersedes	AO DAQE-AN103460057-20 dated April 3, 2020

ACRONYMS

The following lists commonly used acronyms and associated translations as they apply to this document:

40 CFR	Title 40 of the Code of Federal Regulations
AO	Approval Order
BACT	Best Available Control Technology
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CDS	Classification Data System (used by Environmental Protection Agency to classify sources by size/type)
CEM	Continuous emissions monitor
CEMS	Continuous emissions monitoring system
CFR	Code of Federal Regulations
CMS	Continuous monitoring system
CO	Carbon monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent - Title 40 of the Code of Federal Regulations Part 98, Subpart A, Table A-1
COM	Continuous opacity monitor
DAQ/UDAQ	Division of Air Quality
DAQE	This is a document tracking code for internal Division of Air Quality use
EPA	Environmental Protection Agency
FDCP	Fugitive dust control plan
GHG	Greenhouse Gas(es) - Title 40 of the Code of Federal Regulations 52.21 (b)(49)(i)
GWP	Global Warming Potential - Title 40 of the Code of Federal Regulations Part 86.1818-12(a)
HAP or HAPs	Hazardous air pollutant(s)
ITA	Intent to Approve
LB/YR	Pounds per year
MACT	Maximum Achievable Control Technology
MMBTU	Million British Thermal Units
NAA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOI	Notice of Intent
NO_x	Oxides of nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
PM_{10}	Particulate matter less than 10 microns in size
$PM_{2.5}$	Particulate matter less than 2.5 microns in size
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
R307	Rules Series 307
R307-401	Rules Series 307 - Section 401
SO_2	Sulfur dioxide
Title IV	Title IV of the Clean Air Act
Title V	Title V of the Clean Air Act
TPY	Tons per year
UAC	Utah Administrative Code
VOC	Volatile organic compounds