



State of Utah

SPENCER J. COX  
Governor

DEIDRE HENDERSON  
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Department of  
Environmental Quality

Kimberly D. Shelley  
Executive Director

DIVISION OF AIR QUALITY  
Bryce C. Bird  
Director

DAQE-IN109220038-21

December 6, 2021

John Wester  
Westinghouse Electric Company LLC  
10,000 West 900 South  
Ogden, UT 84404-9799  
john.wester@westinghouse.com

Dear Mr. Wester:

Re: Intent to Approve:  
Modification to Approval Order DAQE-AN109220037-16 to Update Equipment  
Project Number: N109220038

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, **Sarah Foran**, as well as the DAQE number as shown on the upper right-hand corner of this letter. Sarah Foran, can be reached at (385) 306-6724 or sforan@utah.gov, if you have any questions.

Sincerely,

  
Jon Black (Dec 2, 2021 23:33 MST)

Jon L. Black, Manager  
New Source Review Section

JLB:SF:sa

cc: Weber-Morgan Health Department  
Dan Fagnant, EPA Region 8  
Gail Fallon, EPA Region


**STATE OF UTAH**  
**Department of Environmental Quality**  
**Division of Air Quality**

**INTENT TO APPROVE**  
**DAQE-IN109220038-21**  
**Modification to Approval Order DAQE-AN109220037-16**  
**to Update Equipment**

**Prepared By**  
**Sarah Foran, Engineer**  
**(385) 306-6724**  
**sforan@utah.gov**

**Issued to**  
**Westinghouse Electric Company LLC - Zirconium Hafnium Production Plant**

**Issued On**  
**December 6, 2021**

  
Jon Black (Dec 2, 2021 23:33 MST)

**Jon L. Black, Manager**  
**New Source Review Section**

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## GENERAL INFORMATION

### CONTACT/LOCATION INFORMATION

**Owner Name**

Westinghouse Electric Company LLC

**Source Name**

Westinghouse Electric Company LLC -  
Zirconium Hafnium Production Plant

**Mailing Address**

10,000 West 900 South  
Ogden, UT 84404-9799

**Physical Address**

10,000 West 900 South  
Ogden, UT 84404-9799

**Source Contact**

Name John Wester  
Phone (385) 408-9060  
Email john.wester@westinghouse.com

**UTM Coordinates**

396,825 m Easting  
4,568,342 m Northing  
Datum NAD83  
UTM Zone 12

**SIC code** 3339 (Primary Smelting & Refining of Nonferrous Metals, Except Copper & Aluminum)

### SOURCE INFORMATION

**General Description**

Western Zirconium (WZ), part of the Westinghouse Electric Company Limited Liability Corporation, is located in Weber County, Utah. The facility manufactures nuclear grade Zirconium and Hafnium products using raw feed materials (including zirconium oxychloride crystals). This nuclear grade material is used as various critical reactor components. Zirconium metal is produced at the plant through liquid separation of zirconium and hafnium, pure chlorination of zirconium oxide, and reduction of zirconium chloride to zirconium metal. The reduction of zirconium from zirconium chloride is achieved in a sealed crucible where heat is used in the presence of magnesium and zirconium chloride to produce a two-phase separation of magnesium chloride and zirconium metal. The zirconium metal is then cast and reduced to sizable pieces or sheets, and the oxides are removed using a grinding bench. The zirconium metal is then alloyed and mechanically fabricated to customer specifications, such as tubes (to hold radioactive pellets), sheets, rods, ribbon, etc. There are multiple venturi scrubbers, a natural gas thermal oxidizer, and baghouses to control emissions from the various sources on site.

**NSR Classification**

Minor Modification at Major Source

**Source Classification**

Located in Ogden City CO Maintenance Area  
Weber County  
Airs Source Size: A

**Applicable Federal Standards**

NSPS (Part 60), A: General Provisions  
NSPS (Part 60), IIII: Standards of Performance for Stationary Compression Ignition Internal  
Combustion Engines

NSPS (Part 60), JJJJ: Standards of Performance for Stationary Spark Ignition Internal Combustion Engines  
 MACT (Part 63), A: General Provisions  
 MACT (Part 63), ZZZZ: NESHAP for Stationary Reciprocating Internal Combustion Engines  
 MACT (Part 63), DDDDD: NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters  
 Title V (Part 70) Major Source

### Project Description

WZ requested a modification to their existing AO for the addition of a dry-mill system, or "co-milling" system, and the removal of two (2) emergency engines and condition II.B.6.c of AO DAQE-AN109220037-16. Condition II.B.6.c which required the routing of off-gassing from Pad 24 West to Pad 24 East during upset conditions to maintain the required 15% opacity, is no longer relevant to the existing equipment configuration. The off-gassing system was upgraded from a manual shutdown and changeover to a more reliable system in 2005. The new configuration increased change over reliability and the provision is no longer necessary. Each scrubber will still maintain the required 15% opacity or less.

The new co-milling system will be an addition to WZ's existing chlorinators. The new co-milling system will use (electric powered) air compressors to mix zirconium oxide and petroleum coke powders prior to entering existing chlorination tanks. This additional process does not change the volume of existing inputs but increases the efficiency of the chlorination process. The co-milling system emissions will be controlled through a baghouse.

The North and South Emergency engines (listed under II.A.34 and II.A.37 in AO DAQE-AN109220037-16) were removed in this modification.

Conditions II.B.1.a for notification of installation and operation of the two (2) new 1000 kW diesel-fired generators and two (2) diesel storage tanks were removed from the permit conditions. WZ provided documentation that the engines and diesel tanks were installed and are operating.

Additional changes include reorganized and updated language to existing conditions for clarity and ease of understanding. The equipment list was also updated within this scope.

### **SUMMARY OF EMISSIONS**

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

<b>Criteria Pollutant</b>	<b>Change (TPY)</b>	<b>Total (TPY)</b>
Ammonia	0	7.09
CO <sub>2</sub> Equivalent	-75	33553.00
Carbon Monoxide	-0.43	2185.31
Nitrogen Oxides	-2.01	51.85
Particulate Matter - PM <sub>10</sub>	0.04	53.12
Particulate Matter - PM <sub>2.5</sub>	-0.05	53.03
Sulfur Dioxide	-0.13	1.45
Volatile Organic Compounds	-0.16	6.46

<b>Hazardous Air Pollutant</b>	<b>Change (lbs/yr)</b>	<b>Total (lbs/yr)</b>
Chlorine (CAS #7782505)	0	142200
Ethyl Benzene (CAS #100414)	0	40
Formaldehyde (CAS #50000)	0	20
Generic HAPs (CAS #GHAPS)	-4	376
Hexane (CAS #110543)	0	357
Hydrochloric Acid (Hydrogen Chloride) (CAS #7647010)	0	15734
Hydrogen Fluoride (Hydrofluoric Acid) (CAS #7664393)	0	60
Methyl Isobutyl Ketone (Hexone) (CAS #108101)	0	10980
Xylenes (Isomers And Mixture) (CAS #1330207)	0	220
	<b>Change (TPY)</b>	<b>Total (TPY)</b>
<b>Total HAPs</b>	-0.01	84.99

## 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 Ogden Standard Examiner on December 8, 2021. 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 five-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 or modification to the Director within 18 months from the date of this AO. This AO may become invalid if construction is not commenced within 18 months from the date of this AO 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	<b>Zirconium Hafnium Production Plant</b>
II.A.2	<b>Feed Make-up System</b> Consisting of one (1) dissolving tank, two (2) holding tanks, four (4) storage tanks, and associated piping and accessories
II.A.3	<b>Two (2) HCl Storage Tanks</b> Capacity: 16,000 gallons Each Control: 2-Stage scrubber; 1st stage Venturi scrubber and 2nd stage packed bed recirculating scrubber
II.A.4	<b>Aqueous Ammonia Storage System and Offloading</b> *(Includes: Anhydrous ammonia offloading operations and the aqueous ammonia storage system) Control: Packed tower wet scrubber Minimum Recirculation Flow Rate: of 8 gpm
II.A.5	<b>One (1) MIBK Storage Tank</b> Capacity: 8,813 gallons Control: Vertical Fixed Roof

II.A.6	<p><b>Separations Kiln Control System</b></p> <p>A. One (1) Zirconium Oxide Kiln</p> <p>B. One (1) Hafnium Oxide Kiln MACT Applicability: Subpart DDDDD</p> <p>C. Two (2) Electrostatic Precipitators in series that controls the Zirconium Oxide Kiln and Hafnium Oxide Kiln</p> <p>D. One (1) Caustic Scrubber that controls the Zirconium Oxide Kiln and Hafnium Oxide Kiln</p>
II.A.7	<p><b>Separations Kiln Control System (continued)</b></p> <p>E. One (1) Venturi Scrubber that controls the Zirconium Oxide Kiln</p> <p>F. One (1) Quench Tower that controls the Zirconium Oxide Kiln</p> <p>G. One (1) Wet Scrubber on the Hafnium Oxide Kiln: Design flow rate of 115 ACFM and a minimum recirculation flow rate of 50 gpm</p>
II.A.8	<p><b>Separations Hafnium Kiln Combustion Vent</b></p>
II.A.9	<p><b>One (1) Thermal Oxidizer</b> Rating: 2.0 MMBtu/hr Control: pre-scrubber</p>
II.A.10	<p><b>Zirconium Oxide Drum Area</b> Control: Baghouse</p>
II.A.11	<p><b>Zirconium Sulfate Ash Bin and Silo</b> Control: Baghouse Baghouse minimum air flow rate: 800 acfm Air to Cloth Ratio: 2.9:1</p>
II.A.12	<p><b>Chlorination System</b> Includes: Two (2) Heated Chlorinators for the Zirconium Process and One (1) Heater Chlorinator for the Hafnium Process Control: Stack with Venturi Scrubber, Caustic Scrubber, and Jet Fume Scrubber Scrubber maximum air flow rate: 18,000 acfm Scrubber minimum liquid flow rate: 18 gallons per minute (gpm)</p>
II.A.13	<p><b>One (1) Co-Milling System (NEW)</b> Zirconium oxide and petroleum coke dry pre-mixing Control: Baghouse Max Air Flow: 1,000 scfm</p>
II.A.14	<p><b>Crucible and Retort Natural Gas Lances</b></p>
II.A.15	<p><b>Magnesium Chloride Bin</b></p>
II.A.16	<p><b>Ten (10) Pre-Evac Furnaces</b> Rating: 1.1 MMBtu/hr each MACT Applicability: Subpart DDDDD</p>

II.A.17	<p><b>Reduction Control System Process</b></p> <p>A. Pad 24 West Venturi Scrubber (Venturi water spray minimum recirculation flow of 15 gpm and minimum pressure drop of 20 inches water gauge)</p> <p>B. Pad 24 East Venturi Scrubber (Venturi water spray recirculation flow no less than 60 gpm and pressure drop no less than 22 inches water gauge)</p>
II.A.18	<p><b>Reduction Control System Process (continued)</b></p> <p>C. Pad 24 West and 24 East control emissions from furnaces, process evacuations, oven, retort removal/washing, several area vents, and distillation through five (5) Electrical Vacuum Pumps</p> <p>D. Four (4) Electrical Vacuum Pumps vented through an activated carbon bed system consisting of a primary bed and a secondary bed in series</p>
II.A.19	<p><b>Reduction Control System Process (continued)</b></p> <p>E. During upset conditions, an addition of five (5) Electrical Vacuum Pumps (nine (9) total) may direct emissions to the activated carbon bed system consisting of a primary bed and a secondary bed in series</p>
II.A.20	<p><b>Reduction Department Zirconium Cleaning Process</b>  Two (2) Rotoclone wet scrubbers on the Zirconium Cleaning Process  Design Air Flow Rate:5,000 ACFM each Pressure drop: no less than 9.3 inches water gauge</p>
II.A.21	<p><b>Bench Grinder</b>  Control: Rotoclone Wet Impeller Scrubber  Scrubber pressure drop: no less than 7.7 inches water gauge</p>
II.A.22	<p><b>Billet Machining Shot Blaster</b>  Control: Baghouse</p>
II.A.23	<p><b>Extrusion System</b>  Control: Wet Scrubber</p>
II.A.24	<p><b>One (1) Plate Blaster</b>  Control: Baghouse  Air to Cloth Ratio: 3.5:1</p>
II.A.25	<p><b>Round, Flat and Specialty Pickle Operation</b>  Control: Scrubber</p>
II.A.26	<p><b>One (1) Emergency Engine</b>  Rating: 300 kW  Fuel: Natural Gas (propane as back up fuel)</p> <p>NSPS Applicability: Subpart JJJJ  MACT Applicability: Subpart ZZZZ</p>
II.A.27	<p><b>Two (2) Boilers</b>  Rating: 16.75 MMBtu/hr Each  (installed in 1979)  MACT Applicability: Subpart DDDDD</p>

II.A.28	<b>Two (2) Diesel Storage Tanks</b> Capacities: 4,750 gallons combined
II.A.29	<b>Drive Through Paint Spray Booth</b> One (1) Burner Rating: 1.2 MMBtu/hr
II.A.30	<b>Emergency Propane Vaporizer System</b> Four (4) vaporizer burners Rating: 0.15 MMBtu/hr Each Two (2) mixer burners Rating: 0.47 MMBtu/hr Each
II.A.31	<b>One (1) Gasoline Storage Tank</b> Capacity: 2,000 gallons
II.A.32	<b>Lime Silo</b>
II.A.33	<b>Hot Mill Vent</b>
II.A.34	<b>Recycle Wheelabrator</b> Control: Baghouse
II.A.35	<b>Slab Blaster</b> Control: Baghouse Baghouse Maximum Air Flow Rate: 5,000 acfm Control efficiency: 99.7% at 0.5 microns
II.A.36	<b>Firefighting Training Operation</b>
II.A.37	<b>Two (2) Emergency Engines</b> Location: Building 92 Generator Rating: 50 kW (each) Fuel: Natural Gas (Propane as back up fuel)  NSPS Applicability: Subpart JJJJ MACT Applicability: Subpart ZZZZ
II.A.38	<b>One (1) Emergency Engine</b> Location: Security Building Generator Rating: 35 kW Fuel: Natural Gas (Propane as backup fuel)  NSPS Applicability: Subpart JJJJ MACT Applicability: Subpart ZZZZ
II.A.39	<b>Two (2) Diesel-Fired Emergency Generator Systems</b> Generator System Rating: 1000 kW - each Engines per generator system: two (2) (four (4) total engines) Engine size: 757 hp - each Two (2) diesel fuel storage tanks each with a maximum capacity of 1,527 gallons  NSPS Applicability: Subpart IIII MACT Applicability: Subpart ZZZZ

## 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**

<b>II.B.1</b>	<b>Plant-Wide Requirements and Limits</b>												
II.B.1.a	<p>Emissions to the atmosphere at all times from the indicated emission points shall not exceed the following rates and concentrations:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 45%;"></th> <th style="width: 25%; text-align: center;">Pollutant</th> <th style="width: 30%; text-align: center;">Limit</th> </tr> </thead> <tbody> <tr> <td>Chlorination area Venturi</td> <td style="text-align: center;">PM<sub>10</sub></td> <td style="text-align: center;">6.64 lb/hr</td> </tr> <tr> <td>S-8 Pickle acid scrubber</td> <td style="text-align: center;">HNO<sub>3</sub></td> <td style="text-align: center;">2.9 mg/m<sup>3</sup> 0.62 lb/hr</td> </tr> <tr> <td>Separation's kiln control system exhaust stack</td> <td style="text-align: center;">SO<sub>2</sub></td> <td style="text-align: center;">0.267 lb/hr</td> </tr> </tbody> </table> <p>[R307-401]</p>		Pollutant	Limit	Chlorination area Venturi	PM <sub>10</sub>	6.64 lb/hr	S-8 Pickle acid scrubber	HNO <sub>3</sub>	2.9 mg/m <sup>3</sup> 0.62 lb/hr	Separation's kiln control system exhaust stack	SO <sub>2</sub>	0.267 lb/hr
	Pollutant	Limit											
Chlorination area Venturi	PM <sub>10</sub>	6.64 lb/hr											
S-8 Pickle acid scrubber	HNO <sub>3</sub>	2.9 mg/m <sup>3</sup> 0.62 lb/hr											
Separation's kiln control system exhaust stack	SO <sub>2</sub>	0.267 lb/hr											
II.B.1.b	<p>The owner/operator shall not allow visible emissions from the following emission points to exceed the following opacity values from the stationary source or associated fugitive emission sources:</p> <ul style="list-style-type: none"> <li>A. All baghouses - 10% opacity</li> <li>B. All scrubbers - 15% opacity</li> <li>C. Bench Grinder- 10% opacity</li> <li>D. Drive Through Paint Spray Booth and Heater - 10% opacity</li> <li>E. Feed Make-up process - 5% opacity</li> <li>F. Emissions from the emergency propane vaporization system - 10% opacity</li> <li>G. Natural gas-fired equipment - 10% opacity</li> <li>H. Diesel-fired emergency generator engines - 20% opacity</li> <li>I. All other sources - 20% opacity</li> </ul> <p>For natural gas-fired equipment: In lieu of monitoring via visible emission observations, records shall be kept for any period that a fuel other than natural gas or propane is used. The records shall be recorded in a log that is kept in a readily accessible location on site.</p> <p>[R307-201-3]</p>												
II.B.1.b.1	<p>Opacity Observation of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. A visual opacity survey is not required on petroleum storage tanks subject to the opacity limit. [R307-401-8]</p>												

<p>II.B.1.c</p>	<p>The owner/operator shall not exceed the following limits:</p> <ul style="list-style-type: none"> <li>A. Hafnium oxide production - 120 tons per rolling 12-month total</li> <li>B. Drive-through paint spray booth - 60 gallons fiberglass resin per rolling 12-month total</li> <li>C. Zirconium sulfate production - 6.0 tons per rolling 24-hour period through the soda ash silo or 52 hours per rolling 12-month period of soda ash silo operation</li> <li>D. Feed Make-up system - 18,850,000 lbs of zirconyl chloride crystals per rolling 12-month total</li> </ul> <p>[R307-401]</p>
<p>II.B.1.c.1</p>	<p>Compliance with each limitation shall be determined on a rolling 12-month total. Based on the first day 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. A 24-hour period is from midnight to midnight. Records of consumption/production shall be kept for all periods when the plant is in operation. Records shall include the pounds of zirconyl chloride crystals processed each month in the Feed Make-up system. [R307-401-8]</p>
<p>II.B.1.d</p>	<p>The owner/operator shall use only natural gas as a primary fuel and propane as a back-up fuel in the following equipment:</p> <ul style="list-style-type: none"> <li>A. Drive Through Paint Booth 1.2 MMBtu/hr paint booth heater</li> <li>B. 300 kW Emergency Generator</li> <li>C. Two (2) 50 kW Emergency Generators</li> <li>D. One (1) 35 kW Emergency Generator</li> </ul> <p>[R307-401-8]</p>
<p>II.B.2</p>	<p><b>Feed Make-Up System Requirements</b></p>
<p>II.B.2.a</p>	<p>The owner/operator shall maintain the specific gravity of the Feed Make-up solution from the dissolving system at 1.50 specific gravity or less. [R307-401-8]</p>
<p>II.B.2.a.1</p>	<p>The owner/operate shall measure and record the specific gravity of the Feed Make-up solution at least once every seven (7) days for any period of time the solution is being produced. [R307-401-8]</p>
<p>II.B.3</p>	<p><b>Thermal Oxidizer Requirements</b></p>
<p>II.B.3.a</p>	<p>The owner/operate shall ensure the operating temperature of the combustion chamber is no less than 1400°F when the Separation Plant is in operation. The temperature shall not drop below 1400°F for more than five (5) minutes in any 60-minute period except during start-up and shut-down. [R307-401-8]</p>
<p>II.B.3.b</p>	<p>The owner/operator shall calibrate, maintain, and operate a monitoring device for the continuous measurement of operating temperature in the Thermal Oxidizer. [R307-401-8]</p>

II.B.3.b.1	The monitoring device must be certified by the manufacturer to be accurate within plus or minus 25°F and must be calibrated on an annual basis in accordance with the manufacturer's instruction. Continuous recording for the monitoring device is not required. A record of the temperature shall be made on a weekly basis while the unit is in operation. If the temperature is less than the stated limit during a weekly reading, except during start-up and shut-down, within 24 hours the permittee shall record the temperature each minute for a 60-minute period to verify compliance. [R307-401-8]
II.B.4	<b>Pre-Evac Furnace Requirements</b>
II.B.4.a	The owner/operator shall ensure the operating temperature of the combustion chamber of each Pre-Evac Furnace is no greater than 700°F for more than five (5) minutes in any 60-minute period except during start-up and shut-down of the Pre-Evac furnaces.  The owner/operator shall verify, maintain, and operate monitoring devices for the continuous measurement of operating temperature in each of the Pre-Evac furnaces.  [R307-401-8]
II.B.4.b	The monitoring devices must be certified by the manufacturer to be accurate within plus or minus 25°F and must be verified on an annual basis in accordance with the manufacturer's instruction. [R307-401-8]
II.B.4.b.1	Continuous recording for the monitoring devices is not required. A record of the temperature shall be made on a weekly basis for each unit while in operation. If the temperature is greater than the stated limit during a weekly reading, except during start-up and shut-down, within 24 hours the owner/operator shall record the temperature each minute for a 60-minute period to verify compliance. [R307-401-8]
II.B.5	<b>Reduction Control System</b>
II.B.5.a	The owner/ operator shall calibrate, maintain, and operate a monitoring device for the continuous measurement of the change in pressure of the gas stream through the Pad 24 West scrubber and Pad 24 East scrubber. [R307-401]
II.B.5.b	The owner/operator shall maintain the pressure drop shall at or above 20 inches water gauge for the Pad 24 West scrubber and at or above 22 inches water gauge for the Pad 24 East scrubber. Change in pressures of the gas stream shall be no less than 20 inches water gauge for the Pad 24 west scrubber and no less than 22 inches water gauge for the Pad 24 east scrubber for more than five (5) minutes in any 60-minute period except during start-up and shut-down of processes being scrubbed by the Pad 24 west and east scrubbers. [R307-401-8]
II.B.5.b.1	Each monitoring device must be certified by the manufacturer to be accurate within plus or minus one-inch water gauge and must be calibrated on an annual basis in accordance with the manufacturer's instruction. Continuous recording for the monitoring device is not required. A record of the pressure drop shall be made on a weekly basis while unit is in operation. If the pressure drop is less than the stated limit above, except during start-up or shut-down, during a weekly reading, within 24 hours the permittee shall record the pressure drop each minute for a 60-minute period to verify compliance. [R307-401-8]
II.B.5.c	The owner/operator shall maintain the scrubber flow rate at no less than 15 gpm for the Pad 24 West scrubber and 60 gpm for the Pad 24 East scrubber for more than five (5)minutes in any 60-minute period except during start-up and shut-down of the operation of the Reduction Control System. [R307-401-8]
II.B.5.d	The owner/operator shall calibrate, maintain, and operate a monitoring device for the continuous measurement of the scrubber liquid flow rate to the Pad 24 West and Pad 24 East scrubbers. [R307-401-8]

<p>II.B.5.d.1</p>	<p>The monitoring device must be certified by the manufacturer to be accurate within plus or minus 5% of the design scrubbing liquid flow rate and must be calibrated on an annual basis in accordance with the manufacturer's instruction. Continuous recording for the monitoring device is not required. A record of the flow shall be made on a weekly basis while the unit is in operation. If the flow is less than the stated limit above during a weekly reading, except during start-up and shut-down, within 24 hours the permittee shall record the flow each minute for a 60-minute period to verify compliance. [R307-401-8]</p>
<p>II.B.5.e</p>	<p>If breakthrough occurs at the sampling point between the primary and secondary bed of the activated carbon bed system, the primary bed shall be replaced within 21 days of detection. Vacuum pump emissions shall be routed through a single bed for no longer than 21 days during bed replacement activities.</p> <p>Breakthrough is defined as a measurement of either a pH less than or equal to three (3) or an HCl concentration greater than or equal to 15 ppm.</p> <p>Once every 14 days the owner/operator shall measure pH or HCl levels from a sampling point located after the primary bed.</p> <p>Once every 14 days the owner/operator shall record the measured levels of pH or HCl. The owner/operator shall also record the date that each breakthrough is detected, the date that each bed is removed from service, and the date each bed is replaced. Records shall be kept in a log for all periods the plant is in operation.</p> <p>[R307-401-8]</p>
<p>II.B.5.f</p>	<p>If upset conditions on Pad 24 East or Pad 24 West develop, the owner/operator may direct emissions from five (5) additional distillation vacuum pumps to the activated carbon bed system. Potentially nine (9) distillation vacuum pumps may direct emissions to the activated carbon bed system.</p> <p>If the emissions from more than four (4) distillation vacuum pumps are directed to the activated carbon bed system, the following shall occur:</p> <ul style="list-style-type: none"> <li>A. Once every four (4) days the owner/operator shall measure pH or HCl levels from a sampling point located after the primary bed.</li> <li>B. Once every four (4) days the owner/operator shall record the measured levels of pH or HCl.</li> <li>C. The owner/operator shall record the date that each breakthrough is detected.</li> </ul> <p>Breakthrough is defined as a measurement of either a pH less than or equal to three (3) or an HCl concentration greater than or equal to 15 ppm.</p> <p>If the emissions from more than four (4) distillation vacuum pumps are directed to the activated carbon bed system and if breakthrough occurs at the sampling point between the primary and secondary bed of the activated carbon bed system, the following shall occur:</p> <ul style="list-style-type: none"> <li>D. The primary bed shall be replaced within 10 days of detection.</li> <li>E. The distillation vacuum pump emissions shall be routed through a single bed for no longer than 10 days during bed replacement activities.</li> <li>F. The owner/operator shall record the date that each bed is removed from service and the date each bed is replaced.</li> </ul>

	<p>Records shall be kept in a log for all periods the plant is in operation.</p> <p>[R307-401-8]</p>
<b>II.B.6</b>	<b>Reduction Department Zirconium Cleaning Process Requirements</b>
II.B.6.a	<p>When the Reduction Department Zirconium Cleaning Process is in operation, the owner/operator shall ensure the pressure drop of each scrubber is no less than 9.3 inches water gauge for more than five (5) minutes in any 60-minute period except during start-up and shut-down of the Reduction Control system. If air flow from the scrubbers will create a fire hazard, one (1) or both scrubbers may be shut down during process operations provided all particulate generated remains in the building until one (1) or both scrubbers resume operation. [R307-401-8]</p>
II.B.6.b	<p>The owner/operator shall calibrate, maintain, and operate monitoring devices for the continuous measurement of the change in pressure of the gas stream through the two (2) Rotoclone wet scrubbers. Except for periods of calibration, maintenance, and when both scrubbers must be shut down due to fire hazard, the monitoring shall continuously measure the change in pressure of the gas stream. [R307-401-8]</p>
II.B.6.b.1	<p>The monitoring devices must be certified by the manufacturer to be accurate within plus or minus one (1) inch of water gauge and must be calibrated on an annual basis in accordance with the manufacturer's instructions. If both scrubbers are shut down due to fire hazard, the owner/operator shall ensure all particulate generated remains in the building until scrubber operation resumes.</p> <p>Continuous recording for the monitoring devices is not required. A record of the pressure drop shall be made on a weekly basis while the unit is in operation. If the pressure drop is less than the stated limit during a weekly reading, except during start-up or shut-down, within 24 hours the owner/operator shall record the pressure drop each minute for a 60-minute period to verify compliance.</p> <p>[R307-401-8]</p>
<b>II.B.7</b>	<b>Bench Grinder Requirements</b>
II.B.7.a	<p>The owner/operator shall calibrate, maintain, and operate a monitoring device for the continuous measurement of the change in pressure of the gas stream through the Bench Grinder Roto-Clone wet impeller scrubber. [R307-401-8]</p>
II.B.7.b	<p>When the Bench Grinder is in operation, the owner/operator shall ensure the pressure drop shall be no less than 7.7 inches water gauge for the Bench Grinder Roto-Clone wet impeller scrubber for more than five (5) minutes in any 60-minute period except during start-up and shut-down of the operation of the Bench Grinder. [R307-401-8]</p>
II.B.7.b.1	<p>The monitoring device must be certified by the manufacturer to be accurate within plus or minus one (1) inch water gauge and must be calibrated on an annual basis in accordance with the manufacturer's instruction. Continuous recording for the monitoring device is not required. . A record of the pressure drop shall be made on a weekly basis while unit is in operation. If the pressure drop is less than the stated limit above, except during start-up or shut-down, during a weekly reading, within 24 hours the permittee shall record the pressure drop each minute for a 60-minute period to verify compliance. [R307-401-8]</p>
<b>II.B.8</b>	<b>Paint Booth VOC &amp; HAP Requirements</b>
II.B.8.a	<p>The owner/operator shall not emit more than 2.94 tons per rolling 12-month period of VOCs the following from evaporative sources (paint, adhesive, solvent, thinner, reducers, chemical compounds, toxics, isocyanates, etc.) from the drive through paint booth and paint booth associated operations. [R307-401-8]</p>

<p>II.B.8.a.3</p>	<p>To demonstrate compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the 20th day of each month using data from the previous 12 months. The VOC emissions shall be determined by maintaining a record of VOC-emitting materials used each month. The record shall include the following data for each material used:</p> <ol style="list-style-type: none"> <li>1. Name of the VOC-emitting material, such as: paint, adhesive, solvent, thinner, reducers, chemical compounds, toxics, isocyanates, etc.</li> <li>2. Density of each material used (pounds per gallon)</li> <li>3. Percent by weight of all VOC in each material used</li> <li>4. Gallons of each VOC-emitting material used</li> <li>5. The amount of VOC emitted monthly by each material used shall be calculated by the following procedure:   <math display="block">\text{VOC} = (\% \text{ VOC by Weight}/100) \times [\text{Density ( lb/gal)}] \times \text{Gal Consumed} \times 1 \text{ ton}/2000 \text{ lb}</math> </li> <li>6. The amount of VOC emitted monthly from all materials used</li> </ol> <p>The amount of VOCs reclaimed for the month shall be similarly quantified and subtracted from the quantities calculated above to provide the monthly total VOC emissions.</p> <p>[R307-401-8]</p>
<p>II.B.9</p>	<p><b>Firefighter Training</b></p>
<p>II.B.9.a</p>	<p>To meet the clearing index requirement for firefighting training events, the following conditions shall exist at the time of each event:</p> <ol style="list-style-type: none"> <li>A. Mixing height greater than or equal to 500 meters</li> <li>B. Wind speed greater than or equal to three (3) miles per hour</li> <li>C. Wind speed less than or equal to 15 miles per hour</li> <li>D. No air quality advisories or alerts for Weber County, and</li> <li>E. Each event shall be conducted between one (1) hour after sunrise and one (1) hour before sunset.</li> </ol> <p>For each firefighting training event, the owner/operator shall record the following information in the fire training log: date and time of event and a description of each test method and/or data source used to evaluate compliance with the clearing index. The record shall be kept for all periods when the plant is in operation.</p> <p>[R307-401-8]</p>
<p>II.B.9.b</p>	<p>For the purposes of firefighting training, no more than 500 gallons total of gasoline and diesel fuel combined shall be consumed per rolling 12-month period and no more than 100 pounds of zirconium metal shall be burned per rolling 12-month period. The volume of gasoline and diesel fuel consumed and the mass of zirconium burned shall be recorded each day of firefighting training and kept in a fire training log.</p>

	<p>Compliance shall be determined on a rolling 12-month total. Based on the first day 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 month. Records of consumption shall be kept for all periods when the plant is in operation.</p> <p>[R307-401-8]</p>
<p>II.B.10</p>	<p><b>Diesel Engines Fuel Requirements</b></p>
<p>II.B.10.a</p>	<p>The owner/operator shall maintain documentation that all diesel fuel meets the specifications of 40 CFR 1090.305. Certification of diesel fuel shall be either by testing using ASTM Method D2880-71, D4294-89, D-975, or other method approved by the Director or by fuel receipt records from the vendor documenting test results. The diesel fuel purchase invoices and/or certifications shall indicate the diesel fuel meets the requirements in 40 CFR 1090.305.</p> <p>[R307-203, R307-401-8]</p>

### PERMIT HISTORY

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

Supersedes  
 Is Derived From  
 Incorporates  
 Incorporates

AO DAQE-AN109220037-16 dated March 14, 2016  
 NOI dated February 22, 2021  
 Additional Information dated April 29, 2021  
 Additional Information dated September 1, 2021

## 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 <sub>2</sub>	Carbon Dioxide
CO <sub>2e</sub>	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 <sub>x</sub>	Oxides of nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
PM <sub>10</sub>	Particulate matter less than 10 microns in size
PM <sub>2.5</sub>	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 <sub>2</sub>	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