PERMIT
Under the Environmental Conservation Law (ECL)

IDENTIFICATION INFORMATION

Permit Type: Air State Facility
Permit ID: 9-1452-00327/00001
Mod 0 Effective Date: 05/19/2015 Expiration Date: 05/18/2025

Mod 1 Effective Date: 01/23/2019 Expiration Date: 05/18/2025

Permit Issued To:NIAGARA REFINING LLC
5601 TRANSIT RD
DEPEW, NY 14043

Facility: NIAGARA REFINING LLC
5601 TRANSIT RD
DEPEW, NY 14043

Contact: ROGER SHOWALTER
5601 TRANSIT RD
DEPEW, NY 14043
(716) 706-1299

Description:
(1) Niagara Refining, LLC is the owner and operator of an ammonium paratungstate and tungsten oxide production facility. The facility is located at 5661 Transit Road in the Village of Depew, Erie County, New York.

(2) This permit modification is for the installation of two (2) calciners, two (2) crystallizers and one (1) Ammonia Recovery System for the production of a new ultra-pure tungsten oxide product identified under new Process 008. Emission point 00011 was added for venting the existing ammonia recovery system. Emission point 00012 was added for venting the new ammonia recovery system.

(3) This project was evaluated for potential ambient impacts using the AERSCREEN model for ammonia emissions. The results indicate the maximum impact from this new project, in addition to the existing ammonia sources, is not expected to exceed the Short-term Guideline Concentration (SGC) and Annual Guideline Concentration (AGC) limits for ammonia.

(4) The combined maximum total production of ammonium paratungstate, tungsten oxide and ultra-pure tungsten oxide from all operations at this facility remains limited to 2,750 tons per year since the maximum projected permitted emission rates and ambient impact evaluations are based on this production rate.

(5) Permit conditions 7 through 13 from permit version Ren 1 Mod 0 have all been re-evaluated based on recent performance testing and the revised 6 NYCRR Part 212 criteria. The permit conditions have been replaced under the new citations for Part 212.

(6) On-going compliance monitoring of the air pollution control equipment has been updated to include established operating ranges determined during the performance testing to ensure proper operation and maintenance practices are used to minimize the impact of excess emissions on ambient air quality, the environment and human health.

(7) Best management practices shall be implemented to reduce the potential for off-site odors and fugitive dust emissions.

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, the General Conditions specified and any Special Conditions included as part of this permit.

Permit Administrator: LISA M CZECHOWICZ
NYSDEC - REGION 9
270 MICHIGAN AVE
BUFFALO, NY 14203-2915

Authorized Signature: _____ Date: ___ / ___ / _____

Notification of Other State Permittee Obligations

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification

The permittee expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the compliance permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in any compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit

The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits

The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights

This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

LIST OF CONDITIONS

DEC GENERAL CONDITIONS
General Provisions
Facility Inspection by the Department
Relationship of this Permit to Other Department Orders and Determinations
Applications for permit renewals, modifications and transfers
Applications for permit renewals, modifications and transfers
Permit modifications, suspensions or revocations by the Department
Facility Level
Submission of application for permit modification or renewal-REGION 9 HEADQUARTERS

DEC GENERAL CONDITIONS
****** General Provisions ******
GENERAL CONDITIONS - Apply to ALL Authorized Permits.

Condition 1: Facility Inspection by the Department
Applicable State Requirement: ECL 19-0305

Item 1.1:
The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71-0301 and SAPA 401(3).

Item 1.2:
The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

Item 1.3:
A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

Condition 2: Relationship of this Permit to Other Department Orders and Determinations
Applicable State Requirement: ECL 3-0301 (2) (m)

Item 2.1:
Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

Condition 3: Applications for permit renewals, modifications and transfers
Applicable State Requirement: 6 NYCRR 621.11

Item 3.1:
The permittee must submit a separate written application to the Department for renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing.

Item 3.2:
The permittee must submit a renewal application at least 180 days before expiration of permits for Title V Facility Permits, or at least 30 days before expiration of permits for State Facility Permits.

Item 3.3:
Permits are transferrable with the approval of the department unless specifically prohibited by the statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

Condition 1-1: Applications for permit renewals, modifications and transfers
Applicable State Requirement: 6 NYCRR 621.11

Item 1-1.1:
The permittee must submit a separate written application to the Department for renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing.

Item1-1.2:
The permittee must submit a renewal application at least 180 days before the expiration of permits for Title V and State Facility Permits.

Item 1-1.3
Permits are transferrable with the approval of the department unless specifically prohibited by the statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

Condition 4: Permit modifications, suspensions or revocations by the Department
Applicable State Requirement: 6 NYCRR 621.13

Item 4.1:
The Department reserves the right to exercise all available authority to modify, suspend, or revoke this permit in accordance with 6NYCRR Part 621. The grounds for modification, suspension or revocation include:

a) materially false or inaccurate statements in the permit application or supporting papers;
b) failure by the permittee to comply with any terms or conditions of the permit;
c) exceeding the scope of the project as described in the permit application;
d) newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;
e) noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

****** Facility Level ******

Condition 5: Submission of application for permit modification or renewal-REGION 9 HEADQUARTERS
Applicable State Requirement: 6 NYCRR 621.6 (a)

Item 5.1:
Submission of applications for permit modification or renewal are to be submitted to:
NYSDEC Regional Permit Administrator
Region 9 Headquarters
Division of Environmental Permits

270 Michigan Avenue
Buffalo, NY 14203-2915
(716) 851-7165

Permit Under the Environmental Conservation Law (ECL)

ARTICLE 19: AIR POLLUTION CONTROL - AIR STATE FACILITY PERMIT

IDENTIFICATION INFORMATION

Permit Issued To:NIAGARA REFINING LLC
5601 TRANSIT RD
DEPEW, NY 14043

Facility: NIAGARA REFINING LLC
5601 TRANSIT RD
DEPEW, NY 14043

Authorized Activity By Standard Industrial Classification Code:
3399 - PRIMARY METAL PRODUCTS, NEC

Mod 0 Permit Effective Date: 05/19/2015 Permit Expiration Date: 05/18/2025

Mod 1 Permit Effective Date: 01/23/2019 Permit Expiration Date: 05/18/2025

LIST OF CONDITIONS

FEDERALLY ENFORCEABLE CONDITIONS
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1-2 6 NYCRR 201-6.4 (g): Non Applicable requirements
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1-3 6 NYCRR 212-1.6 (a): Compliance Demonstration
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EU=U-00APT
1-5 6 NYCRR 200.7: Compliance Demonstration
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EU=U-00APT,EP=00001

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EU=U-00APT,EP=00010

1-11 6 NYCRR 212-2.1 (b): Compliance Demonstration
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17 6 NYCRR 201-5.2 (c): Renewal deadlines for state facility permits
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FEDERALLY ENFORCEABLE CONDITIONS
****** Facility Level ******

NOTIFICATION OF GENERAL PERMITTEE OBLIGATIONS
This section contains terms and conditions which are federally enforceable. Permittees may also have other obligations under regulations of general applicability

Item A: **Sealing - 6 NYCRR 200.5**

The Commissioner may seal an air contamination source to prevent its operation if compliance with 6 NYCRR Chapter III is not met within the time provided by an order of the Commissioner issued in the case of the violation. Sealing means labeling or tagging a source to notify any person that operation of the source is prohibited, and also includes physical means of preventing the operation of an air contamination source without resulting in destruction of any equipment associated with such source, and includes, but is not limited to, bolting, chaining or wiring shut control panels, apertures or conduits associated with such source.

No person shall operate any air contamination source sealed by the Commissioner in accordance with this section unless a modification has been made which enables such source to comply with all requirements applicable to such modification.

Unless authorized by the Commissioner, no person shall remove or alter any seal affixed to any contamination source in accordance with this section.

Item B: **Acceptable Ambient Air Quality - 6 NYCRR 200.6**

Notwithstanding the provisions of 6 NYCRR Chapter III, Subchapter A, no person shall allow or permit any air contamination source to emit air contaminants in quantities which alone or in combination with emissions from other air contamination sources would contravene any applicable ambient air quality standard and/or cause air pollution. In such cases where contravention occurs or may occur, the Commissioner shall specify the degree and/or method of emission control required.

Item C: **Maintenance of Equipment - 6 NYCRR 200.7**

Any person who owns or operates an air contamination source which is equipped with an emission control device shall operate such device and keep it in a satisfactory state of maintenance and repair in accordance with ordinary and necessary practices, standards and procedures, inclusive of manufacturer's specifications,

required to operate such device effectively.

Item D: **Unpermitted Emission Sources - 6 NYCRR 201-1.2**

If an existing emission source was subject to the permitting requirements of 6 NYCRR Part 201 at the time of construction or modification, and the owner and/or operator failed to apply for a permit for such emission source then the following provisions apply:

(a) The owner and/or operator must apply for a permit for such emission source or register the facility in accordance with the provisions of Part 201.

(b) The emission source or facility is subject to all regulations that were applicable to it at the time of construction or modification and any subsequent requirements applicable to existing sources or facilities.

Item E: **Recycling and Salvage - 6 NYCRR 201-1.7**

Where practical, any person who owns or operates an air contamination source shall recycle or salvage air contaminants collected in an air cleaning device according to the requirements of 6 NYCRR.

Item F: **Prohibition of Reintroduction of Collected Contaminants to the Air - 6 NYCRR 201-1.8**
No person shall unnecessarily remove, handle, or cause to be handled, collected air contaminants from an air cleaning device for recycling, salvage or disposal in a manner that would reintroduce them to the outdoor atmosphere.

Item G: **Proof of Eligibility for Sources Defined as Exempt Activities - 6 NYCRR 201-3.2 (a)**
The owner and/or operator of an emission source or unit that is eligible to be exempt, may be required to certify that it operates within the specific criteria described in 6 NYCRR Subpart 201-3. The owner or operator of any such emission source must maintain all required records on-site for a period of five years and make them available to representatives of the Department upon request. Department representatives must be granted access to any facility which contains emission sources or units subject to 6 NYCRR Subpart 201-3, during normal operating hours, for the purpose of determining compliance with this and any other state and federal air pollution control requirements, regulations, or law.

Item H: **Proof of Eligibility for Sources Defined as Trivial**

Activities - 6 NYCRR 201-3.3 (a)
The owner and/or operator of an emission source or unit that is listed as being trivial in 6 NYCRR Part 201 may be required to certify that it operates within the specific criteria described in 6 NYCRR Subpart 201-3. The owner or operator of any such emission source must maintain all required records on-site for a period of five years and make them available to representatives of the Department upon request. Department representatives must be granted access to any facility which contains emission sources or units subject to 6 NYCRR Subpart 201-3, during normal operating hours, for the purpose of determining compliance with this and any other state and federal air pollution control requirements, regulations, or law.

Item I: **Required Emission Tests - 6 NYCRR 202-1.1**

An acceptable report of measured emissions shall be submitted, as may be required by the Commissioner, to ascertain compliance or noncompliance with any air pollution code, rule, or regulation. Failure to submit a report acceptable to the Commissioner within the time stated shall be sufficient reason for the Commissioner to suspend or deny an operating permit. Notification and acceptable procedures are specified in 6 NYCRR Subpart 202-1.

Item J: **Open Fires Prohibitions - 6 NYCRR 215.2**
Except as allowed by section 215.3 of 6 NYCRR Part 215, no person shall burn, cause, suffer, allow or permit the burning of any materials in an open fire.

Item K: **Permit Exclusion - ECL 19-0305**
The issuance of this permit by the Department and the receipt thereof by the Applicant does not and shall not be construed as barring, diminishing, adjudicating or in any way affecting any legal, administrative or equitable rights or claims, actions, suits, causes of action or demands whatsoever that the Department may have against the Applicant for violations based on facts and circumstances alleged to have occurred or existed prior to the effective date of this permit, including, but not limited to, any enforcement action authorized pursuant to the provisions of applicable federal law, the Environmental Conservation Law of the State of New York (ECL) and Chapter III of the Official Compilation of the Codes, Rules and Regulations of the State of New York (NYCRR). The issuance of this permit also shall not in any way affect pending or future enforcement actions under the Clean Air Act brought by the United States or any person.

Item L: **Federally Enforceable Requirements - 40 CFR 70.6 (b)**

All terms and conditions in this permit required by the Act or any applicable requirement, including any provisions designed to limit a facility's potential to emit, are enforceable by the Administrator and citizens under the Act. The Department has, in this permit, specifically designated any terms and conditions that are not required under the Act or under any of its applicable requirements as being enforceable under only state regulations.

FEDERAL APPLICABLE REQUIREMENTS
The following conditions are federally enforceable.

Condition 1-1: Maintenance of Equipment
Effective between the dates of 01/23/2019 and 05/18/2025

Applicable Federal Requirement:6 NYCRR 200.7

Item 1-1.1:
Any person who owns or operates an air contamination source which is equipped with an emission control device shall operate such device and keep it in a satisfactory state of maintenance and repair in accordance with ordinary and necessary practices, standards and procedures, inclusive of manufacturer's specifications, required to operate such device effectively.

Condition 1-2: Non Applicable requirements
Effective between the dates of 01/23/2019 and 05/18/2025

Applicable Federal Requirement:6 NYCRR 201-6.4 (g)

Item 1-2.1:
This section contains a summary of those requirements that have been specifically identified as being not applicable to this facility and/or emission units, emission points, processes and/or emission sources within this facility. The summary also includes a justification for classifying any such requirements as non-applicable.

(From Mod 1) 40 CFR Part 60, Subpart LL
Reason: 40 CFR 60 Subpart LL, New Source Performance Standards for Metallic Mineral Processing Plants is applicable to facilities that process metallic mineral concentrates from ore. Niagara Refining reports Subpart LL is not applicable to this facility because it does not process ore, but instead, ammonium paratungstate is produced from metallic mineral concentrates that have been concentrated to approximately 50 percent prior to arrival on-site.

40 CFR Part 68
Reason: 40 CFR 68 Chemical Accident Prevention

Provisions: Niagara Refining states the facility is not subject to the requirements of the Risk Management Program or general Duty Clause because the facility does not use or store anhydrous ammonia or a 20% ammonia solution.

Condition 19: Visible Emissions Limited
Effective between the dates of 05/19/2015 and 05/18/2025

Applicable Federal Requirement:6 NYCRR 211.2

Item 19.1:
Except as permitted by a specific part of this Subchapter and for open fires for which a restricted burning permit has been issued, no person shall cause or allow any air contamination source to emit any material having an opacity equal to or greater than 20 percent (six minute average) except for one continuous six-minute period per hour of not more than 57 percent opacity.

Condition 1-3: Compliance Demonstration
Effective between the dates of 01/23/2019 and 05/18/2025

Applicable Federal Requirement:6 NYCRR 212-1.6 (a)

Item 1-3.1:
The Compliance Demonstration activity will be performed for the Facility.

Item 1-3.2:
Compliance Demonstration shall include the following monitoring:

Monitoring Type: MONITORING OF PROCESS OR CONTROL DEVICE PARAMETERS AS SURROGATE
Monitoring Description:

OPACITY MONITORING

(1) No person will cause or allow emissions having an average opacity during any six consecutive minutes of 20 percent or greater from any process emission source, except only the emission of uncombined water.

(2) On-going compliance monitoring with this requirement shall be determined by the facility owner/operator conducting a weekly survey of visible emissions whenever a process is in operation. A process shall include any equipment which emits air contaminants to the outdoor atmosphere through any conduit, chimney, duct, vent, flue, stack, doorway or opening of any kind. The specific locations at Niagara Refining include emission points #00001, #00002, #0003A, #0003B, #00004, #00005, #00006, #00007, #00008, #00009, #00010, #00011, #00012 and any other general room ventilation exhaust or building opening through which air contaminants are emitted to the outdoor atmosphere.

(3) The weekly survey does not require the determination of opacity levels. Rather the survey is used to document the presence or non-presence of visible emissions, excluding water vapor. Visible emission observations shall be performed, as best as possible, at a location to obtain the proper sun angle, background, and line of sight. The observer must be knowledgeable regarding the effects on the visibility of emissions caused by background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor).

(4) Upon detecting visible emissions, Niagara Refining shall inspect the source and restore operation of the emission unit (including the control devise, if any, and the associated capture system) to its normal operation as expeditiously as practicable.

(5) Records of the visible emission survey shall be maintained to include: (1) a check list of whether visible emissions were observed or not, (2) the date and time of the visible emission observation, (3) the corrective action taken (if any). The records shall be kept on-site and made available to the Department upon request.

(6) The Department reserves the right to perform or require the performance of a Method 9 or Method 22 opacity evaluation from any process emission source.

Parameter Monitored: OPACITY
Upper Permit Limit: 20 percent
Reference Test Method: EPA Method 9 or 22
Monitoring Frequency: WEEKLY
Averaging Method: MAXIMUM - NOT TO EXCEED STATED VALUE - SEE MONITORING DESCRIPTION
Reporting Requirements: UPON REQUEST BY REGULATORY AGENCY

Condition 1-4: Compliance Demonstration
Effective between the dates of 01/23/2019 and 05/18/2025

Applicable Federal Requirement:6 NYCRR 212-2.4 (b)

Item 1-4.1:
The Compliance Demonstration activity will be performed for the Facility.

Regulated Contaminant(s):
CAS No: 0NY075-00-0 PARTICULATES

Item 1-4.2:
Compliance Demonstration shall include the following monitoring:

Monitoring Type: MONITORING OF PROCESS OR CONTROL DEVICE PARAMETERS AS SURROGATE
Monitoring Description:

COMPLIANCE MONITORING FOR PARTICULATE EMISSIONS

(1) No person will cause or allow emissions of solid particulates that exceed 0.050 grains of particulates per cubic foot of exhaust gas, expressed at standard conditions on a dry gas basis.

(2) On-going compliance monitoring of the particulate emission limit for each particulate emission source, including but not limited to baghouses and particulate filter cartridges, shall be monitored as stated below. A particulate emission source shall include any equipment which emits particulate emissions to the outdoor atmosphere through any conduit, chimney, duct, vent, flue, stack, or opening of any kind.

(a) Each baghouse and particulate filter cartridge must be operated and maintained according to manufacturer specifications.
(b) Weekly inspection of any fall-out from the baghouses and filter cartridges shall be completed whenever a process is in operation.
(c) Weekly differential pressure measurements of each baghouse which vent to the outside atmosphere shall be completed whenever a process is in normal operation.
(d) Differential pressure shall be measured between the inlet and outlet to the dust collector. The dust collectors shall be operated within the differential pressure range specified by the manufacturer.
(e) The differential pressure transducer shall be calibrated annually or as required by the manufacturer.
(f) If any visible emissions, particulate fall-out or pressure measurement is recorded outside the manufacturer range, then Niagara Refining shall inspect the source, initiate corrective action, and restore operation of the dust collector and associated capture system to its normal operation as expeditiously as practicable.

(3) Records shall be maintained to include: (i) a weekly log documenting whether any visible emissions or fall-out were observed, (ii) a log of the weekly pressure drop measurements with reference to the manufacturer differential pressure range, (iii) the date and time of the observation or measurement, (iv) corrective action taken (if any), and (v) the cause of any visible emissions, fall-out or pressure measurements outside the manufacturer range (if known). The records shall be kept

on-site and be made available to the Department upon request.

(4) At the discretion of the Department, an EPA Method 5 compliance test may be required to demonstrate compliance with the 0.050 grains/dscf emission limit.

Parameter Monitored: PARTICULATES
Upper Permit Limit: 0.050 grains per dscf
Reference Test Method: EPA Method 5
Monitoring Frequency: WEEKLY
Averaging Method: MAXIMUM - NOT TO EXCEED STATED VALUE - SEE MONITORING DESCRIPTION
Reporting Requirements: UPON REQUEST BY REGULATORY AGENCY

****** Emission Unit Level ******

Condition 1-5: Compliance Demonstration
Effective between the dates of 01/23/2019 and 05/18/2025

Applicable Federal Requirement:6 NYCRR 200.7

Item 1-5.1:
The Compliance Demonstration activity will be performed for:

Emission Unit: U-00APT

Regulated Contaminant(s):
CAS No: 007664-41-7 AMMONIA

Item 1-5.2:
Compliance Demonstration shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES
Monitoring Description:

DEMONSTRATING EFFECTIVE OPERATION
AMMONIA SCRUBBER SYSTEM

An ammonia scrubber (EP00002) is used to reduce emissions from storage and process tanks that contain various percentages and amounts of ammonia. As per 6NYCRR Part 200.7 – Maintenance of Equipment, any person who owns or operates an air contamination source which is equipped with an emission control device shall operate such device and keep it in a satisfactory state of maintenance and repair in accordance with ordinary and necessary practices, standards and procedures, inclusive of manufacturer's specifications, required to operate such device effectively. In order to demonstrate proper

operation of the ammonia scrubber, complete the following activities:

(1) Operate and maintain a temperature, pressure and pH measurement device for the ammonia wet scrubber system, EP00002.

(2) Monitor and collect data at all times that the affected source is operating, except for malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments).

(3) When the pH in the "lead" tank reaches a high value of three (3) standard units, it is time to replace the acid in the tank. The 'lag" tank becomes the 'lead' tank.

(4) Ensure the alarms for excess pH and temperature are operational.

(5) Niagara Refining has equipment alarms to alert the operators when a parameter is operating outside the normal range. The alarm is used to initiate an investigation of the source and complete any corrective action prior to a potential malfunction.

(6) Maintain the two stage scrubbing system in accordance with manufacturer specifications.

(7) Keep records of all inspection and monitoring data. Keep records of the occurrence and duration of each malfunction of the air pollution control and monitoring equipment. Keep records of actions taken during periods of a malfunction, including corrective actions to restore the malfunctioning air pollution control, or monitoring equipment to its normal or usual manner of operation. Keep each record for 5 years following the date of each recorded action.

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION
Reporting Requirements: UPON REQUEST BY REGULATORY AGENCY

Condition 1-6: Compliance Demonstration
Effective between the dates of 01/23/2019 and 05/18/2025

Applicable Federal Requirement:6 NYCRR 212-2.1 (b)

Item 1-6.1:
The Compliance Demonstration activity will be performed for:

Emission Unit: U-00APT

Regulated Contaminant(s):
CAS No: 007664-41-7 AMMONIA

Item 1-6.2:
Compliance Demonstration shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES
Monitoring Description:

PART 212 EVALUATION
FACILITY-WIDE AMMONIA EMISSIONS

(1) The facility-wide maximum potential ammonia emissions used in the Part 212 Evaluation are listed below. These are not permit limits:
EP00002 at 3.97 lbs/hr to inlet of ammonia scrubber
EP00011 at 0.00015 lbs/hr outlet of Ammonia Recovery System 1
EP00012 at 0.00015 lbs/hr outlet of Ammonia Recovery System 2

(2) The ammonia scrubber (EP00002) reduces emissions from storage and process tanks that contain various percentages and amounts of ammonia. A stack test of the inlet to the scrubber was completed on May 3, 2016. The inlet ammonia concentration was measured at 0.567 pounds per hour. Maximum production levels are expected to be 7 times greater. Assuming a linear relationship between production and emission rates, a maximum inlet ammonia rate of 3.97 pounds per hour was calculated. The facility operates the scrubber on a continuous basis and details of the scrubber operation are presented under 6 NYCRR Part 200.7 which requires proper operation and maintenance of control equipment.

(3) Each Ammonia Recovery System (ARS1, EP00011 and ARS2, EP00012) is considered a process source that is used to capture and reuse ammonia from the calciners and crystallizers. A stack test on ARS1, EP00011 was completed on May 4, 2016. The outlet ammonia concentration was measured at 0.00015 pounds per hour. It is assumed ARS2, which is identical to ARS1, has an equivalent emission rate of 0.00015 lbs/hr.

(4) The three ammonia sources are subject to 6NYCRR Part 212-2.3(b) Table 4 which requires a source having an emission rate potential less than 10 lbs/hr to use air dispersion modeling to demonstrate that the maximum offsite air concentration is less than the short-term

guideline concentration (SGC) and annual guideline concentration (AGC). The cumulative impacts from all 3 ammonia emission sources results in a maximum off-site 1-hr concentration of 150 ug/M3 compared to the short-term guideline concentration of 2,400 ug/M3. The annual impact was modeled to be 15 ug/M3 compared to the annual guideline concentration of 100 ug/M3.

(5) To demonstrate continued compliance with the ammonia emissions, a performance test of the outlet of the three (3) emission points shall be completed as part of the permit renewal application. A stack test protocol shall be submitted for review 6 months prior to the permit expiration date.

(6) An AERSCREEN analysis using the three outlet ammonia concentrations from the performance test shall be completed to demonstrate compliance with the AGC and SGC.

(7) The stack test report and impact analysis shall be submitted within 45 days of completing the stack test.

(8) At the discretion of the department, additional performance testing and a revised Part 212 evaluation may be required prior to the permit renewal if odors are detected and verified to be coming from the facility and impacting the neighborhood.

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION
Reporting Requirements: AS REQUIRED - SEE MONITORING DESCRIPTION

Condition 1-7: Compliance Demonstration
Effective between the dates of 01/23/2019 and 05/18/2025

Applicable Federal Requirement:6 NYCRR 212-2.1 (b)

Item 1-7.1:
The Compliance Demonstration activity will be performed for:

Emission Unit: U-00APT

Item 1-7.2:
Compliance Demonstration shall include the following monitoring:

Monitoring Type: MONITORING OF PROCESS OR CONTROL DEVICE PARAMETERS AS SURROGATE
Monitoring Description:

PRODUCTION MONITORING

(1) Monitor and maintain records of the total combined production of ammonium paratungstate (APT), tungsten oxide and ultra-pure tungsten oxide on a rolling 12-month total basis. Records shall be maintained on-site for five years and be made available upon request.

(2) The maximum projected permitted emission rates and ambient impact evaluations are based on a combined total production of APT, tungsten oxide and ultra-pure tungsten oxide of 2,750 tons per year. If total production exceeds 2,750 tons per year, submit a report documenting whether the increased emissions violate any applicable regulations or result in ambient impacts.

(3) The report shall be submitted to the department within 30 days of the first 12-month production exceedance of 2,750 tons per year.

Parameter Monitored: PRODUCT
Upper Permit Limit: 2750 tons per year
Monitoring Frequency: MONTHLY
Averaging Method: ANNUAL TOTAL ROLLED MONTHLY
Reporting Requirements: AS REQUIRED - SEE MONITORING DESCRIPTION

Condition 1-8: Compliance Demonstration
Effective between the dates of 01/23/2019 and 05/18/2025

Applicable Federal Requirement:6 NYCRR 212-2.1 (b)

Item 1-8.1:
The Compliance Demonstration activity will be performed for:

Emission Unit: U-00APT Emission Point: 00001

Regulated Contaminant(s):
CAS No: 007783-06-4 HYDROGEN SULFIDE

Item 1-8.2:
Compliance Demonstration shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES
Monitoring Description:

PART 212 EVALUATION
HYDROGEN SULFIDE SCRUBBER

(1) The hydrogen sulfide scrubber is used in the purification process and is exhausted through EP00001. The outlet of the scrubber was stack tested on May 5, 2016. The outlet hydrogen sulfide emission rate was 0.0028 lbs/hr. The inlet was not tested due to safety

issues. Based on mass balance calculations, the inlet emission rate is expected to be about 0.25 lbs/hr.

(2) The hydrogen sulfide emissions are subject to 6NYCRR Part 212-2.3(b) Table 4 which requires a source having an emission rate potential less than 1 lb/hr to use air dispersion modeling to demonstrate that the maximum offsite air concentration is less than the short-term guideline concentration (SGC) and annual guideline concentration (AGC). The AERSCREEN results indicate the maximum off-site 1-hr concentration of hydrogen sulfide is 0.387 ug/M3 compared to the short-term guideline concentration of 14 ug/M3. The annual impact was modeled to be 0.039 ug/M3 compared to the annual guideline concentration of 2 ug/M3.

(3) A performance test of the scrubber outlet shall be completed as part of the permit renewal application. A stack test protocol shall be submitted for review 6 months prior to the permit expiration date.

(4) Based on the results of the stack testing, an AERSCREEN analysis shall be completed to evaluate compliance with the AGC and SGC.

(5) The stack test report and impact analysis shall be submitted within 60 days of completing the stack test.

Reference Test Method: EPA Method 15 or other approved method
Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION
Reporting Requirements: AS REQUIRED - SEE MONITORING DESCRIPTION

Condition 1-9: Compliance Demonstration
Effective between the dates of 01/23/2019 and 05/18/2025

Applicable Federal Requirement:6 NYCRR 212-2.1 (b)

Item 1-9.1:
The Compliance Demonstration activity will be performed for:

Emission Unit: U-00APT Emission Point: 00001

Regulated Contaminant(s):
CAS No: 007783-06-4 HYDROGEN SULFIDE

Item 1-9.2:
Compliance Demonstration shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES
Monitoring Description:

DEMONSTRATING CONTINUOUS COMPLIANCE
HYDROGEN SULFIDE SCRUBBER

(1) Demonstrate compliance with the 6 NYCRR Part 212 requirements for the hydrogen sulfide emissions. This is accomplished by operating and maintaining a flow, differential pressure, oxidation-reduction potential (ORP) and pH measurement device for the hydrogen sulfide wet scrubber system.

(2) Monitor and collect data using a continuous data acquisition system, except for malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments).

(3) The normal operating ranges for the scrubbers are as listed below. These operating ranges are used by the equipment operators to determine if the equipment is functioning properly.

pH: 11.1-11.3
ORP: 500-600 mV
Flow: ~35 GPM (when pumping out to WWTP)
Flow: ~50-55 GPM all other times
Differential Pressure Demister: 0.0-0.4 inches of water;
Differential Pressure Packing: ~2.0-2.5 inches of water

(4) Niagara Refining has equipment alarms to alert the operators when a parameter operating outside its typical range approaches a value indicative of a malfunction. The alarms are used to initiate an investigation of the source and control equipment, and complete any corrective action prior to a potential malfunction. The alarms are activated as noted below:

pH: 10-12.5; alarm activated if outside range
ORP: 400-800 mV; alarm activated if outside range
Flow: alarm activated if less than 25 GPM
Differential Pressure Demister: alarm activated if greater than 1.0 inches of water;
Differential Pressure Packing: 1.0-4.0 inches of water; alarm activated if outside range

(5) Keep records of all inspection and monitoring data. Keep records of the occurrence and duration of each malfunction of the air pollution control and monitoring equipment. Keep records of actions taken during periods of a malfunction, including corrective actions to restore the malfunctioning air pollution control, or monitoring

equipment to its normal or usual manner of operation. Keep each record for 5 years following the date of each recorded action.

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION
Reporting Requirements: UPON REQUEST BY REGULATORY AGENCY

Condition 1-10: Compliance Demonstration
Effective between the dates of 01/23/2019 and 05/18/2025

Applicable Federal Requirement:6 NYCRR Subpart 257-10

Item 1-10.1:
The Compliance Demonstration activity will be performed for:

Emission Unit: U-00APT Emission Point: 00001

Regulated Contaminant(s):
CAS No: 007783-06-4 HYDROGEN SULFIDE

Item 1-10.2:
Compliance Demonstration shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES
Monitoring Description:

6 NYCRR SUBPART 257-10
AMBIENT AIR QUALITY STANDARD FOR HYDROGEN SULFIDE (H2S)

(1) Hydrogen sulfide (H2S) is a colorless gas having a characteristic, disagreeable odor often described as that of rotten eggs. For the purpose of this Subpart the term hydrogen sulfide will include hydrogen sulfide and other sulfides as measured by the acceptable analytical method.

(2) Hydrogen sulfide can cause odors which unreasonably interfere with the comfortable enjoyment of life and property. Although tarnishing of metals and discoloring of paint may occur at higher ambient air concentrations the primary objective of this standard is to prevent disagreeable odors.

(3) In any one-hour period, the average concentration of hydrogen sulfide shall not exceed 0.01 ppm (14 µg/m3), as measured at the property fence line.

(4) If hydrogen sulfide odors are detected near the facility, Niagara Refining shall complete a program of assessment and remediation to correct the potential

impacts. An incident report shall be submitted to the department upon resolution of the incident.

(5) Based on stack testing completed in May, 2016, the AERSCREEN modeled emissions demonstrated compliance with the hydrogen sulfide standard of 14 µg/m3.

(6) To demonstrate continued compliance with the hydrogen sulfide standard, a performance test of the scrubber outlet shall be completed as part of the permit renewal application. A stack test protocol shall be submitted for review 6 months prior to the permit expiration date.

(7) Based on the results of the stack testing, an AERSCREEN analysis shall be completed to evaluate compliance with the AGC and SGC.

(8) The stack test report and impact analysis shall be submitted within 45 days of completing the stack test.

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION
Reporting Requirements: AS REQUIRED - SEE MONITORING DESCRIPTION

Condition 1-11: Compliance Demonstration
Effective between the dates of 01/23/2019 and 05/18/2025

Applicable Federal Requirement:6 NYCRR 212-2.1 (b)

Item 1-11.1:
The Compliance Demonstration activity will be performed for:

Emission Unit: U-00APT Emission Point: 00010

Regulated Contaminant(s):
CAS No: 001327-53-3 ARSENIC TRIOXIDE

Item 1-11.2:
Compliance Demonstration shall include the following monitoring:

Monitoring Type: MONITORING OF PROCESS OR CONTROL DEVICE PARAMETERS AS SURROGATE
Monitoring Description:

PART 212 EVALUATION
ROASTER SCRUBBER
ARSENIC TRIOXIDE EMISSIONS

(1) The roaster scrubber reduces arsenic trioxide emissions and is exhausted through EP00010. A performance test to determine the control efficiency of the scrubber

was completed on December 12 -14, 2017. The inlet arsenic trioxide emission rate measured on the roaster scrubber was 0.003 lbs/hr. The outlet concentration was 8.75E-06 lbs/hr. The resulting calculated destruction efficiency was 99.8%.

(2) The arsenic trioxide emissions are subject to 6NYCRR Part 212-2.3(b) Table 4 which requires a source having an emission rate potential less than 0.1 lb/hr to use air dispersion modeling to demonstrate that the maximum offsite air concentration is less than the short-term guideline concentration (SGC) and annual guideline concentration (AGC). The maximum off-site concentration for arsenic trioxide was calculated to be a one-in-one hundred thousand risk and is considered acceptable according to DAR-1 since the control equipment is considered Best Available Control Technology by having a demonstrated destruction efficiency of greater than 99.5%.

(3) At the discretion of the department, additional testing and a revised Part 212 evaluation and reporting may be required due to potential changes in emission rates or significant process changes.

Parameter Monitored: ARSENIC TRIOXIDE
Lower Permit Limit: 99.5 percent degree of air cleaning or greater
Reference Test Method: EPA Method 29
Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION
Averaging Method: MINIMUM - NOT TO FALL BELOW STATED VALUE - SEE MONITORING DESCRIPTION
Reporting Requirements: UPON REQUEST BY REGULATORY AGENCY

Condition 1-12: Compliance Demonstration
Effective between the dates of 01/23/2019 and 05/18/2025

Applicable Federal Requirement:6 NYCRR 212-2.1 (b)

Item 1-12.1:
The Compliance Demonstration activity will be performed for:

Emission Unit: U-00APT Emission Point: 00010

Regulated Contaminant(s):
CAS No: 007446-09-5 SULFUR DIOXIDE

Item 1-12.2:
Compliance Demonstration shall include the following monitoring:

Monitoring Type: MONITORING OF PROCESS OR CONTROL

DEVICE PARAMETERS AS SURROGATE

Monitoring Description:

PART 212 EVALUATION
ROASTER SCRUBBER AND SMELTER SCRUBBER
SULFUR DIOXIDE EMISSIONS

(1) There are two (2) scrubbers used to reduce sulfur dioxide emissions from the roaster and the smelter, separately. Both units exhaust through EP00010. A performance test to determine the control efficiency of each scrubber was completed on December 12 -14, 2017.

(2) The sulfur dioxide emissions from the roaster are subject to 6NYCRR Part 212-2.3(a) which requires a source having an emission rate potential less than 1 lb/hr to use air dispersion modeling to demonstrate that the maximum offsite air concentration is less than the respective National Ambient Air Quality Standard. Since the roaster scrubber demonstrated greater than 99% control efficiency, modeling was not required.

(3) The sulfur dioxide emissions from the smelter are subject to 6NYCRR Part 212-2.3(a) which requires a source having an emission rate potential greater than 1 lb/hr to have a 99% control efficiency. The results of the performance test demonstrated a control efficiency of 99%.

(4) A performance test of the roaster and smelter scrubber efficiency shall be completed as part of the permit renewal application. A stack test protocol shall be submitted for review 6 months prior to the permit expiration date.

(5) Based on the results of the stack testing, an AERSCREEN analysis of the combined sulfur dioxide emissions shall be completed to evaluate compliance with the NAAQS.

(6) The stack test report and impact analysis shall be submitted within 60 days of completing the stack test.

Parameter Monitored: SULFUR DIOXIDE
Lower Permit Limit: 99 percent degree of air cleaning or greater
Reference Test Method: EPA method 6 or other approved method
Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION
Averaging Method: MINIMUM - NOT TO FALL BELOW STATED VALUE - SEE MONITORING DESCRIPTION

Reporting Requirements: AS REQUIRED - SEE MONITORING DESCRIPTION

Condition 1-13: Compliance Demonstration
Effective between the dates of 01/23/2019 and 05/18/2025

Applicable Federal Requirement:6 NYCRR 212-2.1 (b)

Item 1-13.1:
The Compliance Demonstration activity will be performed for:

Emission Unit: U-00APT Emission Point: 00010

Regulated Contaminant(s):
CAS No: 007446-09-5 SULFUR DIOXIDE

Item 1-13.2:
Compliance Demonstration shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES
Monitoring Description:

DEMONSTRATING CONTINUOUS COMPLIANCE
ROASTER SCRUBBER AND SMELTER SCRUBBER
SULFUR DIOXIDE AND ARSENIC TRIOXIDE EMISSIONS

(1) Demonstrate compliance with the 6 NYCRR Part 212 requirements for the sulfur dioxide and arsenic trioxide emissions. This is accomplished by operating and maintaining a flow, pressure, and pH measurement device for the roaster scrubber and the smelter scrubber.

(2) Monitor and collect data using a continuous data acquisition system, except for malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments).

(3) The normal operating ranges for the scrubbers are as listed below. These operating ranges are used by the equipment operators to determine if the equipment is functioning properly.

SMELTER SCRUBBER OPERATING RANGE
Effluent pH: 6.5-8.5
Liquid quench flow: 3-4 gpm
Liquid tower flow 55-56 gpm.
Tower Pressure Drop: 1 - 2 inches of water

ROASTER SCRUBBER OPERATING RANGE
Effluent pH: 6.5-7.5
Pressure Drop: -15 to -25 inches of water
liquid flow rate: 15-16 gpm.

(4) Niagara Refining has equipment alarms to alert the operators when a parameter operating outside its typical range approaches a value indicative of a malfunction. The alarms are used to initiate an investigation of the source and control equipment, and complete any corrective action prior to a potential malfunction. The alarms are activated as noted below:

SMELTER SCRUBBER ALARM
Effluent pH: alarm activated if less than pH 4
Liquid quench flow: alarm activated if less than 1.5 gpm

Liquid tower flow: alarm activated if less than 40 gpm.
Tower Pressure Drop: alarm activated if greater than 8.5 inches of water

ROASTER SCRUBBER ALARM
Effluent pH: alarm activated if less than pH 5
Pressure Drop: alarm activated if greater than -10 inches of water
liquid flow rate: alarm activated if less than 7.5 gpm.

(5) Keep records of all inspection and monitoring data. Keep records of the occurrence and duration of each malfunction of the air pollution control and monitoring equipment. Keep records of actions taken during periods of a malfunction, including corrective actions to restore the malfunctioning air pollution control, or monitoring equipment to its normal or usual manner of operation. Keep each record for 5 years following the date of each recorded action.

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION
Reporting Requirements: UPON REQUEST BY REGULATORY AGENCY

STATE ONLY ENFORCEABLE CONDITIONS
****** Facility Level ******

NOTIFICATION OF GENERAL PERMITTEE OBLIGATIONS
This section contains terms and conditions which are not federally enforceable. Permittees may also have other obligations under regulations of general applicability

Item A: Emergency Defense - 6 NYCRR 201-1.5

An emergency, as defined by subpart 201-2, constitutes an affirmative defense to penalties sought in an enforcement action brought by the Department for noncompliance with emissions limitations or permit conditions for all facilities in New York State.

(a) The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An emergency occurred and that the facility owner or operator can identify the cause(s) of the emergency;
(2) The equipment at the permitted facility causing the emergency was at the time being properly operated and maintained;
(3) During the period of the emergency the facility owner or operator took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and
(4) The facility owner or operator notified the Department within two working days after the event occurred. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.

(b) In any enforcement proceeding, the facility owner or operator seeking to establish the occurrence of an emergency has the burden of proof.

(c) This provision is in addition to any emergency or upset provision contained in any applicable requirement.

Item B: **Public Access to Recordkeeping for Facilities With State Facility Permits - 6 NYCRR 201-1.10 (a)**
Where facility owners and/or operators keep records pursuant to compliance with the requirements of 6 NYCRR Subpart 201-5.4, and/or the emission capping requirements of 6 NYCRR Subpart 201-7, the Department will make such records available to the public upon request in accordance with 6 NYCRR Part 616 - Public Access to Records.

Facility owners and/or operators must submit the records required to comply with the request within sixty working days of written notification by the Department.

Item C: **General Provisions for State Enforceable Permit Terms and Condition - 6 NYCRR Part 201-5**
Any person who owns and/or operates stationary sources shall operate and maintain all emission units and any required emission control devices in compliance with all applicable Parts of this Chapter and existing laws, and shall operate the facility in accordance with all criteria, emission limits, terms, conditions, and standards in this permit. Failure of such person to properly operate and maintain the effectiveness of such emission units and emission control devices may be sufficient reason for the Department to revoke or deny a permit.

The owner or operator of the permitted facility must maintain all required records on-site for a period of five years and make them available to representatives of the Department upon request. Department representatives must be granted access to any facility regulated by this Subpart, during normal operating hours, for the purpose of determining compliance with this and any other state and federal air pollution control requirements, regulations or law.

STATE ONLY APPLICABLE REQUIREMENTS
The following conditions are state only enforceable.

Condition 14: Contaminant List
Effective between the dates of 05/19/2015 and 05/18/2025

Applicable State Requirement:ECL 19-0301

Item 14.1:
Emissions of the following contaminants are subject to contaminant specific requirements in this permit(emission limits, control requirements or compliance monitoring conditions).

CAS No: 001327-53-3
Name: ARSENIC TRIOXIDE

CAS No: 007446-09-5
Name: SULFUR DIOXIDE

CAS No: 007664-41-7
Name: AMMONIA

CAS No: 007783-06-4

Name: HYDROGEN SULFIDE

CAS No: 0NY075-00-0
Name: PARTICULATES

Condition 15: Malfunctions and start-up/shutdown activities
Effective between the dates of 05/19/2015 and 05/18/2025

Applicable State Requirement:6 NYCRR 201-1.4

Item 15.1:
(a) The facility owner or operator shall take all necessary and appropriate actions to prevent the emission of air pollutants that result in contravention of any applicable emission standard during periods of start-up, shutdown, or malfunction.

(b) The facility owner or operator shall compile and maintain records of all equipment malfunctions, maintenance, or start-up/shutdown activities when they can be expected to result in an exceedance of any applicable emission standard, and shall submit a report of such activities to the department when requested to do so, or when so required by a condition of a permit issued for the corresponding air contamination source. Such reports shall state whether any violations occurred and, if so, whether they were unavoidable, include the time, frequency and duration of the maintenance and/or start-up/shutdown activities, and an estimate of the emission rates of any air contaminants released. Such records shall be maintained for a period of at least five years and made available for review to department representatives upon request. Facility owners or operators subject to continuous stack monitoring and quarterly reporting requirements need not submit additional reports for equipment maintenance or start-up/shutdown activities for the facility to the department.

(c) In the event that emissions of air contaminants in excess of any emission standard in this Subchapter occur due to a malfunction, the facility owner or operator shall compile and maintain records of the malfunction and notify the department as soon as possible during normal working hours, but not later than two working days after becoming aware that the malfunction occurred. When requested by the department, the facility owner or operator shall submit a written report to the department describing the malfunction, the corrective action taken, identification of air contaminants, and an estimate of the emission rates.

(d) The department may also require the owner or operator to include, in reports described under Subdivisions (b) and (c) of this Section, an estimate of the maximum ground level concentration of each air contaminant emitted and the effect of such emissions.

(e) A violation of any applicable emission standard resulting from start-up, shutdown, or malfunction conditions at a permitted or registered facility may not be subject to an enforcement action by the department and/or penalty if the department determines, in its sole discretion, that such a violation was unavoidable. The actions and recordkeeping and reporting requirements listed above must be adhered to in such circumstances.

Condition 16: Emission Unit Definition
Effective between the dates of 05/19/2015 and 05/18/2025

Applicable State Requirement:6 NYCRR Subpart 201-5

Item 16.1(From Mod 1):
The facility is authorized to perform regulated processes under this permit for:
Emission Unit: U-00APT
Emission Unit Description:
Emission Unit U-00APT includes the production of ammonium paratungstate (APT) and tungsten oxide (WO3). The APT and WO3 production process begins with processing either concentrated tungsten containing ore or the smelting of tungsten scrap. Concentrated scheelite (wolframite) ore is milled prior to introduction to a digester where a sodium tungstate solution is produced. Less refined ore (i.e. Russian Ore) requires additional processing in a roaster prior to introduction to the digester.

Regardless of whether it is produced via ore processing, or smelting of scrap, the sodium tungstate solution then undergoes a series of steps including filtration, purification, and pH adjustment to remove impurities. The intermediate material then undergoes an ion exchange process which results in an ammonium tungstate solution. The ammonium tungstate solution is then introduced into a crystallizer, where the water and some ammonia are driven off resulting in ammonium paratungstate powder, one of the final products. The APT can then be further refined in a calcining furnace which drives off the ammonia to produce tungsten oxide, the second final product. A third final product produced includes an ultra-pure tungsten oxide.

Ammonia is an essential component of the refining process, therefore, the facility uses two ammonia recovery systems (ARS) to recover ammonia that is liberated in the crystallization and calcining processes for reuse.

Building(s): APT

Condition 17: Renewal deadlines for state facility permits
Effective between the dates of 05/19/2015 and 05/18/2025

Applicable State Requirement:6 NYCRR 201-5.2 (c)

Item 17.1:
The owner or operator of a facility having an issued state facility permit shall submit a complete application at least 180 days, but not more than eighteen months, prior to the date of permit expiration for permit renewal purposes.

Condition 18: Compliance Demonstration
Effective between the dates of 05/19/2015 and 05/18/2025

Applicable State Requirement:6 NYCRR 201-5.3 (c)

Item 18.1:
The Compliance Demonstration activity will be performed for the Facility.

Item 18.2:
Compliance Demonstration shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES
Monitoring Description:
Any reports or submissions required by this permit shall be submitted to the Regional Air Pollution Control Engineer (RAPCE) at the following address:

Division of Air Resources
NYS Dept. of Environmental Conservation
Region 9
270 Michigan Ave.
Buffalo, NY 14203

Reporting Requirements: ANNUALLY (CALENDAR)
Reports due 30 days after the reporting period.
The initial report is due 1/30/2016.
Subsequent reports are due every 12 calendar month(s).

Condition 2: Air pollution prohibited
Effective between the dates of 05/19/2015 and 05/18/2025

Applicable State Requirement:6 NYCRR 211.1

Item 2.1:
No person shall cause or allow emissions of air contaminants to the outdoor atmosphere of such quantity, characteristic or duration which are injurious to human, plant or animal life or to property, or which unreasonably interfere with the comfortable enjoyment of life or property. Notwithstanding the existence of specific air quality standards or emission limits, this prohibition applies, but is not limited to, any particulate, fume, gas, mist, odor, smoke, vapor, pollen, toxic or deleterious emission, either alone or in combination with others.

Condition 1-14: Compliance Demonstration
Effective between the dates of 01/23/2019 and 05/18/2025

Applicable State Requirement:6 NYCRR 211.1

Item 1-14.1:
The Compliance Demonstration activity will be performed for the Facility.

Item 1-14.2:
Compliance Demonstration shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES
Monitoring Description:

AIR POLLUTION PROHIBITED

(1) Odors from facility process operations and particulate emissions from truck traffic, storage piles, transfer of materials, or other facility operations cannot create a nuisance or exceed ambient air quality standards.

(2) Niagara Refining shall implement best management practices to reduce the potential impact of emissions on ambient air quality, the environment and human health. Such measures may include, but are not limited to, increased emission controls or monitoring of facility process operations, paving dirt roadways, installing a tire wash for trucks traveling on dirt roads, sweeping and cleaning paved areas, and installation of windrows.

(3) In the event odors or particulate emissions are determined by the Department to be causing a nuisance to the nearby residential community, Niagara Refining shall undertake a program of assessment and remediation upon request.

(4) Niagara Refining shall submit a written report of the findings within seven (7) calendar days.

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION
Reporting Requirements: AS REQUIRED - SEE MONITORING DESCRIPTION

****** Emission Unit Level ******

Condition 20: Emission Point Definition By Emission Unit
Effective between the dates of 05/19/2015 and 05/18/2025

Applicable State Requirement:6 NYCRR Subpart 201-5

Item 20.1(From Mod 1):
The following emission points are included in this permit for the cited Emission Unit:

Emission Unit: U-00APT

Emission Point: 00001
Height (ft.): 100 Diameter (in.): 18
NYTMN (km.): 4757.198 NYTME (km.): 198.494 Building: APT

Emission Point: 00002
Height (ft.): 80 Diameter (in.): 6
NYTMN (km.): 4757.198 NYTME (km.): 198.494

Emission Point: 00010
Height (ft.): 75 Diameter (in.): 10
NYTMN (km.): 4757.198 NYTME (km.): 198.494 Building: APT

Emission Point: 00011
Height (ft.): 80 Diameter (in.): 2
NYTMN (km.): 4757.198 NYTME (km.): 198.494 Building: APT

Emission Point: 00012
Height (ft.): 80 Diameter (in.): 2
NYTMN (km.): 4757.198 NYTME (km.): 198.494 Building: APT

Emission Point: 00004
Height (ft.): 58 Diameter (in.): 3
NYTMN (km.): 4757.198 NYTME (km.): 198.494 Building: APT

Emission Point: 00005
Height (ft.): 58 Diameter (in.): 6
NYTMN (km.): 4757.198 NYTME (km.): 198.494 Building: APT

Emission Point: 00006
Height (ft.): 58 Diameter (in.): 6
NYTMN (km.): 4757.198 NYTME (km.): 198.494 Building: APT

Emission Point: 00007
Height (ft.): 58 Diameter (in.): 6
NYTMN (km.): 4757.198 NYTME (km.): 198.494 Building: APT

Emission Point: 00008
Height (ft.): 58 Length (in.): 18 Width (in.): 12
NYTMN (km.): 4757.198 NYTME (km.): 198.494 Building: APT

Emission Point: 00009
Height (ft.): 58 Length (in.): 18 Width (in.): 12
NYTMN (km.): 4757.198 NYTME (km.): 198.494 Building: APT

Emission Point: 0003A
Height (ft.): 58 Diameter (in.): 2
NYTMN (km.): 4757.198 NYTME (km.): 198.494 Building: APT

Emission Point: 0003B
Height (ft.): 58 Diameter (in.): 2
NYTMN (km.): 4757.198 NYTME (km.): 198.494 Building: APT

Condition 21: Process Definition By Emission Unit
Effective between the dates of 05/19/2015 and 05/18/2025

Applicable State Requirement:6 NYCRR Subpart 201-5

Item 21.1(From Mod 1):
This permit authorizes the following regulated processes for the cited Emission Unit:

Emission Unit: U-00APT
Process: 008 Source Classification Code: 3-05-150-02
Process Description:
Process 008 is the ultra-high purity tungsten oxide production. Ammonium tungstate solution undergoes several steps to produce ultra-high purity tungsten oxide. These steps include filtration, crystallization, drying, calcining, dissolution and repeated. Ammonia driven off in the crystallization step is captured for reuse with a new ammonia recovery system. Ammonia driven off in the calcining step is captured for reuse by the existing ammonia recovery system.

Emission Source/Control: ARS02 - Control
Control Type: AMMONIA SCRUBBING

Emission Source/Control: UPCA1 - Process

Emission Source/Control: UPCA2 - Process

Emission Source/Control: UPCR1 - Process

Emission Source/Control: UPCR2 - Process

Item 21.2(From Mod 0):
This permit authorizes the following regulated processes for the cited Emission Unit:

Emission Unit: U-00APT
Process: 002 Source Classification Code: 3-05-150-02
Process Description:
Process 002 includes a purification process. Sodium tungstate filtrate solution containing soluble impurities is transferred into purification tanks where chemicals including magnesium sulfate, sodium sulfide, 20% sulfuric acid and recycle liquor from the hydrogen sulfide scrubber are added. The pH of the solution remains slightly alkaline as silicone containing compounds are precipitated and then filtered out. Filtrate is collected and transferred to the pH adjustment tanks where dilution water and more 20% sulfuric acid are added. The key purpose of pH adjustment is to precipitate virtually all of the molybdenum present as the pH is lowered to approximately 3.0. At this pH a reaction takes place which results in the release of hydrogen sulfide and some sulfur dioxide. These vapors discharge to a hydrogen sulfide scrubber.

The hydrogen sulfide scrubber system is designed to eliminate 99 percent of the hydrogen sulfide from the pH adjustment reaction. Hydrogen sulfide itself is acidic and will react with a base. The incoming hydrogen sulfide gas is scrubbed in a packed tower with a solution

containing 20% sodium hydroxide (caustic soda) and 12.5% sodium hypochlorite. The tower is maintained at a pH above neutral via a pH probe, transmitter, controller and control valve. Sodium hypochlorite is added to the mix via an Oxidation Reduction Potential (ORP) probe, transmitter, controller and control valve. The probe will maintain a minimum of 600 millivolts of potential or approximately 8 mg/l of free chlorine to react with sodium sulfide. Sodium sulfate and sodium chloride salts are produced and discharged to the Buffalo Sewer Authority.

Emission Source/Control: 00017 - Control
Control Type: GAS SCRUBBER (GENERAL, NOT CLASSIFIED)

Emission Source/Control: 521VC - Control
Control Type: VENT CONDENSER

Emission Source/Control: 522VC - Control
Control Type: VENT CONDENSER

Emission Source/Control: 00056 - Process

Emission Source/Control: 00521 - Process

Emission Source/Control: 00522 - Process

Emission Source/Control: 00571 - Process

Emission Source/Control: 00572 - Process

Emission Source/Control: 00573 - Process

Emission Source/Control: 00621 - Process

Emission Source/Control: 00671 - Process

Emission Source/Control: 00672 - Process

Emission Source/Control: 00673 - Process

Emission Source/Control: IONEX - Process

Item 21.3(From Mod 0):
This permit authorizes the following regulated processes for the cited Emission Unit:

Emission Unit: U-00APT
Process: 003 Source Classification Code: 3-05-150-02
Process Description:
Process 003 includes the crystallization process. Aqueous ammonia tungstate solution, containing excess unreacted ammonium hydroxide, is fed to a batch operated evaporator-crystallizer system. Here ammonium

paratungstate (APT) is precipitated and recovered as wet cake. The APT cake is then dried. All of the units are heated and vaporize the water and ammonia present. Some ammonia is released during the crystallization as ammonium tungstate converts to crystallized APT. Solution containing crystallized APT is filtered through a vacuum filter. Dewatered ammonium paratungstate crystals are then dried at 100 to 150 degrees Celcius in a furnace. Furthermore, at times, the facility plans to make tungsten oxide (WO3) instead of APT through additional heating in a calcining furnace. The production of WO3 drives off the combined ammonia and results in the liberation of additional ammonia. Ammonia from this process is vented to a dilute ammonia recovery process.

Ammonia (NH3) Recovery Process Description

Ammonia is used at Niagara Refining to pull tungsten containing molecules off a resin bed, in the production process of tungsten oxide. When the ammonia has done its job, the excess free ammonia is “boiled” off in the crysallizer and recovered. During crystallization, as the free ammonia is boiled off, a chemical reaction occurs to form Ammonium Paratungstate or APT. During this reaction, ammonia is also formed. A subsequent process, in which crystalline APT is calcined to form tungsten oxide also forms ammonia.

These two sources of ammonia together with the free ammonia boiled off from the crystallizer are captured for reuse. The system that does this process is called the Ammonia Recovery System or ARS.

The ARS consists of a purified water spray, a heat recovering heat exchanger, a condenser and a scrubber. The ammonia from the crystallizer goes through a spray bank where purified water helps absorb the ammonia during the early stages of the crystallization. From there, the ammonia/water stream enters a heat recovery heat exchanger that helps cool the ammonia/water stream and heats the plant hot water system. The stream then combines with tha calciner ammonia, and then enters a large condenser. All the water condenses and most of the ammonia is absorbed in the water. This stream (now called aqua ammonia) is later strengthened back to its original strength with fresh commercial aqua ammonia.

Any ammonia that does not absorb into the water at the condenser is sent to a scrubber (packed tower) where it is absorbed by purified water. This weak stream of aqua ammonia is also reused in the process and can be strengthened back to usable strength with commercial aqua

ammonia.

Emission Source/Control: 00015 - Control
Control Type: AMMONIA SCRUBBING

Emission Source/Control: 08101 - Control
Control Type: PARTICULATE TRAP

Emission Source/Control: 08102 - Control
Control Type: PARTICULATE TRAP

Emission Source/Control: 841ME - Control
Control Type: MIST ELIMINATOR

Emission Source/Control: 842ME - Control
Control Type: MIST ELIMINATOR

Emission Source/Control: 00841 - Process

Emission Source/Control: 00842 - Process

Emission Source/Control: 00851 - Process

Emission Source/Control: 00852 - Process

Emission Source/Control: 00891 - Process

Emission Source/Control: 00892 - Process

Emission Source/Control: 00ARS - Process

Item 21.4(From Mod 0):
This permit authorizes the following regulated processes for the cited Emission Unit:

Emission Unit: U-00APT
Process: 004 Source Classification Code: 3-05-999-99
Process Description:

Process 004 includes the gaseous ammonia scrubbing system. Niagara Refining's ammonium paratungstate production operation includes a two-stage scrubbing system to remove gaseous ammonia vented from various process tanks containing aqueous solutions. Most of the ammonia emissions occur during transfers of vessel contents.

The primary vent system consists of a common manifolded vent header purged with dilution air. Vents for three of the tanks, which normally contain liquors higher in ammonia content, are separately manifolded and padded with nitrogen to eliminate flammability potential. This manifold is also tied into the primary vent system.

Sulfuric acid is used as the scrubbing media. This is ideal since it reacts very rapidly with ammonia and exhibits no vapor pressure. Product formed is soluble ammonium sulfate. Pumps, one for each system, recirculate acidic liquor over a venturi eductor where the gas and liquid intimately contact.

The scrubber system utilizes venturi eductors not only to achieve vapor-liquid contacting but also to pull the dilution air and ammonia vapors through the common vent system. Gases exiting the first scrubber system are drawn into the second scrubber where further contacting takes place. The second scrubber will always be richer in acid content then the first. When the first scrubber is spent, valves are switched to reverse the scrubbing order. The No.1 scrubber is pumped out, re-charged with dilute sulfuric acid to become the No.2 scrubber. The previous No.2 scrubber becomes No.1.

Vent pipes from the scrubber tanks, only one open at any given time, combine into a single vent pipe and direct dilution air containing moisture and small amounts of unneutralized ammonia to the atmosphere.

Emission Source/Control: 00018 - Control
Control Type: AMMONIA SCRUBBING

Emission Source/Control: 00491 - Process

Emission Source/Control: 00492 - Process

Emission Source/Control: 00711 - Process

Emission Source/Control: 00870 - Process

Emission Source/Control: 00925 - Process

Emission Source/Control: 00926 - Process

Emission Source/Control: 00927 - Process

Emission Source/Control: 07101 - Process

Emission Source/Control: 07141 - Process

Emission Source/Control: 09212 - Process

Emission Source/Control: 09214 - Process

Item 21.5(From Mod 0):
This permit authorizes the following regulated processes for the cited Emission Unit:

Emission Unit: U-00APT
Process: 005 Source Classification Code: 3-05-888-01
Process Description:
Process 005 includes tank vents not vented to the scrubber control systems. There are several chemical solution tanks that do not vent through the scrubber control systems. These include two NaOCl, NaOH, H2SO4, MgSO4, Na2S, NH3Cl and two IT feed tanks. Some of these tanks vent directly to the roof and others vent through filter cartridges to remove particulates before being vented inside the building. Particulates are generated from the addition of dry raw material used to create the desired tank solution. Other particulate emissions are generated from the transfer of dry material to the Blue/Yellow Tungsten screeners. Particulates from these sources are controlled by a baghouse before being vented inside the building.

Emission Source/Control: 08151 - Control
Control Type: FABRIC FILTER

Emission Source/Control: 08152 - Control
Control Type: FABRIC FILTER

Emission Source/Control: 980FC - Control
Control Type: PARTICULATE TRAP

Emission Source/Control: 990FC - Control
Control Type: PARTICULATE TRAP

Emission Source/Control: 00674 - Process

Emission Source/Control: 00675 - Process

Emission Source/Control: 00716 - Process

Emission Source/Control: 00717 - Process

Emission Source/Control: 00781 - Process

Emission Source/Control: 00782 - Process

Emission Source/Control: 00783 - Process

Emission Source/Control: 00911 - Process

Emission Source/Control: 00941 - Process

Emission Source/Control: 00942 - Process

Emission Source/Control: 00951 - Process

Design Capacity: 5,000 gallons

Emission Source/Control: 00953 - Process
Design Capacity: 5,000 gallons

Emission Source/Control: 00980 - Process

Emission Source/Control: 00990 - Process

Emission Source/Control: 08121 - Process

Emission Source/Control: 08122 - Process

Emission Source/Control: 09141 - Process

Emission Source/Control: 09142 - Process

Item 21.6(From Mod 0):
This permit authorizes the following regulated processes for the cited Emission Unit:

Emission Unit: U-00APT
Process: 006 Source Classification Code: 3-05-150-02
Process Description:
Process 006 includes the ore roasting process. Ore must be preprocessed to remove organics and sulfur before it can be used in the normal process. This ore is introduced into a roaster heats the material to 700 degrees Celsius. When combined with oxygen in the air feed to the roaster, the organics react to make carbon dioxide and the sulfur reacts to produce sulfur dioxide. There is also a small amount of arsenic and phosphorus that oxidizes to make arsenic trioxide and phosphorus pentoxide. All the gases are first sent to a cyclone and a ceramic filter to separate any ore dust that has carried through. The ore dust is then recycled back into the roaster. The gases go to a scrubber system. The main scrubber is run with sodium hydroxide as the scrubbing liquor, with the pH being controlled slightly over neutral. The sulfur dioxide reacts with sodium hydroxide to form sodium sulfite, which is sent to the POTW. Before gases leave the system and go to an emission point, it travels through a HEPA filter to filter out any remaining arsenic trioxide particulates.

Emission Source/Control: 00062 - Control
Control Type: SINGLE CYCLONE

Emission Source/Control: 00063 - Control
Control Type: FABRIC FILTER

Emission Source/Control: 00064 - Control
Control Type: QUENCH UNIT

Emission Source/Control: 00065 - Control
Control Type: SINGLE CYCLONE

Emission Source/Control: 00066 - Control
Control Type: VENTURI SCRUBBER

Emission Source/Control: 00067 - Control
Control Type: BAFFLE

Emission Source/Control: 00068 - Control
Control Type: HIGH EFFICIENCY PARTICULATE AIR FILTER

Emission Source/Control: 00061 - Process

Item 21.7(From Mod 0):
This permit authorizes the following regulated processes for the cited Emission Unit:

Emission Unit: U-00APT
Process: 007 Source Classification Code: 3-05-150-02
Process Description:
Process 007 includes the roasting of filter cake, which is mutually exclusive with the ore roasting. Filter cake from the smelter contains a certain amount of cobalt sulfide which must be roasted to yield cobalt oxide. The cobalt oxide rich filter cake will be fed into the smelter near the end of its smelting cycle to react with excess sulfur in the molten salt. This will change the cobalt oxide back to cobalt sulfide and, thus, begin the cycle over again.

Emission Source/Control: 00062 - Control
Control Type: SINGLE CYCLONE

Emission Source/Control: 00063 - Control
Control Type: FABRIC FILTER

Emission Source/Control: 00064 - Control
Control Type: QUENCH UNIT

Emission Source/Control: 00065 - Control
Control Type: SINGLE CYCLONE

Emission Source/Control: 00066 - Control
Control Type: VENTURI SCRUBBER

Emission Source/Control: 00067 - Control
Control Type: BAFFLE

Emission Source/Control: 00068 - Control
Control Type: HIGH EFFICIENCY PARTICULATE AIR FILTER

Emission Source/Control: 00061 - Process

Item 21.8(From Mod 0):
This permit authorizes the following regulated processes for the cited Emission Unit:

Emission Unit: U-00APT
Process: 01A Source Classification Code: 3-05-150-02
Process Description:
Process 01A includes the initial processing of ore concentrate. Scheelite or Wolframite is transferred from bulk super sacs and sent to a ball mill. The ore concentrate solution is mixed with sodium hydroxide to leach a sodium tungstate solution which is later purified. Particulate emissions are generated from the transfer of dry material to the Scheelite ore hoppers. Particulates from these sources are controlled by a baghouse before being vented inside the building.

Emission Source/Control: 00027 - Control
Control Type: FABRIC FILTER

Emission Source/Control: 422VC - Control
Control Type: VENT CONDENSER

Emission Source/Control: 00211 - Process

Emission Source/Control: 00212 - Process

Emission Source/Control: 00221 - Process

Emission Source/Control: 00222 - Process

Emission Source/Control: 00241 - Process

Emission Source/Control: 00242 - Process

Emission Source/Control: 00413 - Process

Emission Source/Control: 00414 - Process

Emission Source/Control: 00422 - Process

Emission Source/Control: 00442 - Process

Item 21.9(From Mod 0):
This permit authorizes the following regulated processes for the cited Emission Unit:

Emission Unit: U-00APT
Process: 01B Source Classification Code: 3-05-150-02
Process Description:
Process 01B includes the initial processing of scap tungsten. Scrap tungsten metal is oxidized to sodium

tungstate by reacting with sodium sulfate and oxygen. Scrap tungsten and sodium sulfate are loaded into two smelters which are operated at a temperature range of 1,000 degrees Celsius. It is anticipated that it will require approximately four hours to process a smelter batch. The tungsten reacts with the sodium sulfate and oxygen to form sodium tungstate and sulfur dioxide. It is expected that the majority of the sulfur dioxide will be generated during a two hour period of each batch cycle. Upon batch completion, sodium tungstate is discharged into a leach tank where remaining sulfur dioxide is collected by a fume hood. Emission controls for the smelted vent gas (sulfur dioxide) will consist of two scrubbing stages. In the first stage, the hot gas is controlled using a water quench. The controlled gas is scrubbed using a counter current packed bed scrubber and mist eliminator.

Emission Source/Control: 00016 - Control
Control Type: SINGLE CYCLONE

Emission Source/Control: 00019 - Control
Control Type: QUENCH UNIT

Emission Source/Control: 00020 - Control
Control Type: BAFFLE

Emission Source/Control: 00011 - Process

Emission Source/Control: 00012 - Process

Emission Source/Control: 00013 - Process

Emission Source/Control: 00014 - Process