Facility ID: 0640010105 Issuance type: Final State Permit To Operate

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In addition to the terms and conditions, hyperlinks have been inserted into the document so you may more readily access the section of the document you wish to review.

Finally, the term language under "Part II" and before "A. Applicable Emissions Limitations..." has been added to aid in document conversion, and was not part of the original issued permit.

THIS IS NOT AN OFFICIAL VERSION OF THE PERMIT. SEE PAGE 1 FOR ADDITIONAL INFORMATION

Facility ID: 0640010105 Emissions Unit ID: P001 Issuance type: Final State Permit To Operate

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Part II - Special Terms and Conditions

This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

1. For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

   (a) None.

2. For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

   (a) None.

A. **Applicable Emissions Limitations and/or Control Requirements**

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P001 - Crude Gold Kettle 1 vented to a wet scrubber. 2300 troy oz max/batch	OAC rule 3745-31-05(A)(3) (PTI 06-08171 issued on 10/3/06)	This emissions unit shall be vented to a wet scrubber with a control efficiency of 90% for Nitrogen Oxide Compounds (NOx) and 98% for Hydrochloric acid (HCl) emissions. There shall be no visible emissions other than water vapor from the scrubber exhaust stack. See A.2.b. below. NOx emissions shall not exceed :9.1 lbs NOx / day and 1.7 TPY HCl emissions shall not exceed:1.3 lbs HCl / day and 0.24 TPY Use of Best Available Control Methods to minimize fugitive emissions from this emission unit. See A.2.a. below.
	OAC rule 3745-17-07(A) OAC rule 3745-17-11(B)	Particulate emissions (PE) are not anticipated from this emissions unit.
	OAC rule 3745-21-08 (B)	See Section A.2.c below.

2. **Additional Terms and Conditions**

   (a) The enclosure has been designed using corrosion resistant materials with adequate containment and air flow to minimize fugitive emissions in accordance with good engineering practices. These enclosures are necessary for employee safety. Therefore no recordkeeping or reporting is necessary to ensure proper operation.
   The no visible emission limit pertains to NOx and acid emissions. Visible emissions evaluations are based on color, rather than opacity.
   The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in this Permit to Install.

   On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" still exists as part of the federally-approved SIP for Ohio.

B. **Operational Restrictions**

1. None

C. **Monitoring and/or Record Keeping Requirements**

1. The permittee shall properly install, operate, and maintain equipment to continuously monitor the stage 4

recirculation water flow rate, purge water flow rate and the stage 4 pH for the scrubber during operation of this emissions unit, including periods of startup and shutdown.

The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s).

2. The permittee shall collect and record the following information daily:

a. stage 4 recirculation water flow rate,
b. purge water flow rate, and
c. the stage 4 pH for the scrubber.

3. Whenever the monitored value for the stage 4 recirculation water flow rate, purge water flow rate or the stage 4 pH for the scrubber deviates from the range(s) specified in Section C.6., the permittee shall promptly investigate the cause of the deviation.

The permittee shall maintain records of the following information for each deviation:

a. the date and time the deviation began,

b. the magnitude of the deviation at that time,

c. the date(s) the investigation was conducted,

d. the names of the personnel who conducted the investigation, and

e. the findings and recommendations.

4. In response to each deviation, the permittee shall take prompt corrective action to bring the operation of the control equipment within the acceptable ranges/values specified below, unless the permittee determines that corrective action is not necessary and documents the reasons for that determination and the date and time the deviation ended.

5. The permittee shall maintain records of the following information for each deviation:

a. a description of the corrective action,

b. the date it was completed,

c. the date and time the deviation ended,

d. the total period of time (in minutes) during which there was a deviation,

e. the ranges/values immediately after the corrective action, and

f. the names of the personnel who performed the work.

Investigation and records required by this paragraph does not eliminate the need to comply with the requirements of OAC rule 3745-15-06 if it is determined that a malfunction has occurred.

6. Acceptable ranges for the operational parameters for the scrubber are:

a. a stage 4 recirculation water flow rate of not less than 360 gallons per minute (gpm).

b. a purge water flow rate of not less than 2,880 gallons per day or the value established during the most recent performance test that demonstrated compliance, whichever is greater.

c. a pH range of 8.5 to 11.5 in stage 4.

These ranges/values are effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by the Ohio EPA Southeast District Office. The permittee may request revisions to the ranges/values based upon information obtained during future emission tests that demonstrate compliance with the allowable emission rate for this emissions unit. In addition, approved revisions to the ranges/values will not constitute a relaxation of the monitoring requirements of this permit and may be incorporated into this permit by means of an administrative modification.

7. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;

b. the total duration of any visible emission incident; and

c. any corrective actions taken to eliminate the visible emissions.

Note: The presence of water vapor in the scrubber plume does not constitute visible emissions.

8. The permit to install for emissions units, P001 - P018 was evaluated based on the maximum total materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: hydrochloric acid

TLV (mg/m3): 7.5 mg/m3
Maximum Hourly Emission Rate (lbs/hr): 1.4 lbs/hr

Predicted 1-Hour Maximum Ground-Level
Concentration (ug/m3): 124.8 ug/m3

MAGLC (ug/m3): 178 ug/m3

Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:
a. changes in the composition of the materials used or the use of new materials, that would result in the emission of a compound or chemical with a lower Threshold Limit Value (TLV) than the lowest TLV previously modeled, as documented in the most current version of the American Conference of Governmental Industrial Hygienists' (ACGIH's) handbook entitled "TLVs and BEIs" ("Threshold Limit Values for Chemical Substances and Physical Agents, Biological Exposure Indices");

b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and

c. physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01 solely due to the emissions of any type of toxic air contaminant not previously emitted, and a modification of the existing permit to install will not be required, even if the toxic air contaminant emissions are greater than the de minimis level in OAC rule 3745-15-05. If the change(s) meet(s) the definition of a "modification" under other provisions of the rule, then the permittee shall obtain a final permit to install prior to the change.

9. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy":

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of the evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. **Reporting Requirements**

1. The permittee shall submit quarterly reports that identify the following information concerning the operation of the control equipment during the operation of this emissions unit:

a. each period of time when the stage 4 recirculation water flow rate, purge water flow rate and the stage 4 pH for the scrubber was not operating within the acceptable ranges specified in Section C.6.;

b. an identification of each incident of deviation described in Section C.3. where a prompt investigation was not conducted;

c. an identification of each incident of deviation described in Section C.3. where prompt corrective action, that would bring the affected parameter into compliance with the acceptable ranges, was determined to be necessary and was not taken; and

d. an identification of each incident of deviation described in Section C.3. where proper records were not maintained for the investigation and/or the corrective action.

These quarterly reports reports shall be submitted (i.e., postmarked) by January 31, April 30, July 31, and October 31 of each year; and each report shall cover the previous calendar quarter.

If an excursion did not occur during the reporting period, then a report stating that fact is required.

2. The permittee shall submit semiannual written reports that;

a. identify all days during which any visible emissions were observed from the stack serving this emissions unit and

b. describe any corrective actions taken to eliminate the visible emissions.

These reports shall be submitted to the Ohio EPA, Southeast District Office by January 31 and July 31 of each year and shall cover the previous 6-month period.

E. **Testing Requirements**

1. Compliance with the emission limitations in section A.1 of these terms and conditions shall be determined in accordance with the following methods:
Emission Limitation: This emissions unit shall be vented to a wet scrubber with a control efficiency of 90% for Nitrogen Oxide Compounds (NOx) and 98% for Hydrochloric acid (HCl) emissions.

Applicable Compliance Method: Compliance shall be demonstrated based upon emissions testing in

accordance with methods and procedures in section E.2.

Emission Limitation: Nitrogen Oxide Compounds (NOx) emissions shall not exceed :
9.1 lbs NOx / day,
1.7 TPY NOx

Applicable Compliance Method: Compliance shall be demonstrated using the following equations:

39.65 lb NOx /1000 troy oz. gold {based on stoichiometry chemical reaction data}
2,300 troy ounces per batch, 1 batch per day
90% NOx control for scrubber

(39.65 lb NOx /1000 troy oz.) (2.3 1000 troy oz/batch) (1 batch per day) (100% - 90% control for NOx) = 9.1 lbs NOx/ day

Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

Emission Limitation: Hydrochloric acid (HCl) emissions shall not exceed:
1.3 lbs HCl / day,
0.24 TPY HCl

Applicable Compliance Method: Compliance shall be demonstrated using the following equations:

28.35 lb HCl /1000 troy oz. gold {based on stoichiometry chemical reaction data}
2,300 troy ounces per batch, 1 batch per day
98% HCl control for scrubber

(28.35 lb HCl/1000 troy oz.) (2.3 1000 troy oz/batch) (1 batch per day) (100% - 98% control for HCl) = 1.3 lbs HCl/ day

Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

Emission Limitation: There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

Applicable Compliance Method: Compliance shall be demonstrated based upon Test Method 22-like visible emission observations. (Although Test Method 22 applies to fugitive emissions units, the visible/no visible emissions observation technique of 40 CFR Part 60, Appendix A, Method 22 can be applied to ducted emissions, i.e., Test Method 22-like visible emissions observations.)

2. The permittee shall conduct, or have conducted, an emission test for this emissions unit within 12 months prior to the expiration date of the permit to operate.

The emission testing shall be conducted to demonstrate that the wet scrubber serving emissions units P001 - P018 is in compliance with the 90% control efficiency limitation for NOx and 98% control efficiency limitation for HCl emissions.

The following test method(s) shall be employed to demonstrate compliance with the removal efficiency requirement for the scrubber:

Methods 1-4 and 7E for NOx, and
Methods 1-4 and 26 or 26A for HCl .

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA. (The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.) The test method and procedures selected shall be based on a consideration of the diversity of the organic species present and their total concentration, and on a consideration of the potential presence of interfering gases.

The control efficiency (i.e., the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined by calculating the percent reduction in mass emissions between the inlet and outlet of the control system.

The test shall be conducted while the emissions unit(s) is operating at or near its maximum capacity, unless otherwise specified or approved by the Ohio EPA, Southeast District Office.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).

Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

F. **Miscellaneous Requirements**

1. None