



BUREAU OF AIR POLLUTION CONTROL

901 South Stewart Street, Suite 4001 • Carson City, Nv 89701-5249
phone: 775-687-9350 • www.ndep.nv.gov/baqp • fax: 775-687-6396

Facility ID No. A0005

Permit No. AP1041-2221

MERCURY OPERATING PERMIT TO CONSTRUCT: PHASE II

Issued to: BARRICK GOLDSTRIKE MINES INC. (HEREINAFTER REFERRED TO AS *THE PERMITTEE*)

Mailing Address: P.O. BOX 29, ELKO, NEVADA 89803

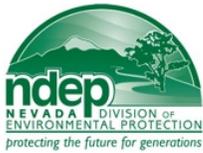
Physical Address: 27 MILES NORTH OF CARLIN, NEVADA

General Facility Location: SECTIONS 1-4, T 35N, R 49E
SECTIONS 12-15, 21-28, AND 33-36, T 36N, R 49E
SECTIONS 7-9, 16-21, AND 28-32, T 36N, R 50E, MDB&M (HA 61: BOULDER FLAT) (EUREKA COUNTY)
NORTH 4,538.50 km, EAST 552.10 km; UTM ZONE 11 (NAD 83)

Thermal Unit List:

C. System 66C – Autoclaves

TU	4.016	Autoclave Circuit # 4
TU	4.017	Autoclave Circuit # 5
TU	4.018	Autoclave Circuit # 6



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Section I. General Conditions

The Permittee must comply with, but is not limited to, all conditions of Nevada Administrative Code (NAC) 445B.3611-3689 “Nevada Mercury Air Emissions Control Program”, inclusive.

A. Records Retention. NAC 445B.3679.2(a)

The Permittee of a Mercury Operating Permit to Construct shall retain records of all required monitoring data and support information for (5) years after the date of the sample collection, measurement, report or analysis. Supporting information includes, without limitation, all records regarding calibration and maintenance of the monitoring equipment and all original strip-chart recordings for continuous monitoring instrumentation.

B. Severability. NAC 445B.3679.2(b)

Each of the conditions and requirements of the Mercury Operating Permit to Construct is severable and, if any are held invalid, the remaining conditions and requirements continue in effect.

C. Compliance/Noncompliance. NAC 445B.3679.2(c)

The Permittee must comply with all conditions of the Mercury Operating Permit to Construct. Any noncompliance constitutes a violation and is grounds for:

1. An action for noncompliance;
2. The revoking and reissuing, or the terminating of the Mercury Operating Permit to Construct by the Director; or
3. The reopening or revising of the Mercury Operating Permit to Construct by the holder of the Mercury Operating Permit to Construct as directed by the Director.

D. Defense to Noncompliance. NAC 445B.3679.2(d)

The need to halt or reduce activity to maintain compliance with the conditions of the Mercury Operating Permit to Construct is not a defense to noncompliance with any conditions of the Mercury Operating Permit to Construct.

E. Cause. NAC 445B.3679.2(e)

The Director may revise, revoke and reissue, reopen and revise, or terminate the Mercury Operating Permit to Construct for cause.

F. Property Rights/Exclusive Privilege. NAC 445B.3679.2(f)

The Mercury Operating Permit to Construct does not convey any property rights or any exclusive privilege.

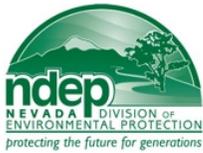
G. Information Request from Director. NAC 445B.3679.2(g)

The Permittee shall provide the Director, in writing and within a reasonable time, with any information that the Director requests to determine whether cause exists for revoking or terminating the Mercury Operating Permit to Construct or to determine compliance with the conditions of this Mercury Operating Permit to Construct.

H. Right to Entry. NAC 445B.3679.2(h)

The Permittee shall allow the Director or any authorized representative of the Director, upon the presentation of credentials, to:

1. Enter upon the premises of *the Permittee* where:
 - a. The thermal unit that emits mercury is located;
 - b. Activity related to mercury emissions is conducted; or
 - c. Records are kept pursuant to the conditions of the Mercury Operating Permit to Construct.
2. Have access to and copy, during normal business hours, any records that are kept pursuant to the conditions of the Mercury Operating Permit to Construct;
3. Inspect, at reasonable times, any facilities, practices, operations, or equipment, including any equipment for monitoring or controlling air pollution, that are regulated or required pursuant to the Mercury Operating Permit to Construct; and
4. Sample or monitor, at reasonable times, substances or parameters to determine compliance with the conditions of the Mercury Operating Permit to Construct or applicable requirements.



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Section I. General Conditions (continued)

I. Certify True and Accurate. NAC 445B.3679.2(i)

A responsible official of the stationary source shall certify that, based on information and belief formed after reasonable inquiry, the statements made in any document required to be submitted by any condition of the Mercury Operating Permit to Construct are true, accurate and complete.

J. Yearly Reporting. NAC 445B.3679.3(b)(c)(d)

The Permittee will submit yearly reports including, but not limited to, throughput, production, fuel consumption, hours of operation, emissions and mercury co-product. These reports will be submitted on the form provided by the Bureau of Air Pollution Control for all emission units/systems specified on the form. The completed form must be submitted to the Bureau of Air Pollution Control no later than March 1 annually for the preceding calendar year, unless otherwise approved by the Bureau of Air Pollution Control.

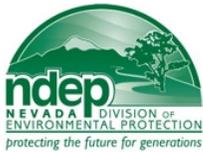
K. Facilities Operation. NAC 445B.227

The Permittee may not:

1. Operate a stationary source of air pollution unless the control equipment for air pollution that is required by applicable requirements or conditions of the Mercury Operating Permit to Construct are installed and operating.
2. Disconnect, alter, modify or remove any of the control equipment for air pollution or modify any procedure required by an applicable requirement or condition of the Mercury Operating Permit to Construct.

L. Excess Emissions. NAC 445B.232

1. Scheduled maintenance or testing or scheduled repairs which may result in excess emissions of regulated air pollutants prohibited by NAC 445B.001 to 445B.3689, inclusive, must be approved by the Director and performed during a time designated by the Director as being favorable for atmospheric ventilation.
2. The Director must be notified in writing of the time and expected duration at least 24 hours in advance of any scheduled maintenance which may result in excess emissions of regulated air pollutants prohibited by NAC 445B.001 to 445B.3689, inclusive.
3. The Director must be notified in writing or by telephone of the time and expected duration at least 24 hours in advance of any scheduled repairs which may result in excess emissions of regulated air pollutants prohibited by NAC 445B.001 to 445B.3689, inclusive.
4. The Director must be notified of any excess emissions within 24 hours after any malfunction or upset of the process equipment or equipment for controlling pollution or during startup or shutdown of such equipment. The telephone number for the notification is (775) 687-9350.
5. *The Permittee*, as the owner or operator of an affected facility, shall provide the Director, within 15 days after any malfunction, upset, startup, shutdown, or human error which results in excess emissions, sufficient information to enable the Director to determine the seriousness of the excess emissions. The information must include at least the following:
 - a. The identity of the stack or other point of emission, or both, where the excess emissions occurred.
 - b. The estimated magnitude of the excess emissions expressed in units of the applicable limitation on emission and the operating data and methods used in estimating the magnitude of the excess emissions.
 - c. The time and duration of the excess emissions.
 - d. The identity of the equipment causing the excess emissions.
 - e. If the excess emissions were the result of a malfunction, the steps taken to remedy the malfunction and the steps taken or planned to prevent the recurrence of the malfunction.
 - f. The steps taken to limit the excess emissions.
 - g. Documentation that the equipment for controlling air pollution, process equipment, or processes were at all times maintained and operated, to a maximum extent practicable, in a manner consistent with good practice for minimizing emissions.



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Section I. General Conditions (continued)

M. Construction Requirements. NAC 445B.250

1. Early Reduction Credit (ERC), New, or Modified Thermal Units

The Permittee shall provide the Director written notification of:

- a. The date that construction or reconstruction of an affected facility is commenced, postmarked no later than 30 days after such date. This requirement shall not apply to mass-produced facilities which are purchased in completed form.
- b. The anticipated date of initial startup of an affected facility, postmarked not more than 60 days and not less than 30 days prior to such date.
- c. The actual date of initial startup of an affected facility, postmarked within 15 days after such date.

N. Annual Testing. NAC 445B.3679.3

Before the conclusion of each calendar year, **the Permittee** shall:

- 1. Conduct and record a Method 29 (or alternative test method approved by the Director) compliance test for mercury on the exhaust stack of **System 66C** consisting of three valid runs. Each of the three test runs must collect a sample volume of 1.7 dry standard cubic meters (60 dscf) or be conducted for up to two hours in an effort to collect this sample volume (NAC 445B.3679.3).
- 2. Simultaneously, during the Method 29 (or alternative test method approved by the Director) compliance tests, conduct and record a material assay from **System 66C**. One representative sample shall be taken during each test run. Total mercury content shall be determined using EPA Method 7471B (cold vapor atomic adsorption analysis) (or alternative test method approved by the Director) (NAC 445B.3679.3).
- 3. Conduct tests of performance under such conditions as the Director specifies to the operator of the plant based on representative performance of the affected facility. The owner or operator shall make available to the Director such records as may be necessary to determine the conditions of the test of performance. Operations during periods of startup, shutdown and malfunction must not constitute representative conditions of a test of performance unless otherwise specified in the applicable standard (NAC 445B.252.3).
- 4. Give notice to the Director 30 days before the test of performance to allow the Director to have an observer present. A written testing procedure for the test of performance must be submitted to the Director at least 30 days before the test of performance to allow the Director to review the proposed testing procedures (NAC 445B.252.4).
- 5. Furnish the Director within 60 days after completing the performance tests a written and electronic report of the results of the performance tests. All information and analytical results of testing and sampling must be certified as to the truth and accuracy and as to their compliance with NAC 445B.001 to 445B.3689 (NAC 445B.252.8).

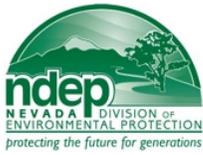
O. SIP Article 2.5.4 Federally Enforceable SIP Requirement.

Breakdown or upset, determined by the Director to be unavoidable and not the result of careless or marginal operations, shall not be considered a violation of these regulations.

P. Expiration and Extension. NAC 445B.3687

- 1. If construction will occur in one phase, a mercury operating permit to construct for a new or modified thermal unit that emits mercury expires if construction is not commenced within 18 months after the date of issuance thereof or construction of the thermal unit that emits mercury is delayed for 18 months after initiated. The Director may extend the date on which the construction may be commenced upon a showing that the extension is justified.
- 2. If construction will occur in more than one phase, the projected date of the commencement of construction of each phase of construction must be approved by the Director. A mercury operating permit to construct expires if the initial phase of construction is not commenced within 18 months after the projected date of the commencement of construction approved by the Director. The Director may extend only the date on which the initial phase of construction may be commenced upon a showing that the extension is justified.

***** **End of General Conditions** *****



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Section II. Specific Operating Conditions

C. Thermal Unit # 4.016 through 4.018 location North 4,536.01 km, East 554.73 km, UTM (Zone 11)

C. System 66C – Autoclaves		
TU	4.016	Autoclave Circuit # 4
TU	4.017	Autoclave Circuit # 5
TU	4.018	Autoclave Circuit # 6

1. Air Pollution Equipment

- a. Each Autoclave Circuit consists of the following:
 - i. Primary Splash Vessel
 - ii. Secondary Splash Vessel
 - iii. Autoclave
 - iv. Primary Flash Vessel
 - v. Secondary Flash Vessel
- b. Exhaust gases from the **Autoclaves** and **Primary and Secondary Splash Vessels** in **System 66C** shall be ducted to a control system with 100% capture consisting of:
 - i. **Primary Venturi Scrubbers (VS-004, VS-005, and VS-006)** – each autoclave has its own primary venturi scrubber. Exhaust gases from each autoclave are sent through their respective primary venturi scrubber before joining the exhaust gas from the secondary splash vessels. The combined gases are then ducted to the secondary venturi scrubber (VS-007).
 - ii. **Secondary Venturi Scrubber (VS-007)**
 - iii. **Gas Cooling Tower**
 - iv. **Ammonia Chilled Condenser**
 - v. **Humidity Control Heater**
 - vi. **Carbon Filter** – Two trains of carbon beds with each train consisting of a primary and secondary bed.
- c. Stack parameters
 - i. Height: 100 feet
 - ii. Diameter: 4.5 feet
 - iii. Temperature: approximately 110°F
 - iv. Exhaust gases from **System 66C** shall have a maximum volume flow rate of approximately 11,820 Dry Standard Cubic Feet per Minute (DSCFM).
 - v. Exhaust gases from **System 66C** are ducted to 1 stack.

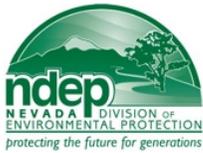
2. Construction Requirements (NAC 445B.250)

The *Permittee* shall provide the Director written notification of:

- a. The NvMACT for **System 66C** must be implemented no later than 24 months after the issuance date of this mercury operating permit to construct. (NAC445B.3679.3 (a) (2) (I))
- b. The date that construction of **System 66C** is commenced, postmarked no later than 30 days after such date.
- c. The anticipated date of initial startup of **System 66C**, postmarked not more than 60 days and not less than 30 days prior to such date.
- d. The actual date of initial startup of **System 66C**, postmarked within 15 days after such date.

3. Operating Requirements

- a. Limitations of Operation NAC 445B.3679(3)
 - i. The maximum allowable throughput rate of as fed ore for **TU4.016 through TU4.018** each shall not exceed 200.0 tons per any one-hour period.
 - ii. Mercury emissions from **System 66C** shall not exceed **7.8 x 10⁻⁵** grains per dry standard cubic foot (gr/dscf).
 - iii. **TU4.016 through TU4.018** each may operate a total of **8,760** hours per calendar year.



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Section II. Specific Operating Conditions (continued)

C. Thermal Unit #TU 4.016 through 4.018 (continued)

b. Work Practice Standards NAC 445B.3679(3)

i. Primary Venturi Scrubbers (VS-004, VS-005, and VS-006)

- (a) The pressure drop across each of the **Primary Venturi Scrubbers** shall be maintained at or below 70.0 inches of water, based on a one hour period.
- (b) The water flow rate to each of the **Primary Venturi Scrubbers** shall be maintained at or above 50.0 gallons per minute, based on a one hour period.

ii. Secondary Venturi Scrubber (VS-007)

- (a) The pressure drop across the **Secondary Venturi Scrubber** shall be maintained at or above 12 inches of water, based on a one hour period.
- (b) The water flow rate to the **Secondary Venturi Scrubber** shall be maintained at or above 2,000 gallons per minute, based on a one hour period.

iii. Gas Cooling Tower

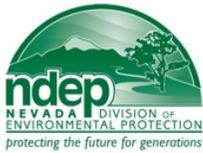
- (a) The water flow rate to the **Gas Cooling Tower** shall be maintained at or above 250 gallons per minute, based on a one hour period.

iv. Ammonia Chilled Condenser

- (a) The exhaust gas temperature at the outlet of the **Condenser** shall be maintained at or below 58°F, based on a one hour period. If at any time the gas temperature at the outlet of the condenser exceeds 58°F, an alarm shall sound and immediate corrective action shall be taken.
- (b) Condensed mercury from the **Condenser** shall be collected monthly.

v. Carbon Filter

- (a) The primary beds in the **Carbon Filter** combined shall contain no less than 12,000 pounds of sulfur-impregnated carbon.
- (b) The secondary beds in the **Carbon Filter** combined shall contain no less than 28,800 pounds of sulfur-impregnated carbon.
- (c) The pressure drop across the primary beds in the **Carbon Filter** shall be at or below 8 inches of water, based on a one hour period.
- (d) The pressure drop across the secondary beds in the **Carbon Filter** shall be at or below 20 inches of water, based on a one hour period.
- (e) The relative humidity entering the **Carbon Filter** shall not exceed 70%, based on a one hour period.
- (f) Replace the sulfur-impregnated carbon according to the following schedule:
 1. The carbon filter will include a sampling canister that will contain the equivalent carbon depth as the carbon filter. This canister will receive a slip stream of the process gas during operation of **System 66C**. Once every calendar quarter the sample canisters will be analyzed for mercury. The percentage of mercury by weight shall be calculated. The sampling canister will be analyzed quarterly until 70 % of the carbon loading capacity of 20% by weight, as specified by the manufacturer, is reached. Upon reaching 70% of the carbon loading capacity of 20% by weight, sampling of the canister will occur monthly until 75% of the carbon loading capacity of 20% by weight is reached. The carbon in the carbon filter will be replaced with an equivalent performing sulfur impregnated carbon no later than 30 days after reaching 75% of the carbon loading capacity of 20% by weight. The required mercury analysis shall be performed utilizing one of the following methods:
 - A. EPA method 6020-Inductively Coupled Plasma-Mass Spectrometry;
 - B. EPA method 7471B- Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique); or
 - C. An alternative test method as approved by the Director.
- (g) A halogen impregnated carbon may be used in place of the sulfur impregnated carbon upon approval by the Director. Halogen carbon shall follow the same sampling and change out schedule as sulfur impregnated carbon.



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Section II. Specific Operating Conditions (continued)

C. Thermal Unit #TU 4.016 through 4.018 (continued)

4. Compliance, Monitoring, Recordkeeping, and Reporting (NAC 445B.3379.3)

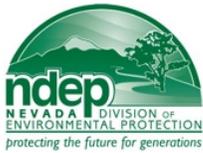
a. Compliance/Performance Testing

Within 180 days of the notification of initial startup of **System 66C** as required in C.2.d, of this section, **the Permittee** shall conduct and record a performance test for mercury on the exhaust stack of **System 66C** consisting of three valid runs utilizing US EPA Method 29 of 40 CFR part 60 Appendix A.

b. Monitoring

The Permittee, upon commencement of operation of **System 66C**, as established by Section II.C.2.d, shall:

- i. Prior to commencement of **System 66C**, install, operate, calibrate, and maintain an exhaust gas temperature alarm which will notify the operator when the exhaust gas from **Condenser** exceeds 58°F.
- ii. Monitor the throughput rate of acidic and alkaline **ore** each, in tons for each autoclave in **System 66C**. Acidic ore is defined as any ore whose carbonate/sulfide ratio is less than 3 following acidulation. Alkaline ore is any ore whose carbonate/sulfide ratio is greater than or equal to 3 following acidulation.
- iii. Monitor the daily hours of operation for each autoclave in **System 66C**.
- iv. Monitor the pressure drop in inches of water across each **Primary Venturi Scrubber** hourly, during operation.
- v. Monitor the water flow rate in gallons per minute to each **Primary Venturi Scrubber** hourly, during operation.
- vi. Monitor the pressure drop in inches of water across the **Secondary Venturi Scrubber** hourly, during operation.
- vii. Monitor the water flow rate in gallons per minute to the **Secondary Venturi Scrubber** hourly, during operation.
- viii. Monitor the water flow rate in gallons per minute to the **Gas Cooling Tower** hourly, during operation.
- ix. Monitor the exhaust gas temperature in degrees Fahrenheit at the outlet of the **Condenser** hourly, during operation.
- x. Monitor the mercury drained from the **Condenser**, monthly.
- xi. Monitor the pressure drop in inches of water across the primary beds in the **Carbon Filter** hourly, during operation.
- xii. Monitor the pressure drop in inches of water across the secondary beds in the **Carbon Filter** hourly, during operation.
- xiii. Monitor the relative humidity as a percent entering the **Carbon Filter** hourly, during operation.
- xiv. Monitor the **Carbon Filter** for percentage of mercury by weight, quarterly until reaching 70 percent capacity and then monthly until reaching 75 percent capacity.



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Section II. Specific Operating Conditions (continued)

C. Thermal Unit #TU 4.016 through 4.018 (continued)

c. Recordkeeping

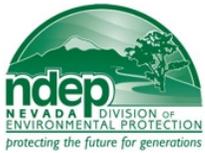
The required monitoring, established in Section C.4.b.i through xiv, shall be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:

- i. The calendar date of any required monitoring.
- ii. The total daily hours of operation, for each autoclave in **System 66C**, for the corresponding date.
- iii. The total daily throughput rate of **ore** in tons, for each autoclave in **System 66C**, for the corresponding date.
- iv. The corresponding average hourly throughput rate in tons per hour, for each autoclave in **System 66C**. The average hourly throughput rate will be determined from the total daily throughput rate (iii) and the total daily hours of operation (ii) above.
- v. The pressure drop in inches of water across each **Primary Venturi Scrubber** hourly, during operation, for the corresponding date.
- vi. The water flow rate in gallons per minute to each **Primary Venturi Scrubber** hourly, during operation, for the corresponding date.
- vii. The pressure drop in inches of water across the **Secondary Venturi Scrubber** hourly, during operation, for the corresponding date.
- viii. The water flow rate in gallons per minute to the **Secondary Venturi Scrubber** hourly, during operation, for the corresponding date.
- ix. The water flow rate to the **Gas Cooling Tower** hourly, during operation, for the corresponding date.
- x. The exhaust gas temperature in degrees Fahrenheit at the outlet of the **Condenser** hourly, during operation, for the corresponding date.
- xi. The amount of mercury drained from the **Condenser**, in pounds, monthly, for the corresponding date.
- xii. The pressure drop in inches of water across the primary beds in the **Carbon Filter** hourly, during operation, for the corresponding date.
- xiii. The pressure drop in inches of water across the secondary beds in the **Carbon Filter** hourly, during operation, for the corresponding date.
- xiv. The relative humidity as a percent entering the **Carbon Filter** hourly, during each operation.
- xv. The percentage of mercury by weight in the sulfur-impregnated carbon, for the corresponding date.
- xvi. The date, time, and weight of each replacement of the sulfur-impregnated carbon bed.
- xvii. The original manufacturer's design specifications for the sulfur impregnated carbon used in the **Carbon Filter** shall be kept on site.
- xviii. The date, time, and corrective action taken for an alarm notification, for the corresponding date.

d. Reporting

Permittee will promptly report to the Director any deviations from the requirements of the Operating Permit to Construct. The report to the Director will include probable cause of all deviations and any action taken to correct deviations. For this Operating Permit to Construct, prompt is defined as submittal of a report within 15 days of said deviation. This definition does not alter any reporting requirements as established for reporting of excess emissions as required under NAC 445B.232 and under condition I.L. of this permit.

***** **End of Specific Operating Conditions** *****



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Section III. Amendments

This permit:

1. Is non-transferable. (NAC 445B.287.3)
2. Will be posted conspicuously at or near the stationary source. (NAC 445B.318.5)
3. Any party aggrieved by the Department's decision to issue this permit may appeal to the State Environmental Commission (SEC) within ten days after the date of notice of the Department's action. (NRS 445B.340)

Signature _____

Issued by: Rob Bamford
Supervisor, Permitting Branch
Bureau of Air Pollution Control

Phone: (775) 687-9330 **Date:** August 19, 2010