

## BUREAU OF AIR POLLUTION CONTROL

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

**Facility ID No. A0387**

**Permit No. AP1041-2254**

### MERCURY OPERATING PERMIT TO CONSTRUCT: PHASE 2

**Issued to:** Marigold Mining Company (HEREINAFTER REFERRED TO AS *THE PERMITTEE*)

**Mailing Address:** P.O. Box 160; VALMY, NEVADA 89438

**Physical Address:** 4.0 MILES SOUTH OF I-80 AT THE VALMY INTERCHANGE (EXIT 216)

**General Facility Location:** SECTION 6 OF T32N, R43E, MDB&M  
 SECTIONS 4, 5, 8, 9, 16-20, 30 AND 31 OF T33N, R43E, MDB&M  
 SECTIONS 28, 32 AND 33 OF T34N 43E, MDB&M (HA 64) (HUMBOLDT COUNTY)  
 NORTH 4,511.00 KM, EAST 487.48 KM, UTM ZONE 11 (NAD 83)

**Thermal Unit List: (6 Thermal Units)**

**A. System 01 – Carbon Kiln**

TU	4.001	Carbon Kiln, manufactured by Lockheed Haggerty Engineering, Serial # 18775
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**B. System 02 – Refining Circuit**

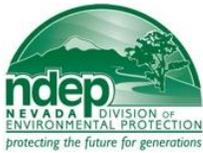
TU	4.002	Mercury Retort, manufactured by Custom Equipment Corporation, Serial # 370-555-03A
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TU	4.003	Tilting Crucible Furnace, manufactured by Custom Equipment Corporation, Serial # 134
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TU	4.004	Electrowinning Cells (3 Cells), manufactured by Scotia International, Equipment # 760-EWC-001, 760-EWC-002, 760-EWC-003
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TU	4.005	Pregnant Tank, manufactured by Scotia International, Equipment # 760-TNK-001
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TU	4.006	Barren Tank, manufactured by Scotia International, Equipment # 760-TNK-002
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# MERCURY OPERATING PERMIT TO CONSTRUCT: PHASE 2

Issued to: Marigold Mining Company

## 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.

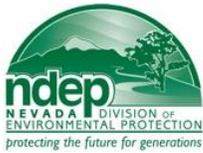
G. Information Request from Director. NAC 445B.3679.2(g)

*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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Facility ID No. A0387

Permit No. AP1041-2254

# MERCURY OPERATING PERMIT TO CONSTRUCT: PHASE 2

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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.

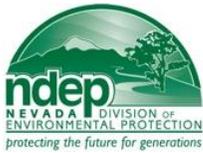
K. Facilities Operation. NAC 445B.227

**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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Facility ID No. A0387

Permit No. AP1041-2254

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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:

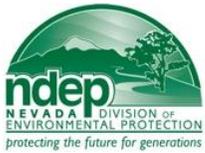
1. Conduct and record a Method 29 (or alternative test method approved by the Director) compliance tests for mercury on the exhaust stacks of **System 01 - 02** consisting of three valid runs. Each of the three test runs must collect a sample volume of 1.7 dry standard cubic meters (60 dscf) or be conducted for up to two hours in an effort to collect this sample volume (NAC 445B.3679.3). **System 02 shall be tested in accordance with II.B.3.a.**
2. Simultaneously, during the Method 29 (or alternative test method approved by the Director) compliance test, conduct and record a material assay from **System 01 - 02**. 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). **System 02 shall be tested in accordance with II.B.3.a.**
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)

1. 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.



**BUREAU OF AIR POLLUTION CONTROL**

**Facility ID No. A0387**

**Permit No. AP1041-2254**

**MERCURY OPERATING PERMIT TO CONSTRUCT: PHASE 2**

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**Section I. General Conditions (continued)**

Q. Nevada Mercury Control Program Implementation Requirements

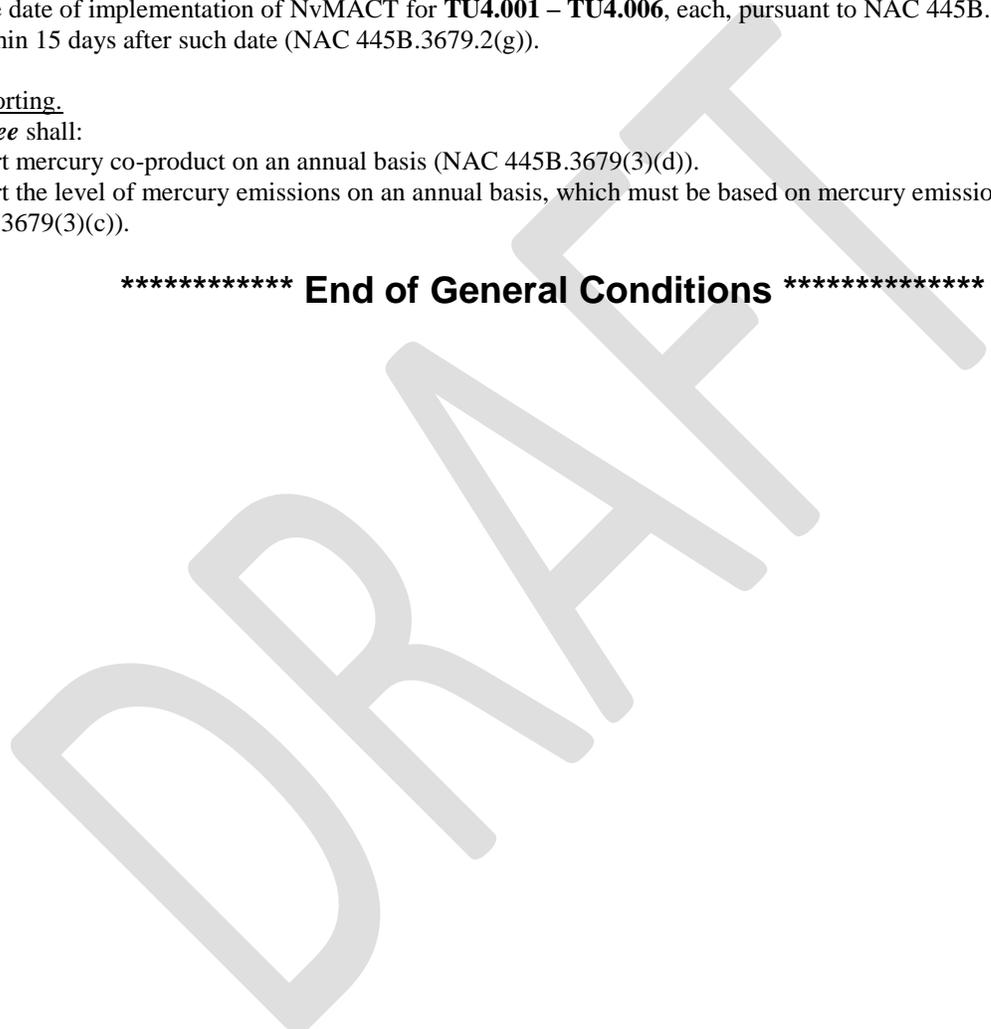
- 1. The NvMACT for **TU4.001 – TU4.006**, each must be implemented not later than 48 months after the issuance of this mercury operating permit to construct (NAC 445B.3679.3(a)(2)(II)).
  - a. The issuance date for **TU4.001 – TU4.006** is **month day year**.
- 2. The Permittee shall provide the Director written notification of:
  - a. The date of implementation of NvMACT for **TU4.001 – TU4.006**, each, pursuant to NAC 445B.3679.3(a)(2)(i) postmarked within 15 days after such date (NAC 445B.3679.2(g)).

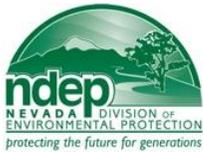
R. Annual Reporting.

*The Permittee shall:*

- 1. Report mercury co-product on an annual basis (NAC 445B.3679(3)(d)).
- 2. Report the level of mercury emissions on an annual basis, which must be based on mercury emissions test data (NAC 445B.3679(3)(c)).

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





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# MERCURY OPERATING PERMIT TO CONSTRUCT: PHASE 2

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## Section II. Specific Operating Conditions

A. Thermal Unit #TU4.001 stack location North 4,510.90 km, East 487.49 km, UTM (Zone 11)

### A. System 01 – Carbon Kiln

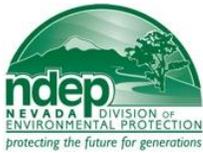
TU	4.001	Carbon Kiln, manufactured by Lockheed & Haggerty Engineering, Serial # 18775
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#### 1. Air Pollution Equipment

- a. Exhaust gases from **TU4.001** shall be ducted to a control system with 100% capture consisting of:
  - i. **Wet Scrubber (WS-001)** (*manufactured by Lockheed & Haggerty Engineering*)
  - ii. **Carbon Adsorption Unit (CA-001)** (*manufactured by Lockheed & Haggerty Engineering*)
- b. Stack parameters
  - i. Height: 55.0 ft.
  - ii. Diameter: 8 in.
  - iii. Stack temperature: 120°F
  - iv. Flow: Maximum volume flow rate of 1,500 dry standard cubic feet per minute (dscfm).

#### 2. Operating Requirements

- a. Limitations of operation. NAC 445B.3679.3
  - i. The maximum allowable throughput rate for **TU4.001** will not exceed **0.35** ton of strip circuit carbon per any one-hour period.
  - ii. The interim mercury emission limit during the demonstration period for establishment of the final mercury emission limit as established in Section II.A.3.e. for **TU4.001** shall not exceed **5.0 x 10<sup>-3</sup>** grains per dry standard cubic foot (gr/dscf).
  - iii. Hours  
**TU4.001** may operate a total of **8,760** hours per calendar year.
- b. Work practices. NAC 445B. 3679.3
  - i. Carbon Kiln (**TU4.001**):
    - (a) Perform a visual inspection of the kiln drum for cracks approximately every six months.
  - ii. Wet Scrubber (**WS-001**):
    - (a) The water flow rate for **WS-001** shall be maintained at or above **60** gallons per minute.
    - (b) Mercury from the mercury trap shall be collected monthly.



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Facility ID No. A0387

Permit No. AP1041-2254

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## Section II. Specific Operating Conditions (continued)

### A. Thermal Unit #TU4.001 (continued)

#### 2. Operating Requirements (continued)

##### iii. Carbon Adsorption Unit (CA-001):

- (a) CA-001 shall contain no less than 3.0 tons of sulfur impregnated carbon.
- (b) The differential pressure on CA-001 during operation of TU4.001 shall be maintained at or below -0.1 inches of water.
- (c) Replace the sulfur-impregnated carbon according to the following schedule:
  - i. The sulfur-impregnated carbon in CA-001 shall be sampled within 90 days after the notification of implementation of NvMACT operation for TU4.001 as required in Section I.Q. above. The depth of the sample location shall be recorded. If more than one sample is taken, calculate an average carbon loading from the samples. Using this sample the percentage of mercury by weight shall be calculated. Sampling will continue quarterly, at the same sample depth location, until 50% of the 20% by weight of the carbon loading capacity, as specified by the manufacturer, is reached. Upon reaching 50% of the 20% by weight of the carbon loading capacity, sampling of the carbon will occur monthly until 90% of the 20% by weight of the carbon loading capacity is reached. The carbon will be replaced with an equivalent performing sulfur impregnated carbon no later than 30 days after reaching 90% of the 20% by weight of the carbon loading capacity. The required mercury analysis shall be performed utilizing one of the following methods:
    1. EPA method 6020-Inductively Coupled Plasma-Mass Spectrometry;
    2. EPA method 7471B- Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique); or
    3. An alternative test method as approved by the Director.
  - (d) Any sulfur-impregnated carbon replaced in CA-001 shall be replaced with only the original manufacturer's design specification sulfur-impregnated carbon or with equivalent or better performing carbon.
  - (e) The original manufacturer's design specifications for the sulfur impregnated carbon used in CA-001 shall be kept on site.

#### 3. Monitoring, Recordkeeping, Reporting and Testing (NAC 445B. 3679.3)

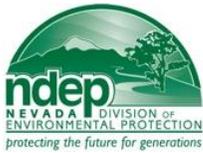
##### a. Compliance Testing

Within 180 days of the implementation of NvMACT for System 01 as required in Section I.Q., the Permittee shall conduct and record a performance test for mercury on the exhaust stack of System 01 consisting of three valid runs utilizing US EPA Method 29 of 40 CFR part 60 Appendix A.

##### b. Monitoring

The Permittee shall:

- i. Prior to implementation of NvMACT for System 01, install, operate, calibrate, and maintain instrumentation to measure and record the following:
  - (a) The water flow rate of WS-001, in gallons per minute.
  - (b) The differential pressure across CA-001, in inches of water.
- ii. Monitor the throughput rate of strip circuit carbon in tons for TU4.001 on a daily basis.
- iii. Monitor the hours of operation for TU4.001 on a daily basis.
- iv. Monitor the water flow rate in gallons per minute for WS-001 once per day during TU4.001 operation.
- v. Monitor the differential pressure in inches of water for CA-001 once per day during TU4.001 operation.



## BUREAU OF AIR POLLUTION CONTROL

Facility ID No. A0387

Permit No. AP1041-2254

# MERCURY OPERATING PERMIT TO CONSTRUCT: PHASE 2

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## Section II. Specific Operating Conditions (continued)

### A. Thermal Unit #TU4.001 (continued)

#### 3. Monitoring, Recordkeeping, Reporting and Testing (continued)

##### c. Recordkeeping

The required monitoring established in Section II.A.3.b.i, through Section II.A.3.b.v, above will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:

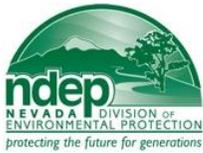
- i. The calendar date of any required monitoring.
- ii. The total daily throughput rate of strip circuit carbon in tons, for the corresponding date.
- iii. The total daily hours of operation for the corresponding date.
- iv. The results of the kiln drum inspections.
- v. The water flow rate for **WS-001**, in gallons per minute, for the corresponding date.
- vi. The amount of mercury collected from the mercury trap, in pounds, for the corresponding date.
- vii. The differential pressure for **CA-001**, in inches of water, for the corresponding date.
- viii. The percentage of mercury by weight in the sulfur-impregnated carbon, for the corresponding date.
- ix. The depth of the sample location in **CA-001** from the mercury analysis, for the corresponding date.
- x. The date, time, and weight of each sulfur-impregnated carbon replacement for **CA-001**, for the corresponding date.

##### d. Reporting

*Permittee* will promptly report to the Director any emissions and or throughput exceedences from 2.a of this section. The report to the Director will include probable cause and any action taken to correct the exceedence. 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.

##### e. Performance Testing

- i. Upon the date of notification of the implementation of NvMACT, *the Permittee*, shall begin a performance demonstration period for the establishment of a mercury emissions limit for **TU4.001**, which shall consist of (6) consecutive Method 29 source tests at approximate 6-month intervals. The performance demonstration period shall provide emissions data for the establishment of a final NvMACT mercury emission limit for **TU4.001**.
- ii. *The Permittee* shall submit a test protocol and receive NDEP protocol approval for each performance demonstration test. Performance tests must be performed at conditions that the Director deems representative of normal operations. Only NDEP-validated tests may be used for the establishment of a final NvMACT mercury emission limit for **TU4.001**.
- iii. *The Permittee* shall provide in each validated performance test report the records of all operating parameters and work practice standards required in the Phase-2 Mercury Operating Permit to Construct as monitored and recorded during each corresponding test of performance. Material sampling must be performed pursuant to the NDEP approved protocol.
- iv. Within 30-days of receiving a complete stack test report, the Director shall complete a review of the stack test report and provide written notification to *the Permittee* with determination of applicability for the performance demonstration, pursuant to the NDEP approved test protocol.
- v. The final NvMACT mercury emission limit shall be calculated as the maximum test value from the (6) corresponding NDEP-validated performance demonstration tests plus one standard deviation in gr/dscf mercury. The standard deviation value shall be calculated from the (6) corresponding NDEP-validated performance demonstration test values.
- vi. The final NvMACT mercury emission limit shall be the applicable mercury emission limit permit requirement for the Phase-2 Mercury Operating Permit to Construct expressed as gr/dscf mercury.
- vii. A validated performance demonstration test may be used for the purpose of annual mercury emissions testing.



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Facility ID No. A0387

Permit No. AP1041-2254

## MERCURY OPERATING PERMIT TO CONSTRUCT: PHASE 2

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### Section II. Specific Operating Conditions (continued)

B. Thermal Units #TU4.002 – TU4.006 location North 4,510.90 km, East 487.49k m, UTM (Zone 11)

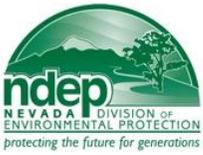
B. System 02 – Refining Circuit		
TU	4.002	Mercury Retort, manufactured by Custom Equipment Corporation, Serial # 370-555-03A
TU	4.003	Tilting Crucible Furnace, manufactured by Custom Equipment Corporation, Serial # 134
TU	4.004	Electrowinning Cells (3 Cells), manufactured by Scotia International, Equipment # 760-EWC-001, 760-EWC-002, 760-EWC-003
TU	4.005	Pregnant Tank, manufactured by Scotia International, Equipment # 760-TNK-001
TU	4.006	Barren Tank, manufactured by Scotia International, Equipment # 760-TNK-002

#### 1. Air Pollution Equipment

- a. Exhaust gases from **TU4.002** shall be ducted to a control system with 100% capture consisting of:
  - i. **Mercury Condenser: (CO-001)** (*manufactured by Scotia International*)
- b. Exhaust gases from **TU4.002 (after CO-001), TU4.003, TU4.004, TU4.005 and TU4.006** shall be ducted to a common control system with 100% capture consisting of:
  - i. **Carbon Adsorption Unit: (CA-002)** (*manufactured by Scotia International*)
- c. Stack parameters
  - i. Height: 55.0 ft.
  - ii. Diameter: 10 in.
  - iii. Stack temperature: 100°F
  - iv. Flow: Maximum volume flow rate of 3,000 dry standard cubic feet per minute (dscfm).
  - v. **TU4.002 through TU4.006** are ducted to a common exhaust stack.

#### 2. Operating Requirements

- a. Limitations of operation. NAC 445B.3679.3
  - i. The interim mercury emission limit during the demonstration period for establishment of the final mercury emission limit as established in Section II.B.3.e. for **TU4.002 and TU4.004 – TU4.006 combined** shall not exceed **5.0 x 10<sup>-3</sup>** grains per dry standard cubic foot (gr/dscf)
  - ii. The interim mercury emission limit during the demonstration period for establishment of the final mercury emission limit as established in Section II.B.3.e. for **TU4.003 and TU4.004 – TU4.006 combined** shall not exceed **5.0 x 10<sup>-3</sup>** grains per dry standard cubic foot (gr/dscf)
  - iii. Mercury Retort (**TU4.002**):
    - (a) The maximum allowable throughput for **TU4.002** will not exceed **0.25** ton of precious metal concentrate per batch.
    - (b) Precious metal concentrate fed into the retorts is defined as the following:
      - 1. Precious metal concentrate recovered from the process of electrowinning;
      - 2. Precious metal concentrate recovered from the Merrill-Crowe process;
      - 3. Precious metal concentrate recovered from flotation and gravity separation, and;
      - 4. Precious metal concentrate recovered from the wash-down of equipment or surfaces that have been in contact with precious metal concentrate.
    - (c) Hours
      - 1. **TU4.002** may operate **24** hours per day.
      - 2. **TU4.002** will not operate in excess of **2,340** hours per calendar year.



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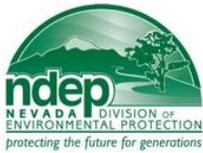
Issued to: Marigold Mining Company

## Section II. Specific Operating Conditions (continued)

### B. Thermal Units #TU4.002 – TU4.006 (continued)

#### 2. Operating Requirements (continued)

- iv. Tilting Crucible Furnace (TU4.003):
  - (a) The maximum allowable throughput for TU4.003 will not exceed 0.26 ton of retorted precious metal concentrate per batch.
  - (b) Hours
    - 1. TU4.003 will not operate in excess of 12 hours per day.
    - 2. TU4.003 will not operate in excess of 1,200 hours per calendar year.
- v. Electrowinning Cells (3 Cells) (TU4.004):
  - (a) The maximum allowable throughput rate of precious metal bearing material for TU4.004 will not exceed 70 gallons per minute.
  - (b) Hours  
TU4.004 may operate a total of 8,760 hours per calendar year.
- vi. Pregnant Tank (TU4.005):
  - (a) The maximum allowable throughput rate of precious metal bearing material for TU4.005 will not exceed 70 gallons per minute.
  - (b) Hours  
TU4.005 may operate a total of 8,760 hours per calendar year.
- vii. Barren Tank (TU4.006):
  - (a) The maximum allowable throughput rate of precious metal bearing material for TU4.006 will not exceed 70 gallons per minute.
  - (b) Hours  
TU4.006 may operate a total of 8,760 hours per calendar year.
- c. Work practices. NAC 445B.3679.3
  - i. Mercury Retort (TU4.002):
    - (a) An interlock will shut down TU4.002 when water flow to CO-001 is not present.
    - (b) TU4.002 shall be operated under negative pressure while heating.
    - (c) The negative vacuum pressure for TU4.002 shall be maintained between 4 to 12 inches of water during operation.
  - ii. Electrowinning Cells (TU4.004):
    - (a) Lids for TU4.004 shall be closed during operation and the exhaust ducted directly to CA-002.
  - iii. Mercury Condenser (CO-001):
    - (a) CO-001 will be drained of mercury monthly.
    - (b) The water temperature exiting CO-001 shall be maintained at or below 95°F.



## BUREAU OF AIR POLLUTION CONTROL

Facility ID No. A0387

Permit No. AP1041-2254

# MERCURY OPERATING PERMIT TO CONSTRUCT: PHASE 2

Issued to: Marigold Mining Company

## Section II. Specific Operating Conditions (continued)

### B. Thermal Units #TU4.002 – TU4.006 (continued)

#### 2. Operating Requirements (continued)

##### vii. Carbon Adsorption Unit (CA-002):

- (a) CA-002 shall contain no less than **3.0** tons of sulfur impregnated carbon.
- (b) The differential pressure on CA-002 during operation of **TU4.002 through TU4.006** shall be maintained at or below **14** inches of water.
- (c) Replace the sulfur-impregnated carbon according to the following schedule:
  - i. The sulfur-impregnated carbon in CA-002 shall be sampled within 90 days after the notification of implementation of NvMACT operation for **TU4.002 through TU4.006** as required in Section I.Q. above. The depth of the sample location shall be recorded. If more than one sample is taken, calculate an average carbon loading from the samples. Using this sample the percentage of mercury by weight shall be calculated. Sampling will continue quarterly, at the same sample depth location, until 50 % of the 20% by weight of the carbon loading capacity, as specified by the manufacturer, is reached. Upon reaching 50% of the 20% by weight of the carbon loading capacity, sampling of the carbon will occur monthly until 90% of the 20% by weight of the carbon loading capacity is reached. The carbon will be replaced with an equivalent performing sulfur impregnated carbon no later than 30 days after reaching 90% of the 20% by weight of the carbon loading capacity. The required mercury analysis shall be performed utilizing one of the following methods:
    1. EPA method 6020-Inductively Coupled Plasma-Mass Spectrometry;
    2. EPA method 7471B- Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique); or
    3. An alternative test method as approved by the Director.
  - (d) Any sulfur-impregnated carbon replaced in CA-002 shall be replaced with only the original manufacturer's design specification sulfur-impregnated carbon or with equivalent or better performing carbon.
  - (e) The original manufacturer's design specifications for the sulfur impregnated carbon used in CA-002 shall be kept on site.

#### 3. Monitoring, Recordkeeping, Reporting and Performance Testing (NAC 445B.3679.3)

##### a. Compliance Testing

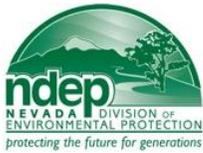
Within 180 days of the implementation of NvMACT for **System 02** as required in Section I.Q., the Permittee shall conduct and record a performance test for mercury on the exhaust stack of **System 02** consisting of three valid runs utilizing US EPA Method 29 of 40 CFR part 60 Appendix A. Testing shall be conducted in the following manner:

- i. **TU4.002** and **TU4.004 – TU4.006** shall be tested simultaneously for **System 02**.
- ii. **TU4.003** and **TU4.004 – TU4.006** shall be tested simultaneously for **System 02**.

##### b. Monitoring

The *Permittee* shall:

- i. Prior to implementation of NvMACT for **System 02**, install, operate, calibrate, and maintain instrumentation to measure and record the following:
  - (a) The vacuum gauge pressure of **TU4.002**, in inches of water column.
  - (b) The water temperature exiting from **CO-001**, in degrees Fahrenheit.
  - (c) The differential pressure across **CA-002**, in inches of water.
- ii. Install, operate, calibrate, and maintain an interlock to shut down **TU4.002** when water flow to **CO-001** is not present.
- iii. Monitor the batch weight of precious metal concentrate in tons for **TU4.002** on a daily basis.
- iv. Monitor the hours of operation for **TU4.002** on a daily basis.
- v. Monitor the vacuum gauge pressure in inches of water for **TU4.002** once per day during batch operation.
- vi. Monitor the water temperature in degrees Fahrenheit exiting **CO-001** once during batch operation for **TU4.002**.



## BUREAU OF AIR POLLUTION CONTROL

Facility ID No. A0387

Permit No. AP1041-2254

# MERCURY OPERATING PERMIT TO CONSTRUCT: PHASE 2

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## Section II. Specific Operating Conditions (continued)

### B. Thermal Units #TU4.002 – TU4.006 (continued)

#### 3. Monitoring, Recordkeeping, Reporting and Performance Testing (continued)

- vii. Monitor the batch weight of precious metal concentrate in tons for **TU4.003** on a daily basis.
- viii. Monitor the hours of batch operation for **TU4.003** on a daily basis.
- ix. Monitor the throughput rate of precious metal bearing solution in gallons per minute for **TU4.004** once per day.
- x. Monitor the hours of operation for **TU4.004** on a daily basis.
- xi. Monitor the throughput rate of precious metal bearing solution in gallons per minute for **TU4.005** once per day.
- xii. Monitor the hours of operation for **TU4.005** on a daily basis.
- xiii. Monitor the throughput rate of precious metal bearing solution in gallons per minute for **TU4.006** once per day.
- xiv. Monitor the hours of operation for **TU4.006** on a daily basis.
- xv. Monitor the differential pressure in inches of water for **CA-002** once per day.

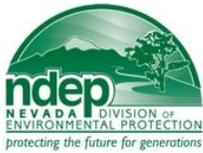
#### c. Recordkeeping

The required monitoring established in Section II.B.3.b.i, through Section II.B.3.b.xvi, above will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:

- i. The calendar date of any required monitoring.
- ii. The batch weight of precious metal concentrate for **TU4.002** in tons, for the corresponding date.
- iii. The hours of batch operation for **TU4.002** for the corresponding date.
- iv. The vacuum gauge pressure for **TU4.002** once per day during batch operation for the corresponding date.
- v. The water temperature exiting **CO-001** once per batch operation for the corresponding date.
- vi. The batch weight of precious metal concentrate for **TU4.003** in tons, for the corresponding date.
- vii. The hours of batch operation for **TU4.003** for the corresponding date.
- viii. The throughput rate of precious metal solution for **TU4.004** in gallons per minute, for the corresponding date.
- ix. The hours of operation for **TU4.004** for the corresponding date.
- x. The throughput rate of precious metal solution for **TU4.005**, in gallons per minute, for the corresponding date.
- xi. The hours of operation for **TU4.005** for the corresponding date.
- xii. The throughput rate of precious metal solution for **TU4.005**, in gallons per minute, for the corresponding date.
- xiii. The hours of operation for **TU4.005** for the corresponding date.
- xiv. The differential pressure in inches of water for **CA-002** once per batch, for the corresponding date.
- xv. The percentage of mercury by weight in the sulfur-impregnated carbon, for the corresponding date.
- xvi. The depth of the sample location in **CA-002** from the mercury analysis, for the corresponding date.
- xvii. The date, time, and weight of each sulfur-impregnated carbon replacement for **CA-002**, for the corresponding date.

#### d. Reporting

*Permittee* will promptly report to the Director any emissions and or throughput exceedences from 2.a of this section. The report to the Director will include probable cause and any action taken to correct the exceedence. 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.



## BUREAU OF AIR POLLUTION CONTROL

Facility ID No. A0387

Permit No. AP1041-2254

### MERCURY OPERATING PERMIT TO CONSTRUCT: PHASE 2

Issued to: Marigold Mining Company

## Section II. Specific Operating Conditions (continued)

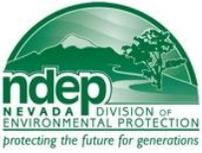
### B. Thermal Units #TU4.002 – TU4.006 (continued)

#### 3. Monitoring, Recordkeeping, Reporting and Performance Testing (continued)

##### e. Performance Testing

- i. Upon the date of notification of implementation of NvMACT, *the Permittee*, shall begin a performance demonstration period for the establishment of a mercury emissions limits for **TU4.002, TU4.004 – TU4.006 combined, and TU4.003, TU4.004 – TU4.006 combined**, which shall consist of (6) consecutive Method 29 source tests at approximate 6-month intervals. The performance demonstration period shall provide emissions data for the establishment of final NvMACT mercury emission limits.
- ii. *The Permittee* shall submit a test protocol and receive NDEP protocol approval for each performance demonstration test. Performance tests must be performed at conditions that the Director deems representative of normal operations. Only NDEP-validated tests may be used for the establishment of final NvMACT mercury emission limits.
- iii. *The Permittee* shall provide in each validated performance test report the records of all operating parameters and work practice standards required in the Phase-2 Mercury Operating Permit to Construct as monitored and recorded during each corresponding test of performance. Material sampling must be performed pursuant to the NDEP approved protocol.
- iv. Within 30-days of receiving a complete stack test report, the Director shall complete a review of the stack test report and provide written notification to *the Permittee* with determination of applicability for the performance demonstration, pursuant to the NDEP approved test protocol.
- v. The final NvMACT mercury emission limits shall be calculated as the maximum test value from the (6) corresponding NDEP-validated performance demonstration tests plus one standard deviation in gr/dscf mercury. The standard deviation value shall be calculated from the (6) corresponding NDEP-validated performance demonstration test values.
- vi. The final NvMACT mercury emission limits shall be the applicable mercury emission limit permit requirement for the Phase-2 Mercury Operating Permit to Construct expressed as gr/dscf mercury.
- vii. A validated performance demonstration test may be used for the purpose of annual mercury emissions testing.

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



**BUREAU OF AIR POLLUTION CONTROL**

**Facility ID No. A0387**

**Permit No. AP1041-2254**

**MERCURY OPERATING PERMIT TO CONSTRUCT: PHASE 2**

Issued to: Marigold Mining Company

**Section III. Amendments**

**DRAFT**

**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 DRAFT  
 Issued by: Jonathan McRae, P.E.  
 Supervisor, Permitting Branch  
 Bureau of Air Pollution Control

Phone: (775) 687-9337 Date: \_\_\_\_\_