

ERM-West, Inc.  
136 E South Temple, Suite 2150  
Salt Lake City, UT 84111  
Telephone: (801) 204-4300  
Fax: (801) 595-8484  
www.erm.com



**INTERNATIONAL CYANIDE MANAGEMENT CODE  
MINING OPERATION RECERTIFICATION AUDIT  
NEWMONT PHOENIX COMPLEX**

**SUMMARY AUDIT  
REPORT**

*Submitted to:*

*International Cyanide Management Institute  
1400 I Street NW, Suite 550  
Washington, D.C. 20005*

*and*

*Newmont Phoenix Complex  
Post Office Box 1657  
Battle Mountain, NV 89820  
United States of America*

*Submitted by:*

*ERM-West, Inc.*

*136 E South Temple Street, Suite 2150  
Salt Lake City, Utah 84111*

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### LOCATION AND DESCRIPTION OF OPERATION

Name of Project: Phoenix Complex

Project Owner / Operator: Newmont

Name of Responsible Manager: Mark Evatz

Address and Contact Information: Newmont Phoenix Complex, Post Office Box 1657, Battle Mountain, NV 89820, United States of America

[mark.evatz@newmont.com](mailto:mark.evatz@newmont.com)

Newmont USA Limited (Newmont) operates the Phoenix Complex consisting of the Phoenix and Lone Tree Mines. The two mines operate in conjunction with each other sharing staff and resources.

#### **Phoenix Mine**

The Phoenix Mine is located in Lander County, Nevada approximately 12 miles to the southwest of the community of Battle Mountain via Interstate Highway 80 and Nevada State Highway 306. It includes the Phoenix, Midas, Reona, and Iron Canyon open pits and excavation of the existing Northeast Extension, Tomboy, Midas, and Fortitude gold ore stockpiles.

The Phoenix Mill, constructed in 2005, is designed for the beneficiation of 35,000 tons per day of run-of-mine grade ores from the mining operations. Gold, silver, and copper are recovered by: (1) coarse gold recovery by gravity separation; (2) two-stage flotation to produce a copper sulfide concentrate for offsite processing; and (3) further processing of the flotation tailings using a carbon-in-pulp leach (CIP) circuit for additional gold and silver recovery. Gravity concentrates are diverted to an intensive cyanidation unit (ICU) for gold recovery.

Cyanide and lime are added to the CIP leach tanks for precious metal dissolution. The CIP leach tanks discharge to the CIP leach circuit, where dissolved precious metals are adsorbed onto activated carbon particles. Loaded carbon is collected for stripping and the tails slurry passes through an ammonium bisulfite (ABS) cyanide destruction circuit prior to discharge to the tailings storage facility (TSF). Loaded carbon is transferred from the mill CIP leach circuit by pipeline. The carbon is washed with hydrochloric acid in the acid wash tank, neutralized with caustic soda, and pumped to the strip vessel. Copper is removed from the carbon by an ambient temperature cyanide rinse and the resulting rinse solution is pumped to the CIP circuit. Following the cyanide rinse for copper, the carbon is stripped of precious metals with a hot caustic solution. Barren carbon is conveyed through a regeneration kiln and the activated product is mixed with fresh make-up carbon and pumped to the CIP agitator tank for reintroduction into the CIP recovery circuit.

Pregnant solution from the carbon stripping process is pumped through a circuit comprised of electrowinning cells. The electrowinning precipitate is filtered, heated in a retort to dry the product, and then shipped to Newmont facilities at Twin Creeks or the Carlin complex for refining of precious metals.

Tailings slurry is conveyed by gravity from the Phoenix Mill to the TSF through a 20-inch diameter slurry pipeline. Reclaim water reports to the Reclaim Pond, which is lined and contains a leak detection system. Reclaim water is pumped back to the Phoenix mill via a pipeline that shares a common corridor with the slurry pipeline. Both pipelines are largely constructed above ground.

Historic tailings impoundments on site consist of two separate impoundments separated by an east-west earthen embankment. The northern portion of the impoundment was developed first and was used to contain tailings from the historic copper milling process until being filled in 1970. The southern portion of the impoundment was

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constructed in 1972, to store copper tailings and gold tailings from the more recent gold mining and milling operations. Neither impoundment was constructed with an engineered liner. The Phoenix Project consists of a constructed lined tailings impoundment over the existing northern copper tailings impoundment. The synthetic-lined impoundment basin is covered with a minimum 18-inch thick cover of locally borrowed alluvial silty sand and gravel to protect the synthetic liner and to provide relief for hydraulic head pressure and promote solution collection and flow into an underdrain system. The southern portion of the historic impoundment has been covered for closure.

The Phoenix cyanide facilities are largely unchanged from the previous audits. However, there are two new or changed cyanide facilities for this audit cycle:

- Completion of Stage 6 and RE 4953 of the tailings impoundment.
- Tailings Delivery Secondary Containment Concrete Slab (modification of the tailings piping at the mill).

The Reona Heap Leach continues to be permanently inactive and no longer receives process solution, as was the case during the previous audits. It has been demonstrated that the concentration of weak acid dissociable (WAD) cyanide in the residual solution is continuously below 0.5 mg/L and the facility is not considered a “cyanide facility”.

### Lone Tree Mine

The Lone Tree Mine (Lone Tree) is located in Humboldt County, Nevada approximately 30 miles to the west of the community of Battle Mountain and immediately to the south of Interstate 80. Newmont operates the Lone Tree Mine in conjunction with the nearby Phoenix Mine.

The Lone Tree Mine consists of reclaimed overburden and waste rock stockpiles; an inactive mill; a reclaimed TSF with an active seepage control pond; an inactive open pit with a pit lake; an active Heap Leach Facility (HLF) with seven phases and three ponds; a CIC building with one active train and two inactive trains; a separate outdoor CIC train; a precipitation circuit; an offload for liquid cyanide; administration building; maintenance facilities; and access and haul roads. The Hydro-Jex system to inject barren solution into the HLF for re-leaching is no longer in use. Carbon with gold values is loaded into trucks at the Carbon in Column (CIC) building for transport to the Phoenix Mine for additional processing; no stripping or refining occurs at Lone Tree Mine.

The Lone Tree Mine is re-locating leached ore from certain phases of the HLF and placing it on other phases for re-leaching, as well as adding new ore from the nearby Brooks Expansion. Mining at the Brooks Expansion started in 2016 and is scheduled to continue for a year or two. All of the active cyanide facilities are located near the HLF.

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**CERTIFICATION**

Audit Company: ERM-West, Inc.  
Audit Team Leader: Brent C. Bailey, P.E., CEA  
E-mail: brent.bailey@erm.com  
Audit Dates: May 21-24, 2018

I attest that I meet the criteria for knowledge, experience and conflict of interest for Code Verification Audit Team Leader, established by the International Cyanide Management Institute (ICMI) and that all members of the audit team meet the applicable criteria established by the International Cyanide Management Institute for Code Verification Auditors.

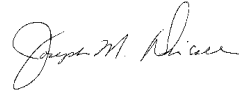
I attest that this Summary Audit Report accurately describes the findings of the verification audit. I further attest that the verification audit was conducted in a professional manner in accordance with the International Cyanide Management Institute, Mining Operations Verification Protocol (February 2018) and Auditors Guidance for Use of the Mining Operations Verification Protocol (February 2018) and using standard and accepted practices for health, safety and environmental audits.

Brent C. Bailey  
Name of Lead Auditor

  
Signature

October 24, 2018  
Date

Joe Driscoll  
Name of Auditor

  
Signature

October 24, 2018  
Date

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**SUMMARY OF FINDINGS**

**The operation is**  **in full compliance with**  
 in substantial compliance with **All Code Principles**  
 not in compliance with

The Phoenix Complex was found to be in Full Compliance with the International Cyanide Management Code. The Phoenix Complex has not experienced regulatory compliance problems during the previous three-year audit cycle.

**ICMI STANDARDS OF PRACTICE**

**1.0 PRODUCTION: Encourage responsible cyanide manufacturing by purchasing from manufacturers who operate in a safe and environmentally protective manner**

***Standard of Practice 1.1: Purchase cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide, and to prevent releases of cyanide to the environment.***

**Audit Finding:**

**The operation is**  **in full compliance with**  
 in substantial compliance with **Standard of Practice 1.1**  
 not in compliance with

The operation is in full compliance with Standard of Practice 1.1. The Phoenix Complex purchases cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide, and to prevent releases of cyanide to the environment.

**Basis for Audit Finding:**

The Phoenix Complex purchases cyanide from Cyanco Company, L.L.C. (Cyanco), located in Winnemucca, Nevada, The current contract between Newmont and Cyanco was signed in 2016 and with subsequent amendments later in 2016, 2017, and 2018. Provisions of the agreement (and amendments) states "...that the part(ies) shall...comply with the cyanide code's principles and standards of practice as published and amended by the International Cyanide Code (ICMC)." Cyanco's production facility was initially certified as compliant by the ICMI on October 11, 2006, and fully recertified February 2, 2010, July 12, 2013, and November 22, 2016.

In a Memorandum, Newmont states that "Cyanide for the Newmont...(Phoenix Complex)...has been exclusively manufactured by Cyanco...since January 1, 2015."



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**2.0 TRANSPORTATION: Protect communities and the environment during cyanide transport**

***Standard of Practice 2.1: Establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.***

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 2.1**
- not in compliance with

The operation is in full compliance with Standard of Practice 2.1. The Phoenix Complex has established clear lines of responsibility for safety, security release prevention, training and emergency response in written agreements with producers, distributors, and transporters.

**Basis for Audit Finding:**

Cyanco is the producer and supplier for the Phoenix Complex and Cyanco uses TransWood as the only transporter of cyanide from their operation to the Phoenix Complex. TransWood is a signatory to the Code and was recertified as fully compliant with the Code on January 12, 2017. As signatories to the Code, Cyanco and TransWood have been certified as conducting their operations in a manner that conforms to the Code's requirements for packaging, labeling, storage, transportation, unloading, safety, security, training, and emergency response. The contract between Newmont (Phoenix Complex) and Cyanco requires Cyanco to utilize an ICMC certified transporter for product delivery.

***Standard of Practice 2.2: Require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.***

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 2.2**
- not in compliance with

The operation is in full compliance with Standard of Practice 2.2. The Phoenix Operation requires cyanide transporters to implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.

**Basis for Audit Finding:**

The purchase and sales agreement between the Phoenix Complex and Cyanco (effective from January 1, 2016 to December 31, 2020) states that Cyanco shall utilize an ICMI transporter. Cyanco uses TransWood as the only transporter of cyanide from their operation to The Phoenix Complex. TransWood is a signatory to the Code and was most recent recertified as fully compliant with the Code on January 12, 2017.

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Bills of Lading for cyanide delivered to the Phoenix Complex demonstrate that the cyanide was produced by Cyanco and transported by TransWood. Neither Cyanco nor TransWood use interim storage facilities. TransWood is the only transporter used by Cyanco to transport cyanide from their facility.

**3.0 HANDLING AND STORAGE: Protect workers and the environment during cyanide handling and storage**

***Standard of Practice 3.1: Design and construct unloading, storage and mixing facilities consistent with sound, accepted engineering practices, quality control/quality assurance procedures, spill prevention and spill containment measures.***

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 3.1**
- not in compliance with

The operation is in full compliance with Standard of Practice 3.1. The Phoenix Complex has designed and constructed unloading, storage and mixing facilities consistent with sound accepted engineering practices, quality control/quality assurance procedures, spill prevention, and spill containment measures.

**Basis for Audit Finding:**

The Phoenix Complex has cyanide unloading and storage facilities at both the Phoenix Mine and the Lone Tree Mine that were designed and constructed in accordance with sound and accepted engineering practices. This was verified during the initial certification audits for the Phoenix and Lone Tree Mines. No changes or modifications have been made since the initial audit and subsequent recertification audits.

The Phoenix and Lone Tree Mines unloading and storage facilities are located outside with adequate ventilation. The location of these facilities has not changed since the initial certification audits and subsequent recertification audits. These facilities are not located near any offices or places where workers might congregate. Although the unloading and storage facilities are not within their own fenced areas, they are located within the fenced and secured areas of the mine where public access is controlled. The Phoenix Complex is located in an arid area and there is no surface water in the vicinity.

The Complex's off-load areas have concrete pads for the trucks carrying liquid cyanide. These pads are constructed with cast-in-place reinforced concrete to prevent seepage to the subsurface. They are sloped to sumps to collect spillage. The pads and sumps have capacity for approximately 5,000 gallons that would contain the contents of most cyanide deliveries to the mines. In the event of spillage onto the offload pads, whether a partial load or a load exceeding 5,000 gallons, the operations would implement emergency response procedures and corresponding remediation measures. The concrete pads and sumps were observed to be in good condition.

The reliability and the functionality of the level alarms are maintained through checks of tank level, checks for the offloads, and routine testing and monitoring by the operations. Immediate attention and repair is given for an improper functioning high-level alarm.

Both the Phoenix and Lone Tree Mines cyanide storage tanks have ultrasonic level indicators and high level alarms. The offload standard procedure is designed prevent overfilling the tanks. The operators verify that the tank levels are low enough to receive the expected delivery. In addition, the cyanide supplier, Cyanco, has

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remote telemetry monitoring of the cyanide tank levels to track cyanide usage and inventory, allowing them to dispatch cyanide loads when needed. The cyanide delivery driver is required to verify the tank levels prior to offloading. Tank levels before and after cyanide unloading are documented in the Cyanco's bills of lading.

The cyanide storage tanks are located within concrete secondary containments that are adequate barrier to prevent seepage to the subsurface. The containments consist of concrete tank foundations, concrete floors, and concrete walls. They are equipped with sumps, pumps, and automatic controls to return liquids to the process circuits. Cyanide storage tanks are located apart from foods, animal feeds, explosives, tobacco products and no smoking is allowed. No changes or modifications have been made since the initial certification audits and subsequent recertification audits. The concrete containments were observed to be in good condition.

At the Phoenix Mine there is a second tank of caustic solution within the secondary containment for the cyanide storage tank, but the caustic solution is compatible with cyanide. The cyanide tank containment is located adjacent to the hydrochloric acid containment, but is separated by concrete walls with separate sump systems. There is an overhead pipeline that connects the cyanide storage tank to the mill. This pipeline crosses over the hydrochloric acid containment and is checked every shift for leakage and documented on the work place inspection reports. Any leaks would be reported and maintenance work initiated with a notification in the Maintenance SAP maintenance management system.

***Standard of Practice 3.2: Operate unloading, storage and mixing facilities using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.***

**Audit Finding:**

- in full compliance with
- The operation is**  in substantial compliance with **Standard of Practice 3.2**
- not in compliance with

The operation is in full compliance with Standard of Practice 3.2. The Phoenix Complex operate unloading storage and mixing facilities using inspections, preventative maintenance, and contingency plans to prevent or contain releases and control and respond to worker exposures.

**Basis for Audit Finding:**

The Phoenix Complex only uses liquid cyanide delivered in tanker trucks; no drums or wooden crates are involved. Cyanco/TransWood's offloading procedure requires the driver to monitor and control the entire offload operation. Their procedure also discusses responses to any leaks or spillage. At the end of the offload the driver is required to inspect the truck by walking completely around the tractor-trailer before moving. If there is any spillage or residue on the outside of the truck, off-load piping, or pad, the driver washes it off where the material is collected in the pad sump. The Phoenix Complex's procedure specifies monitoring the offload process...“and observing the delivery hose disconnect process, ensure that all hoses and fittings used in the offload process are rolled up or stowed properly to eliminate trip hazards.” Any spilled product (on containment) is to be noted and cleaned up immediately, as appropriate, and to report a product release (off containment) to the area supervisors and environmental departments to determine appropriate clean up and disposal.” Before departure, the TransWood drivers close all valves on the tanker trucks for return to Cyanco.

Any spills or leaks related to an off-load and onto the pads are captured in sumps and pumped out with portable pumps to the adjacent secondary containments for the cyanide storage tanks. The sumps in the secondary

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containments have pumps and automatic controls to return liquids to the process circuits. Any spills captured in the off-load sumps would be manually pumped following the procedures outlined in the environmental spill response plans for the respective mine. Any spills that flowed off the pads would be cleaned up following the procedures in the Remediation of Cyanide Contaminated Soils standard operating practice (SOP).

Procedures have been developed and implemented for cyanide offloading that covers the responsibilities for the truck drivers, the operators, control rooms, and supervisors. Along with the reagent offloading Standard Operating Procedure (SOP), the Complex has a Reagent Offloading Checklist that is used by the Complex's Operators monitoring the offloads. The Checklist provides a summary of the items described in the Reagent Offloading SOP. The Complex's Operators are familiar with the Cyanco/TransWood delivery and emergency shut off procedures. The bills of lading document the pH of the liquid cyanide and the before and after tank levels; the Operator signs the form to authorize the offload.

The Phoenix Complex requires appropriate personal protective equipment for the transporter during the connection, off-load, and disconnection. Observations by Phoenix Operators are required during the connection at the start of the offloading process, and then during the disconnection. Offloading does not occur until the Operator is there to observe and document the procedure. Both the transporter and Operator check to confirm that the storage tank has sufficient capacity for the offload; the tank level is recorded on the bill of lading. The Operator is trained in the transporter requirements for PPE, off-load procedures, and emergency shut off measures. The Operators have radios for communication with the control rooms in the event of an emergency. The control room operators have cameras and video terminals to observe the cyanide tankers during the offloading.

**4.0 OPERATIONS: Manage cyanide process solutions and waste streams to protect human health and the environment**

***Standard of Practice 4.1: Implement management and operating systems designed to protect human health and the environment utilizing contingency planning and inspection and preventive maintenance procedures.***

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 4.1**
- not in compliance with

The operation is in full compliance with Standard of Practice 4.1. The Phoenix Complex implements management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventative maintenance procedures.

**Basis for Audit Finding:**

The Water Pollution Control Permits (WPCP) for the two mines describe operating requirements. These Permits authorize the Complex to construct, operate, and close the operations in accordance with the requirements and conditions of the permit, which includes specific requirements for the cyanide facilities. These requirements and conditions are based on information provided to the Nevada Department of Environmental Protection (NDEP) by the operations describing the facilities and operating methods. Additionally there are operating plans, manuals, and SOPs some serving both operations and others specifically for the Phoenix Mine or the Lone Tree Mine. Examples of these documents are:

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- Phoenix Mine Operating Plan, prepared by Newmont, September 15, 2015
- SOP “Reagent Offloading of Bulk Liquids”, Process Operations, Doc ID NA-PLT-PROC-SOP-1942, 7/18/2017 (for both the Phoenix and Lone Tree Mines)
- Cyanide Management Plan – Phoenix Mine (August 2018)
- Operation, Maintenance, and Surveillance (OMS) Manual, Phoenix Tailings Storage Facility, prepared by Golder Associates, Inc., December 2017
- Lone Tree Cyanide Management Plan (April 2013)
- Lone Tree Operating Plan, (September 2015)

The plans, procedures, and permits plans identify the assumptions and parameters that were the basis for designs of the cyanide facilities. The WPCP permit for the Phoenix Mine describes regulatory requirements, such as, regular pumping and monitoring of the leak detection and collection system for the Reona Heap Leach Pad and the process ponds (less than 75 gallons per day average over the quarter or less than 25 gallons per day averaged over the year); and monitoring of the supernatant pond and the reclaim pond for the Phoenix TSF. Other requirements include a minimum freeboard of 3 feet for the TSF supernatant pool and 2 feet for any solution or stormwater pond. The Fact Sheet for the WPCP states that the Phoenix Mine has a detoxification target of 25 ppm. Additionally, it states the Phoenix Mine TSF reclaim pond and diversion ditches were designed for the 100-year, 24-hour event. The Lone Tree WPCP describes regulatory requirements, such as, regular pumping and monitoring of the leak detection and collection system, groundwater monitoring, and a minimum 2 feet of freeboard for the process ponds.

Additionally, the Phoenix Complex has SOPs and Standard Task Procedures (STPs) that describe the operation of the process and reagent facilities and define the practices for safety and environmental protection. Examples of SOPs and STPs for cyanide facilities and related operations are:

- HCN Detection and Evacuation NA-PHX-PROC-STP-340 (January 2015)
- Confined Space Entry NA-NNA-HSLP-STFD-17 (March 2013)
- Personal Protective Equipment and Rules Compliance NNA-SOP-0010 (December 2011)
- Spills, Releases, Excess Emissions and Wildlife Mortality Reporting NNA-SOP-0002 (February 2010)
- Water Sampling and Monitoring Standard Operating Procedure, Phoenix and Lone Tree Complex NNA-PLT-ESR-SOP-1184 (January 2015)

The Phoenix Complex has developed a series of forms for daily, weekly, monthly, and quarterly inspections. Each inspection describes frequency, responsible department, and required documentation (some of which are required by the WPCP Fluid Management System Operating Plans). Inspections cover the mill (process equipment), secondary containments, pipelines, the tailings facility, the heap leach pads (tops and toes), ponds, and the cyanide offload/storage facilities. The wall thickness of the cyanide storage tanks is measured annually using ultrasonic methods to evaluate structural integrity. The inspections are documented using forms and reports that include the name of the inspector, date, and a comments column where deficiencies are noted. Deficiency notifications are sent to maintenance planners where they schedule corrective maintenance via work orders. The specific inspection forms and SOPs support the consistent collection of information. The inspections are used to develop work orders for equipment and facility repairs and maintenance. The inspections are sufficient to assure and document that the systems are operating within design parameters.

A preventative maintenance program has been implemented to ensure equipment and devices function for safe cyanide management. The SAP (Strategic Enterprise Management) system is used for identifying, assigning responsibility, scheduling, and tracking the completion of the preventive maintenance activities.

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The Complex utilizes a Management of Change (MOC) program identified as Integrated Management of Systems (IMS) to identify when the site's operating practices may increase the potential for the release of cyanide and to incorporate the necessary release prevention measures. It consists of forms requiring a description of the proposed project, reasons for the project, and potential risks to human health and safety and the environment. The initial form has a field for entry of the email addresses of departmental personnel that are needed for review, comment, and approval.

The Mine Operating Plans describe contingency actions for numerous situations, such as:

- Leaks, spills, and releases
- Impoundment and slope failures
- Earthquake
- Temporary closure
- Excess High levels in solution ponds

Additionally, the Phoenix TSF Operation, Maintenance, and Surveillance (OMS) Manual covers conditions and emergency response activities such as, leakage or failure in the tailings delivery and decant return lines, Reclaim Pond leakage in the liner, excessive Supernatant Pool limits, power failure, and seepage or slope instability. Also the Manual covers "Closure Planning", for seasonal, temporary and tentative permanent closure.

The Phoenix Mine has two diesel generators both with 500-kilowatt capacity. In the event of a power outage these generators would run the control room, agitators, chillers, other critical functions at the plant. The Lone Tree Mine has two emergency generators to operate pumps and other equipment to prevent releases and exposures. A fixed generator with a capacity of 1000 kilowatts is located at the CIC Plant. This generator will operate the critical pumps and equipment at the CIC Plant. A second mobile generator with a capacity of 350 kilowatts is stationed at the Truck Shop and can be mobilized to run the pumps at the Phase 5 Pond. These generators are test run and maintained on a monthly basis.

***Standard of Practice 4.2: Introduce management and operating systems to minimize cyanide use, thereby limiting concentrations of cyanide in mill tailings.***

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 4.2**
- not in compliance with

The Phoenix Complex is in full compliance with Standard of Practice 4.2. The Complex has introduced and implemented management and operating systems to minimize cyanide use, thereby limiting concentrations of cyanide in mill tailings.

**Basis for Audit Finding:**

The Phoenix Complex's metallurgical staff conducts tests (bottle roll) on a periodic basis to optimize the operation, i.e. to minimize the use of cyanide and improve the recovery of gold. Results of this ongoing testing are provided to the operations to guide them in the addition rates for cyanide.

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The Phoenix Mine manages cyanide addition to meet the post-destruction WAD cyanide target of 50 ppm at the spigots at the TSF. In this regard, they measure the cyanide level in the #4 Carbon in Pulp (CIP) tank to determine if it is at a target level prior to cyanide destruction, i.e. the cyanide level must be at or below 0.15 lbs. liquid cyanide per ton leach solution. Adjustments in cyanide addition are made to meet the target. Additionally, cyanide levels are measured at the CIP overflow, CIP tails, post-detoxification, and the TSF spigots.

The Lone Tree Mine controls cyanide addition by sampling the Barren and Preg Solutions on each shift. The target for the Preg Solution returning from the Heap Leach Pad (HLP) is 0.15 lb. liquid cyanide per ton of process solution. Adjustments in the application rates are made to meet this target.

***Standard of Practice 4.3: Implement a comprehensive water management program to protect against unintentional releases.***

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 4.3**
- not in compliance with

The operation is in full compliance with Standard of Practice 4.3. The Phoenix Complex has implemented comprehensive water management programs to protect against unintentional releases.

**Basis for Audit Finding:**

The Phoenix Complex has developed water balance models that are comprehensive and probabilistic.

The Phoenix Mine water balance tracks storage in the tailings impoundment and takes into account inflows and outflows. It uses Monte Carlo statistical analysis on the climate data and includes various calibration tools. Inputs to the water balance include but are not limited to the following parameters: meteoric events, tailings tonnages, dewatering wells, dust control, climate data, and pump back. Data for these input parameters are derived from a site-managed database called Data Historian. The model covers a considerable range of operational parameters that govern how the impoundment area is managed. It includes a display showing anticipated TSF freeboard.

The GoldSim Model is used for the Lone Tree Mine water balance. The most recent design water balance accompanied the Phase 7 HLF Expansion in 2010. It includes all phases of the HLF, the CIC Plant, the East, West, and Phase 5 Ponds, the Phase 5 Process Solution Tank, and the Barren Pump House. Input parameters included precipitation data, the 100-year, 24-hour precipitation event plus 8 hours of draindown during a power outage, among other parameters.

These water balances include inputs for leach solution application to the leach pads and the application of tailings to the TSF. They address the precipitation entering ponds and HLFs as well as the up gradient run-on. The operations diverts the up gradient flow away from the cyanide related facilities, i.e., the mills, TSF, and heap leach pads, which is typically negligible. Run-on is excluded from the Phoenix TSF impoundment and the water balance. The models take into account losses such as dust control, which is measured and recorded. The TSF and HLPs and associated facilities are lined to reduce the potential for seepage to the subsurface. Other than losses to the ore, only evaporation is included as losses to the systems.

The Phoenix Complex records and stores precipitation data in the Data Historian database. The water balance models are updated to reflect current conditions. The Phoenix Mine TSF is monitored for the supernatant pond

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levels and available freeboard. Additionally, the tailings dam is being constructed in stages and the current stage elevation is well above the required storage level for storing supernatant, impounded tailings, and storm events.

The models have been developed to simulate power outages of various durations or pump failures. The models can predict situations and conditions that would result in possible releases to the environment. Additionally, the Phoenix TSF is managed as a closed circuit where a power loss cuts off the inflow as well as the return flow. The HLFs include evaluations of a draindown time of 8 hours simulating a power outage or equipment failure.

The Phoenix Mine tailings operators do monthly inspections including visual inspections of sediment basins, diversion channels, the upgradient TSF diversions, and the waste rock piles. Inspections are also conducted after rainfalls. Inspections of the reclaim pond and impoundment area are conducted to record water levels in addition to the regular instrumentation recordings. Monitoring data is used to compare the freeboard with available storage

The Lone Tree Mine incorporates inspection and monitoring activities into their procedures to implement the water balance and prevent the overtopping of process ponds. Operators record pond levels during their daily inspections. In addition, Pond 5 and the West Pond are equipped with ultrasonic level sensors that report to the control room for real-time monitoring of pond levels. The operators inspect surface water diversions on a quarterly basis and after large rainfalls as required by regulations.

The ponds and impoundments are designed and operated to comply with the NDEP and Nevada State Engineer requirements. While freeboard requirements are regulated, the water balance models are used to calculate the necessary pond volumes for specific design storm events.

***Standard of Practice 4.4: Implement measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions.***

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 4.4**
- not in compliance with

The Phoenix Complex is in full compliance with Standard of Practice 4.4 that implements measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions.

**Basis for Audit Finding:**

The Phoenix Complex has implemented the following measures to restrict wildlife and livestock access to open waters:

- Barbed wire fence around the mine perimeter (Phoenix Mine)
- Chain link fence around the reclaim pond (Phoenix Mine)
- Barbed wire fence around the perimeter of the HLF (Lone Tree Mine)
- Eight-foot high chain link fence around the Phase 5 Pond (Lone Tree Mine)
- Eight-foot high combination chain link-barbed wire fence around the East and West Ponds (Lone Tree Mine)



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- Birdballs on the surface all ponds (Lone Tree Mine)

The Phoenix TSF is the only facility with significant open waters with cyanide-related solutions i.e., the supernatant pool and the reclaim pond. The operation uses ammonium bisulfite to destroy cyanide in the tailings before discharge to the tailings impoundment. In addition the physical restrictions listed above, the operation uses mobile propane cannons around the perimeter of the supernatant pool for temporary hazing, as needed.

A time series graph of WAD cyanide at the Phoenix TSF spigot demonstrates that the operation consistently maintains the discharge to the tailings impoundment below 50 mg/L. Over the three years of record there was one value above 50 mg/L (54 mg/L) in January 2017. As reported in the previous audit, the higher value can be attributed to implementation of the ammonium bisulfite cyanide destruction process.

Additionally, a time series graph of WAD cyanide in the reclaim pond ranged from 0.9 ppm to 0.05 ppm from 2015 to mid 2018. Values were consistently below 0.10 ppm from 2017 to the present.

Lone Tree uses birdballs on the Phase 5 Pond, East Pond, and West Pond. Quarterly sampling reports show the range of concentrations of WAD cyanide during this audit cycle were:

- Phase 5 Pond – approximately <1 to 42 mg/L
- East Pond – approximately <1 to 62 mg/L
- West Pond – approximately < to 62 mg/L

Both the Phoenix and Lone Tree Mines have Industrial Artificial Pond permits with the Nevada Department of Wildlife (NDOW) where they are required to maintain concentrations in open waters to prevent any cyanide mortality, conduct mortality monitoring and, report all wildlife mortalities. If an animal mortality is found, the Complex holds the carcass until authorized by NDOW to dispose of it. If there is a question whether the mortality is related to cyanide, NDOW has the authority to require testing. Reporting to NDOW indicated that quarterly mortalities ranged from 0 to 2 (small mammals and/or birds).

The Lone Tree Mine includes an active HLF where the leach rate is limited to a maximum of 0.005 gallons per minute per square foot by the terms of the WPCP. Leach solution is applied with drip emitters on the top surface and with wobblers or drip emitters on the side slopes. The mine operators stated that the ore is generally coarse and the application rate is low, which reduces the potential for ponding. The operators conduct daily inspections where ponding, if present, would be noted and mitigated.

***Standard of Practice 4.5: Implement measures to protect fish and wildlife from direct and indirect discharges of cyanide process solutions to surface water.***

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 4.5**
- not in compliance with

The operation is in full compliance with Standard of Practice 4.5. The Phoenix Complex has implemented comprehensive water management programs to protect against unintentional releases.

**Basis for Audit Finding:**

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The Phoenix Complex does not discharge cyanide solutions to surface waters. The Phoenix and Lone Tree Mines operate with zero discharge of process solutions. The Mines are located in an arid climate with no natural surface water bodies on the properties or within close proximity. They do not have any indirect discharge of cyanide solutions to surface waters. Inspections and monitoring is conducted to verify that there is no seepage entering surface drainages. No impact to the beneficial use of surface or groundwater has occurred.

***Standard of Practice 4.6: Implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of groundwater.***

**Audit Finding:**

**in full compliance with**

**The operation is**  in substantial compliance with **Standard of Practice 4.6**

not in compliance with

The operation is in full compliance with Standard of Practice 4.6. The Phoenix Complex have implemented measures designed to manage seepage from cyanide facilities to protect the beneficial uses of groundwater.

**Basis for Audit Finding:**

The Phoenix Complex employs a number of specific water management and control measures to protect beneficial use of groundwater.

The Phoenix Mine’s cyanide facilities consist of the mill and related conveyance pipes, tanks and containments, the tailings delivery and reclaim water pipelines, the TSF and the reclaim pond. The mill has adequate concrete spill containment to eliminate seepage. The tailings delivery pipelines are contained within an 80-mil high-density polyethylene (HDPE) lined channel. The reclaim water pipelines are constructed of Tite-Liner® pipe, composed of an outer steel pipeline with a HDPE pipe insert. The outer pipeline contains monitoring valves to detect any water presence. The underdrain and decant piping between the TSF and the reclaim pond is underlain by a synthetic liner, consisting of a double pipe system, or are contained within concrete structures.

The Phoenix TSF consists of an historic unlined portion divided into a northern (copper operations) portion and southern (gold operations) portion and a new partial synthetic-lined impoundment constructed over a portion of the northern copper operations impoundment. The impoundment expansion over the northern copper operations impoundment has a synthetic lining system, which caps the copper tailings and provides containment for the new gold tailings. The TSF was designed in accordance with the NDEP “Zero Discharge” requirements and the Nevada Department of Water Resources (NDWR) Department of Dam Safety criteria. A drainage system constructed throughout the impoundment above a geomembrane liner, consisting of a network of perforated piping, serves to lower the hydraulic head on the geomembrane liner and enhance consolidation of the tails via bottom drainage of the tailings mass. Tailings underflow water collected by the underdrain system is conveyed beneath the dam to an external reclaim pond. Supernatant water that pools on the surface of the tailings is directed to the reclaim pond by gravity via an inclined decant riser. Solution flowing to the reclaim pond is pumped back to the mill through a reclaim water pipeline for reuse in the milling process.

The Lone Tree Mine facilities include:

- **HLF.** A low permeability soil HDPE liner, and pregnant solution collection systems. Leak Collection and Recovery Systems (LCRS) consist of perforated pipes placed at the base of the pads.

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- **East and West Ponds.** A duel liner HDPE secondary liner and a HDPE primary liner. A LCRS is between the primary and secondary liners.
- **Phase 5 Pond.** A triple liner system consisting of a 12-inch layer of compacted low permeability soil, a HDPE secondary liner, and a HDPE primary liner. An LCRS is between the primary and secondary liners.
- **CIC Plant (Trains A, B and C Trains).** Curbed concrete floors with sumps. Only Train B is active.
- **Train E CIC Columns.** Concrete floor with sump, but also within the footprint of the lined pad.
- **Precipitation Circuit.** (part of the former thickener facility when the mill was operating). Curbed concrete floors with sumps.
- **Solution conveyances between facilities.** HDPE pipes within lined secondary containment channels, or pipe-in-pipe configurations, or pipes within pipe trays.

The Phoenix cyanide facilities are largely unchanged from the previous audits. However, there are two new or changed cyanide facilities for this audit cycle:

- Completion of Stage 6 and RE 4953 of the tailings impoundment;
- Tailings Delivery Secondary Containment Concrete Slab (Modification of the tailings piping at the mill).

The Phoenix Mine monitors 8 downgradient point-of-compliance wells in accordance with its WPCP. The direction of the gradient is approximately to the south of the cyanide facilities. Monitoring for 2015 through 2017 showed no detectable WAD cyanide in groundwater, with one exception where cyanide was detected but below the standard.

The Lone Tree Mine monitors five point-of-compliance wells around the cyanide facilities in accordance with its WPCP. The direction of the gradient is approximately from the south to the north in the vicinity of the cyanide facilities. The quarterly monitoring for the recertification period showed no detectable WAD cyanide in groundwater.

The beneficial use for groundwater downgradient of the cyanide Phoenix Complex, as designated by the State of Nevada, is agricultural and livestock use. The standard is 0.2 ppm WAD cyanide. The Phoenix Complex has not caused cyanide concentrations in groundwater to rise above levels protective of beneficial use.

***Standard of Practice 4.7: Provide spill prevention or containment measures for process tanks and pipelines.***

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 4.7**
- not in compliance with

The Phoenix Complex is in full compliance with Standard of Practice 4.7 where they provide spill prevention or containment measures for process tanks and pipelines.

**Basis for Audit Finding:**

The Phoenix Complex has spill prevention and containment measures for the processing facilities. These facilities have not been changed since the initial certification audits and the previous recertification audits.

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For the Phoenix Mine this includes the unloading and storage area, the leach and CIC areas, the carbon circuit area that contains the intense cyanidation solution tank, the tailings collection box, and the B-C Train. There are automated pumps within the containments to pump collected solutions into the process circuit. The containments are constructed of cast-in-place reinforced concrete. The storage tank area is within a concrete containment with sufficient capacity to contain 110% of the largest tank plus the 100-year, 24-hour storm event. The containment volumes for the CIP/leach area, carbon circuit and the grinding circuit buildings (includes the intense cyanidation unit) are constructed to contain 110% of the single largest tank in the area.

For the Lone Tree Mine this includes the cyanide offload tank that has a concrete secondary containment with a sump to return solutions to the process circuit and a wall cut-out to direct large releases to the secondary containment for the CIC Plant; the CIC Plant has curbed concrete floors sloped to sumps to return solutions to the process circuit along with an emergency overflow system that includes a collection vault and piping to the East Pond; E-Train CIC Columns that is a skid installed on a curbed concrete pad with a sump that gravity flows to the East Pond, all located within the lined footprint of the HLF; Phase 5 Pregnant Tank that is a double-walled tank-in-tank facility with gravity drainage to the adjacent Phase 5 Pond; Barren Tank that was constructed with a concrete gravity drainage system to the adjacent East Pond; and the Precipitation Circuit that is part of the inactive mill facility and as such has a walled/curbed concrete containment with sumps to return solutions to the process circuit.

The secondary containments for the Lone Tree Mine have been sized to hold at least 110% of the largest tank plus the 100-year, 24-hour precipitation event. There are collection sumps in the containment areas to automatically pump any cyanide solution to the process circuits or they are equipped with gravity flow-through capabilities to adjacent process ponds.

The secondary containment for all cyanide process tanks are designed and provided to prevent releases to the environment and contaminate soils. Also, there are written procedures for soil remediation if a release did occur.

The Phoenix Complex has constructed all pipelines with spill prevention and containment measures to collect leaks and prevent releases. Pipelines have been constructed either as pipe-in-pipe configuration or within lined ditches and pipelines between separate processing buildings are connected with HDPE pipelines in concrete, underground utility corridors.

The Phoenix Mine tailings delivery and reclaim water pipelines between the process area and the TSF are located predominantly above ground. The above ground tailings slurry pipeline is constructed within a HDPE lined ditch whereas the reclaim water pipeline is constructed of a Tite-Liner® System that is composed of an outer steel pipeline with a HDPE pipe insert. The outer pipeline contains monitoring valves to detect any water presence. Where buried, the pipelines are pipe within a pipe. Recent modifications of the tailings pumping and pipeline included routing the pipeline in a concrete lined ditch in the vicinity of the process plant.

The Lone Tree Mine has provided both spill containment and spill prevention measures for all pipelines conveying cyanide solutions. Pipelines between the CIC Plant and the HLF are contained in HDPE-lined ditches or within pipe-in-pipe systems where they go under roads. The high-grade overhead line from the cyanide storage tank passes over the concrete floor of the CIC Plant and then within a pipe tray from the CIC Plant to the addition point at the barren tank. The barren pipelines to the HLF are equipped with both pressure and flow monitoring systems that report to the control room. The pregnant lines from the HLF are equipped with flow monitoring devices.

There are no perennial or ephemeral surface water bodies in the vicinity of Phoenix Complex requiring special protection for pipelines. As described above, all outside pipelines have secondary containment: pipe-in-pipe, concrete ditch or enclosure, or pipe within a lined channel.

The Phoenix Complex's tanks are constructed of steel placed on concrete foundations; and pipelines are

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constructed of steel and HDPE. These materials of construction are compatible materials for the conveyance of high pH, cyanide solutions, and slurries.

***Standard of Practice 4.8: Implement quality control/quality assurance procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.***

**The operation is**                **in full compliance with**  
       in substantial compliance with    **Standard of Practice 4.8**  
       not in compliance with

The Phoenix Complex is in full compliance with Standard of Practice 4.8. The Complex has implemented quality control/quality assurance (QC/QA) procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

**Basis for Audit Finding:**

The Phoenix Complex’s use of quality control/quality assurance (QA/QC) programs in the construction of the cyanide facilities, new facilities, and modifications to existing facilities was demonstrated in the initial audits and subsequent recertification audits. Appropriately qualified personnel have prepared the documents - Nevada-registered Professional Engineers and subsequently approved by the NDEP, and the Bureau of Mining Regulation & Reclamation.

During the 2015 to 2018 audit cycle, the Phoenix Mine constructed or made the following changes:

- Completion of Stage 6 and RE 4953 of the tailings impoundment;
- Tailings Delivery Secondary Containment Concrete Slab (Modification of the tailings piping at the mill.)

Golder Associates prepared the design and conducted the construction oversight for the Phoenix Mine TSF, i.e. Golder is both the Engineer-of Record and the firm that conducted the QA/QC. A review of the Record of Construction for the 4953 Expansion report demonstrating and discussing QA/QC measures and procedures confirmed that the construction through the 4953 Raise was in accordance to accepted engineering standards and specifications. A Registered Professional Engineer signed the report.

Black Dolphin Consulting, LLC prepared the Engineering Design for the Tailings Delivery Secondary Containment Concrete Slab in November 2017. In December 2017, Rain Tree Construction was retained for the construction. Construction of the project was completed at the end of January 2018. Golder Associates performed the QA/QC of the construction work as documented in a letter report. The report demonstrates that the tailings piping modifications were constructed in accordance with accepted engineering standards and specifications. A Registered Professional Engineer signed the report.

The Lone Tree Mine has not modified any existing cyanide facilities or added any new cyanide facilities during this audit cycle.

The QA/QC programs described here and in previous audit reports demonstrate that they address the suitability of materials and adequacy of soil compaction for earthworks, including tank foundations and clay or geomembrane liners. The Phoenix Complex has retained the QA/QC documents.

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***Standard of Practice 4.9: Implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and ground water quality.***

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 4.9**
- not in compliance with

The Phoenix Complex is in full compliance with Standard of Practice 4.9. The Complex has implemented monitoring programs to evaluate the effects of cyanide use on wildlife, surface and groundwater quality.

**Basis for Audit Finding:**

The Phoenix Complex has developed written procedures for water sampling and monitoring by qualified personnel in the Phoenix Complex's Environmental Department. The sampling and monitoring plan along with the WPCPs specify how and where samples should be taken, sample preservation techniques, chain of custody procedures, shipping instructions, and cyanide species to be analyzed. The list of analytes are specified in the WPCPs. Additionally, there is a procedure discussing wildlife monitoring and reporting requirements.

The Phoenix Complex documents sampling conditions on field logs that accompany each sample. The log includes the date, the sampler, weather conditions, sampling method, field parameters, purge volume (for wells), sample volume, sample preservation, and a pre-assigned lot and serial number assigned by the analytical laboratory. A comments section is used to document abnormal sampling conditions.

The laboratory used by the Phoenix Complex is Silver Valley Analytical (SVL) of Kellogg, Idaho, which is certified by the State of Nevada. The analytical protocols have been selected using standard methods to achieve the desired detection limits.

The Phoenix Complex does not monitor surface water for cyanide because they operate with zero discharge of process solutions. In addition, the mines are located in an arid climate with no natural surface water bodies in the vicinity of the mines. The Phoenix Complex monitors groundwater for cyanide in wells downgradient of the cyanide facilities on a quarterly basis, as required under their WPCPs.

The Phoenix Mine inspects the TSF supernatant pool and reclaim pond daily for the presence of wildlife and mortality, if any. The Lone Tree Mine inspects for wildlife mortalities on a daily basis and records the inspection results on log sheets and inspection forms. The Complex trains operators on proper methods for reporting and handling mortalities.

The Phoenix Complex conducts monitoring at frequencies adequate to characterize the groundwater and wildlife. Groundwater samples are collected and analyzed on a quarterly basis. Wildlife monitoring is continuous while employees are outside on the properties and during daily inspections. The Phoenix Complex does not monitor surface water because they operate with zero discharge of process solutions and there are no natural surface water bodies on the properties or within close proximity.

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**5.0 DECOMMISSIONING: Protect communities and the environment from cyanide through development and implementation of decommissioning plans for cyanide facilities**

***Standard of Practice 5.1: Plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.***

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 5.1**
- not in compliance with

The Phoenix Complex is in full compliance with Standard of Practice 5.1. The Complex has plans and implementation procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.

**Basis for Audit Finding:**

The Phoenix Complex has prepared reclamation closure plans as part of their permitting programs for the operations.

The current version of the Phoenix Mine Reclamation Plan was prepared in November 2017. The plan addresses decommissioning and reclaiming all project components at the cessation of operations including the decommissioning of all cyanide facilities. This includes removal of contained process water from facilities and reduces the amount of water that is added to the facilities from precipitation. In addition, the Plan addresses disposition of buildings, equipment, piping, scrap, reagents, equipment and materials.

The Phoenix Mine Operating Plan discusses various closure scenarios, i.e., seasonal closure, temporary closure, and tentative permanent closure. The Plan describes decommissioning for the HLF and process ponds, the tailings storage facility, and the reclaim pond. The Phoenix Mine Cyanide Management Plan summarizes the decommissioning and reclamation information from the Reclamation Plan and the Operations Plan; and summarizes Process Fluid Stabilization for cyanide solutions.

The Phoenix Mine Reclamation Plan includes an implementation schedule for decommissioning activities. It includes both the order and duration of facility closure. In general terms, the schedule calls for decommissioning, demolition, and closure of the HLF, ponds, and plant starting in 2031 and finishing in 2035. Reclamation of the TSF is scheduled to take six years, beginning in 2051 with completion at the end of 2055.

The Lone Tree Mine Reclamation Plan includes reclamation of the heap leach pad, ponds, pipelines, pumps, tanks, and plant components. The Plan specifies that equipment, pipelines, and tanks that contained cyanide solution will be triple rinsed with the rinsate returned to the process circuit. It also describes the Heap Leach Pad rinsing, removal of solution inventory, and construction of an evaporation cell to manage long-term draindown. The Plan shows a schedule with reclamation work starting 2018, however, where there is concurrent reclamation, the staff did not indicate that extensive reclamation would be starting in 2018.

The Phoenix Complex has developed a procedure for decontamination of cyanide equipment. The decontamination procedures cover detoxifying equipment (including pumps, piping, tanks) exposed to cyanide solutions prior to disassembly. Inspection of decontaminated equipment is required prior to shipment off the

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mine sites.

The Phoenix Complex reviews their decommissioning plans and procedures and update them periodically. They are required by the NDEP to update the reclamation plans and costs at least every three years or as facilities change.

***Standard of Practice 5.2: Establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.***

**Audit Finding:**

- The operation is**
- in full compliance with**
  - in substantial compliance with **Standard of Practice 5.2**
  - not in compliance with

The Phoenix Complex is in full compliance with Standard of Practice 5.2. The Complex has established assurance mechanisms capable of fully funding cyanide related decommissioning activities.

**Basis for Audit Finding:**

The Phoenix Complex has developed cost estimates for full funding of third party implementation of reclamation and decommissioning activities described in the reclamation plans. Cost estimates utilize the “Standardized Reclamation Cost Estimator” (SRCE), a cost-estimating model developed by the Nevada Division of Environmental Protection and the Bureau of Land Management. The cost estimates include third party unit costs (Bacon-Davis wage rates), local equipment rental rates, costs for engineering design, contingency, insurance, performance bond, contractor profit, agency indirect costs, and a 28 percent cost for third party administration.

The Phoenix Mine 2017 reclamation cost estimate is \$539,051,916 that includes decommissioning measures for the TSF, process buildings and equipment, process ponds, pipeline removal, decontamination, waste water treatment, disposal of wastes, and associated overhead and administrative costs.

The Lone Tree Mine 2018 reclamation cost estimate is \$81,691,940 that includes decommissioning measures for the heap leach pads, tailings, process buildings and equipment, process ponds, pipeline removal, decontamination, waste water treatment, disposal of wastes, and associated overhead and administrative costs.

These amounts are for all closure and reclamation at the Phoenix Complex, and include decommissioning of cyanide facilities.

The Phoenix Complex review and update the reclamation plans and cost estimates when facilities are changed, or at least every three years, as required by State of Nevada regulations. The most recent are the 2017 Reclamation Plan for the Phoenix Mine and the 2015 Reclamation Plan (along with 2018 reclamation cost estimate) for the Lone Tree Mine.

The Phoenix Complex have established financial assurance mechanisms approved by the Bureau of Land Management (BLM) Nevada State Office.



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**6.0 WORKER SAFETY: Protect workers’ health and safety from exposure to cyanide**

*Standard of Practice 6.1: Identify potential cyanide exposure scenarios and take measures as necessary to eliminate, reduce and control them.*

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 6.1**
- not in compliance with

The Phoenix Complex is in full compliance with Standard of Practice 6.1. The Complex have identified potential cyanide exposure scenarios and have taken measures as necessary to eliminate, reduce, and control them.

**Basis for Audit Finding:**

The Phoenix Complex has developed STPs, SOPs, and plans that describe the management and operation of the cyanide facilities located in the mine. These plans and procedures cover the safe operation of the entire cyanide management. The plans and procedures have been developed for the cyanide unloading, process tasks, confined spaces, and equipment decontamination and are detailed for the risks involved with each task and adequately describe safe work practices. Each procedure details task specific PPE requirements, personnel responsibilities for the task, and the detailed procedures to appropriately conduct the task. The procedures have been updated on a regular basis.

In addition to the various procedures, the Phoenix Complex has operating manuals that describe how to safely conduct cyanide-related activities for gold recovery processes, heap leach and CIP facilities, carbon handling, and tailings and reclaim water operations. The operating manuals contain safe job procedures including procedures for working with and handling sodium cyanide.

The Phoenix Complex has developed a standard operating procedure specifically for the use of personal protective equipment. In addition, many of the SOPs and STPs contain sections, as applicable to the task, for PPE.

The Phoenix and Lone Tree Mines were permitted and operated as separate operations for numerous years; and separate STPs, SOPs, and plans for the specific mining operation were developed. However, as the Phoenix Mine staff became more involved with the Lone Tree Mining operations there has been the development of “universal” Phoenix Complex STPs and SOPs, yet there are operating plans, reclamation plans, permits, STPs, and SOPs that are specific to each of the operations - they relate to the operation for which they were developed. The Phoenix Complex staff provided separate documents for both the Phoenix and Lone Tree Mines for the 2018 Phoenix Complex Recertification Audit and the two lists, in aggregate, represent the Phoenix Complex’s STPs, SOPs, operating plans, and permits.

Additionally, there are requirements and procedures for daily inspections. For example, the Phoenix Complex conducts daily inspections and pre-work inspections of the Reagent Areas prior to cyanide off-loading as part of the Cyanco/TransWood inspections. The pre-work inspections are documented in the bills of lading from Cyanco/TransWood. These inspections include the verification of the safety showers and eye wash stations, the pH, the cyanide storage tank levels, the conditions of the offload pads, and the use of appropriate PPE. Cyanide off-loads were observed to verify that pre-work inspections are conducted and documented.

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The Phoenix Complex utilizes a MOC program identified as Integrated Management of Systems (IMS) (based on Microsoft SharePoint program) located in the Newmont Intranet site. It consists of forms requiring a description of the proposed project, reasons for the project, and potential risks to human health, safety, and the environment. The initial form has a field for entry of the email addresses of departmental personnel that are needed for review, comment, and approval. Examples of the use of the system were the,

- Tailings Delivery Secondary Containment Concrete Slab (Modification of the tailings piping at the mill), and the
- Flotation Toggle Flow Path (July 12, 2017 and October 17, 2017)

These examples included the email addresses of personnel from the Health and Safety and Environmental departments.

The Phoenix Complex solicits worker input in developing and evaluating health and safety procedures through: (1) direct communication between supervisors and operators, (2) the continuous safety improvement program that allows employees to provide safety suggestions and concerns to their supervisors; (3) job hazard analysis forms, (4) safety suggestion program, and (5) meetings conducted at the process areas (such as daily meetings and training refresher sessions). The job hazard analysis forms are completed for each new or modified process task and include a step-by-step description of the task, identifies potential hazards, and recommends controls. Daily meetings and training sessions included discussions of cyanide topics. Safety suggestions are received through the “Continuous Improvement Program”. Suggestions are entered into a database for evaluation and follow up.

***Standard of Practice 6.2: Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.***

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 6.2**
- not in compliance with

The Phoenix Complex is in Full Compliance with Standard of Practice 6.2 that requires the site to operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.

**Basis for Audit Finding:**

The Phoenix Complex has determined, based on its solution chemistry, the solution pH for limiting HCN gas formation. The Complex has established:

- A pH of 12.8 for cyanide offloading;
- A minimum pH of 9.5 throughout leach circuit (Phoenix Mine).
- A minimum PH of 9.5 throughout the rest of the operation (Lone Tree Mine)

The Phoenix Mine monitors the pH with in-line pH meters and portable pH meters. The in-line pH meters report to the control room and are located in different process areas. The pH is also manually checked in the different circuits every 4 hours. The pH meters are maintained and calibrated on a regular basis.

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The Lone Tree Mine monitors the pH with in-line pH meters and/or portable pH meters. The pH is recorded for the CIC trains B and E; Phase 5 pregnant solutions; flume building; and barren solution to the pad. The pH meters are maintained and calibrated on a regular basis.

The pH for off-load activities are verified by the Cyanco/TransWood drivers prior to a cyanide offload and documented in the Cyanco/TransWood bills of lading.

The Phoenix Complex has installed fixed HCN monitors in the areas where workers may be exposed to cyanide to measure HCN concentrations. These fixed monitors are equipped with visible and audible alarms, in addition to being connected to the control panels in the control rooms. Two alarm levels have been established: a low-level alarm at 4.7 ppm and a high-level alarm at 10 ppm. Low-level alarms require investigation and high-level alarms require evacuation. Monitor locations are surveyed monthly with portable HCN meters to confirm proper location.

The Complex has identified high-risk activities requiring HCN gas monitoring and PPE. The Phoenix Complex has portable HCN meters used during cyanide offloading, maintenance activities, and other process tasks as necessary. The Confined Space Entry Procedure, for example, requires monitoring of the air in the confined space for HCN concentrations prior to entry. Additionally, these portable meters are used for emergency response and spill activities, as needed.

The Phoenix Complex's Instrumentation Department calibrates and maintains the fixed monitors monthly, or as needed. Portable monitors are bump tested on a daily basis via the meter docking stations (the docking stations maintain the calibration log) and are calibrated as needed by process personnel (for the portable HCN meters in the process areas) and by the Emergency Response Team (ERT) (for the meters in the rescue trailer).

The Phoenix Complex has posted warning signs in areas where cyanide is used to alert workers that cyanide is present, and that smoking, open flames, and eating and drinking are not allowed (except in designated areas). This includes doors and entryways to the plants where hydrogen cyanide alarms are set at yellow alert (for investigation) and red alert (for evacuation). Signage is also provided in other areas such as the along the pipeline to the Phoenix Mine TSF, the TSF, and the tailings reclaim pond where the signage indicates that solutions may contain cyanide. Signage is in place at both the Phoenix and Lone Tree cyanide off-load areas and cyanide storage tanks. Additionally, the Lone Tree Mine includes cyanide signage for both the pregnant solution pond, the barren solution pond, and on the heap leach pad. Confined spaces associated with cyanide facilities are clearly labeled with the requirement that a confined space permit is needed for entry. The signage in general does not indicate PPE requirements, but in combination with the thoroughness of safety training and procedures, adequately substitutes for specific PPE signage. Employees interviewed during site visits were knowledgeable of the use of Cyanide and all dangers associated with its use.

The Phoenix Complex has showers, low-pressure eyewash stations and dry powder fire extinguishers located at strategic locations throughout the plants and at the cyanide offload areas and are maintained, inspected and tested on a regular basis. The shower/eyewash stations are inspected daily by process personnel and documented in the daily safety inspection forms. Health, Safety, and Loss Prevention personnel also inspect the shower/eyewash stations monthly.

The Phoenix Complex have placed fire extinguishers throughout the plants and at the cyanide offloading areas. All extinguishers checked during the audit were the dry powder type. The fire extinguishers are inspected monthly by Health, Safety, and Loss Prevention staff.

The Phoenix Complex has labeled tanks and pipelines at the plants with various types of labels indicating cyanide is present and arrows showing the direction of flow. Signage and labels - the number, types, and location - alert workers to the contents of the tanks, pipes, and ponds. In addition to the labels and sign in and around the processing facilities, the Phoenix Mine has marked the tailings slurry and reclaim water lines with cyanide labels

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and flow direction arrows. The Lone Tree Mine has labels on tanks and pipelines within the CIC Plant, at the leach pad, and at the process ponds.

The Phoenix Complex stores Safety Data Sheets (SDSs) on the Newmont intranet system. The SDSs are available to any Phoenix Complex personnel at any computer terminal. In addition, cyanide first aid procedures are located with each of the cyanide antidote kits. The SDSs and first aid procedures are in English, the language of the local workforce

The Phoenix Complex’s Accident and Incident Investigation Procedure details the investigative methods and actions to be followed in the event of an accident or incident. These procedures are followed for various types of incidents, including cyanide-related incidents. The purpose of the procedures is to “prevent the recurrence of accidents and incidents by ensuring thorough and effective investigations take place and corrective actions are implemented”.

Several employees were interviewed regarding the use of cyanide and what to do during an incident. All employees were well versed on cyanide safety.

***Standard of Practice 6.3: Develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.***

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 6.3**
- not in compliance with

The Phoenix Complex is in Full Compliance with Standard of Practice 6.3 that requires the operation to develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

**Basis for Audit Finding:**

The Phoenix Complex provides the necessary equipment for response to cyanide exposures and the communication means to coordinate their use. The Complex provides water via the eyewashes and showers located throughout the plants. There are antidote kits in strategic locations in the plants. The amyl nitrite antidote kits are stored in refrigerators. In addition, oxygen and automated external defibrillators (AED) are located with each of the cyanide antidote kits. Radios and telephones are located in the control rooms and in other process areas. The cyanide offloads are monitored by video from the plant control rooms. The Phoenix Mine emergency response personnel conduct monthly inspections of the cyanide antidote kits that include verification of the antidote expiration date, the storage temperature, and the pressure in the oxygen bottles. Similar inspections are conducted at the Lone Tree Mine.

The Phoenix Complex has prepared an Emergency Response Procedure for the Phoenix Mine and an Emergency Response Plan for the Lone Tree Mine and other procedures such as the “Hazmat Response” and “Ambulance – Emergency Vehicle Operations” Procedures for responding to cyanide exposures. The Phoenix Mine Emergency Response Procedure addresses responses to cyanide exposures and cyanide releases. The procedures describe the use of the ambulance in case of an emergency, such as a cyanide exposure. The Lone Tree Emergency Response Plan also describes procedures to respond to cyanide exposures and cyanide releases.

The Phoenix Complex has their own onsite capabilities (equipment and trained staff) to provide first aid to

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workers exposed to cyanide. The Phoenix Mine has a response vehicle available onsite and the Lone Tree Mine has one emergency response vehicle located at the admin building.

The Phoenix Mine has a trained Emergency Response Team (ERT) comprised of 25 members from all functional areas of the mine. Certifications for the ERT members include Emergency Medical Technician, First Responders, and Hazmat Responders. First Responders and Hazmat Responders are available on all shifts. In addition, all ERT members have received training on cyanide first aid. The Phoenix Mine responders will respond to any and all incidents at the Lone Tree Mine, if needed. The emergency response team training includes medical first aid for cyanide, firefighting, confined space, Hazmat, and other topics. First responders are available on all shifts.

Both the Phoenix Mine Emergency Response Procedure and the Lone Tree Mine Emergency Response Plan describes how to dispatch the hospital ambulance or air evacuation. In the event of an emergency, the emergency responders and supervisors will determine which service is to be called. If the transport is by air, the plans detail the procedure and the air ambulance landing requirements and zone coordinates. If the transport is by ambulance, then the plans describe how the responders will coordinate with the hospital ambulance staff and where the rendezvous will take place.

The Phoenix Complex has correspondence with the Battle Mountain General Hospital that confirms the hospital is aware of the potential to treat patients with cyanide exposure.

Mock drills are conducted by the Phoenix Complex to test response procedures for various cyanide exposure scenarios and to gain information to make improvements into response planning. In 2016 and 2017, drills were performed at both the Phoenix and Lone Tree Mines. The scenarios for the drills was similar for each of the mines. One mock drill, in Winnemucca in conjunction with all Newmont North America Sites, involved Cyanco and the Emergency Systems in the Winnemucca Area. This entailed a ruptured Cyanco/TransWood Truck that was impaled by a metal object. Other drills conducted at both the Phoenix Mine and Lone Tree Mine involved workers being exposed to high levels of hydrogen cyanide gas. The Phoenix Complex conducted one tabletop exercise in 2016 to test response procedures for cyanide exposure and release scenarios.

The Phoenix and Lone Tree Mine Rescue team members train together every month. The Phoenix Mine Rescue team members participate in the Lone Tree drills. The Lone Tree members do not normally participate in the Phoenix drills because there are enough team members at the Phoenix Mine to take care of emergencies. Phoenix Mine Rescue team members respond to emergencies at the Lone Tree Mine. At this time there are two mine rescue team members at Lone Tree Mine.

### **7.0 EMERGENCY RESPONSE – Protect communities and the environment through the development of emergency response strategies and capabilities.**

***Standard of Practice 7.1: Prepare detailed emergency response plans for potential cyanide releases.***

**Audit Finding:**

- |                         |                                     |  |
|-------------------------|-------------------------------------|--|
|                         | <input checked="" type="checkbox"/> | <b>in full compliance with</b>                                 |
| <b>The operation is</b> | <input type="checkbox"/>            | in substantial compliance with <b>Standard of Practice 7.1</b> |
|                         | <input type="checkbox"/>            | not in compliance with   |

The Phoenix Complex is in Full Compliance with Standard of Practice 7.1 that asks if the operations have prepared detailed emergency response plans for potential cyanide releases.

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### Basis for Audit Finding:

The Phoenix Complex has prepared emergency response plans for both the Phoenix Mine and the Lone Tree Mine. Additionally, both mines have Operating Plans with emergency response and contingency provisions. There are other response procedures (e.g., Remediation of Cyanide Contaminated Soils Procedure) for responding to cyanide releases. These plans describe actions and activities for the accidental releases of cyanide during process operations and spills from the Cyanco/TransWood delivery trucks.

More specifically these plans address: (a) Catastrophic release of hydrogen cyanide gas from storage or process facilities; (b) Transportation accidents; (c) Releases during unloading; (d) Releases during fires and explosions; (e) Pipe, valve and tank ruptures; (f) Overtopping of ponds and impoundments (g) Power outages and pump failures; (h) Uncontrolled seepage; (i) Failure of cyanide treatment, destruction, or recovery systems; and (j) Failure of the TSF.

The Phoenix Complex takes responsibility for the sodium cyanide solution after it is offloaded into the cyanide storage tanks, hence Cyanco/TransWood would address a cyanide transportation emergency. The Phoenix Complex would provide assistance in coordination with Cyanco/TransWood. For example, the plans state that in the case of a transportation-related emergency within the mines' property, the ERT will be organized immediately with the appropriate safety equipment to contain the spill before it leaves the property or enters a waterway, and that the action to be taken after containment of the spill will be determined in conjunction with Cyanco/TransWood.

The plans address specific response actions including evacuation use of antidotes, release containment, and mitigation or cleanup. There are no communities near the Phoenix Complex and therefore the plans do not address clearing potentially affected communities. Also the plans describe symptoms of cyanide exposure; routes of exposure; treatment procedures for conscious semi-conscious, and unconscious victims; location of first aid kits; and general use of antidote kits. The antidote kits themselves contain detailed instructions for use. Instructions on managing releases, including: safety and detection; tracing the source; controlling the source; emergency notification; securing the area; containing the release; recovering product; cleaning up; disposing of waste; confirming cleanup; and post-cleanup monitoring are contained the plans. More detailed procedures for spill containment, and cleanup are described in the Remediation of Cyanide Contaminated Soils Procedure.

***Standard of Practice 7.2: Involve site personnel and stakeholders in the planning process.***

### Audit Finding:

	<input checked="" type="checkbox"/>	<b>in full compliance with</b>
<b>The operation is</b>	<input type="checkbox"/>	in substantial compliance with <b>Standard of Practice 7.2</b>
	<input type="checkbox"/>	not in compliance with

The Phoenix Complex is in Full Compliance with Standard of Practice 7.2 that asks if the operations involve site personnel and stakeholders in the planning process.

### Basis for Audit Finding:

The Phoenix Complex solicits input of its workforce and local response agencies (e.g. local hospital and Lander County Local Emergency Planning Committee) in the emergency response planning through safety meetings, training sessions, and mock drills. Worker input in developing and evaluating health and safety procedures is via direct communication between supervisors and operators and during daily meetings. In addition, the Phoenix

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Mine process staff and the ERT participate in the cyanide-related mock drills.

Phoenix Complex employees are members of the Lander County Local Emergency Planning Committee (LEPC) that meets regularly in Battle Mountain. Other members of LEPC include representatives from the Battle Mountain General Hospital, Battle Mountain Fire Department, Sheriff, Lander County Ambulance and other local agencies. During these meetings, Emergency Response Plans are discussed. Newmont has a mutual aid emergency response agreement with Lander County.

The Phoenix Complex has also made the business leaders and the general public of the local communities aware of potential risks via community breakfasts, newsletters, and tours, as described in detail under Principle 9

There are no communities adjacent to the Phoenix Complex, but the Complex has made the nearest community (i.e., Battle Mountain) aware of the nature of risks from accidental cyanide releases via Phoenix Complex’s staff involvement in the Lander County LEPC.

The Phoenix Complex has not designated a role for offsite responders in planning or response to cyanide emergencies except for the Battle Mountain General Hospital. If transport of an exposed worker to the Battle Mountain General Hospital is required for further treatment, then the Phoenix Complex ambulance will meet the hospital ambulance (or the Summit Air Ambulance) at a pre-determined offsite rendezvous point, as specified in the procedures for emergency vehicle operations.

The Phoenix Complex has correspondence with the Battle Mountain General Hospital that confirms the hospital is aware of the potential to treat patients with cyanide exposure.

The Plans include the Sheriff Dispatch contact number to contact Summit Air as well as the air ambulance landing requirements and coordinates.

Although offsite stakeholders do not have a role in response to onsite cyanide emergencies, The Phoenix Complex still engages with local stakeholders via the membership of mine staff on the Lander County Local Emergency Planning Committee.

***Standard of Practice 7.3: Designate appropriate personnel and commit necessary equipment and resources for emergency response.***

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 7.3**
- not in compliance with

The Phoenix Complex is in Full Compliance with Standard of Practice 7.3. The Complex has designated appropriate personnel and committed necessary equipment and resources for emergency response.

**Basis for Audit Finding:**

The Phoenix Mine Emergency Response Procedure and the Lone Tree Mine Emergency Response Plan address:  
(a) The roles and responsibilities for the emergency response coordinators (including primary and alternate coordinators) in the event of an emergency (This includes the roles for the General Manager, Managers/General Foreman/Supervisors, the Health and Safety Manager, Security Department, the Emergency Response

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Trainer/Coordinator, the Emergency Response Team Captain and the ERT.); (b) the roles of the Emergency Response Team Captain and the ERT; (c) the training required for the ERT including Fire Fighting, Hazardous Material Emergencies, Advanced First Aid, Vehicle and Equipment Rescue, Rope Rescue, Incidents Command, and confined Space Rescue; (d) the callout process; (e) the duties and responsibilities of the Emergency Response Coordinators; (f) the locations of the emergency response vehicles (ambulances), fire truck, heavy rescue trailer, and Hazmat trailer; (g) the roles of the outside responders (the hospital).

All emergency vehicles, equipment, and supplies are inspected monthly. The Phoenix Mine equipment inspection forms detail the equipment pieces and PPE at each location. The Lone Tree Mine inspection forms the specific emergency response equipment at each location including the emergency response vehicle, the admin building, the Lone Tree Lab and the plant.

The Phoenix Complex has not designated a role for offsite entities in planning or response to cyanide emergencies except for the Battle Mountain General Hospital. The Phoenix Complex has corresponded with the Battle Mountain General Hospital that confirms that the hospital is aware of the potential to treat patients with cyanide exposure.

The response of the ambulance is tested in mock drills.

***Standard of Practice 7.4: Develop procedures for internal and external emergency notification and reporting.***

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 7.4**
- not in compliance with

The Phoenix Complex is in Full Compliance with Standard of Practice 7.4. The Complex has developed procedures for internal and external emergency notification and reporting.

**Basis for Audit Finding:**

The Phoenix Complex emergency response plans detail procedures for notifying management, regulatory agencies, outside response providers (i.e. the hospital and the Lander County Ambulance or Summit Air) and the cyanide supplier (Cyanco emergency response service). The plans include contact information for the Phoenix Mine management, Phoenix Mine Dispatch, sheriff, local hospital, ambulance, and others. The Phoenix Mine Operating Plan contains procedures and contact information to notify regulatory agencies.

Section 4.1.3 of the Phoenix Mine Operating Plan and Section 4.5.3 of the Lone Tree Mine Operating Plan contain procedures to notify local communities (through the State Emergency Response Commission and Local Emergency Planning Committee) and includes the contact information of these entities in Table 4.3 of the plan (Phoenix Mine) and Table 4.2 of the plan (Lone Tree). The Newmont Rapid Response Manual under its Communication Guidelines contains procedures for Media Release in case of an emergency.

***Standard of Practice 7.5: Incorporate into response plans and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals.***

**Audit Finding:**

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- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 7.5**
- not in compliance with

The Phoenix Complex is in Full Compliance with Standard of Practice 7.5. The Complex has incorporated into response plans and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals.

### Basis for Audit Finding:

The Phoenix Complex has described specific remediation measures for cyanide releases as follows:

- a. Written procedures to contain, recover and clean up liquid cyanide spills are described in the Phoenix Mine Operating Plan and the Lone Tree Mine Operating Plan under Section 4.1.2.1 and Section 4.4.1, respectively (Both sections are titled “Release of Cyanide”) Procedures require that containment structures such as berms or dikes or other immediate measures will be taken to stop the release until the necessary equipment and personnel can be mobilized to clean up the release. Soil, sand, or other absorbent material may be used to absorb the spill. Cyanide-affected materials releases will be disposed of on the heap leach pad, in the event pond, tailings facility or returned to the leaching circuit, depending upon the physical nature of the release. Spilled cyanide solution within the process plant and mill building will be returned to the mill leaching circuit or to the recovery process circuit from the floor sumps. The plans require the monitoring of the affected area after cleaning. The Phoenix Mine Emergency Response Procedure, the Lone Tree Mine Emergency Response Plan and the Remediation of Cyanide Contaminated Soils Procedure describe what final cyanide concentration (< 0.2 ppm WAD cyanide) will be allowed in residual soil as evidence that the release has been completely cleaned up.
- b. The Phoenix Mine Operating Plan and the Lone Tree Mine Operating Plan require the use of soil, sand, or other absorbent material to absorb the spill. The plans require the monitoring of the affected areas after cleaning. The two plans and the Remediation of Cyanide Contaminated Soils Procedure describe what final cyanide concentration will be allowed in residual soil as evidence that the release has been completely cleaned up. Contaminated soil or other contaminated media will be placed on the heap leach pads or in the tailings impoundment.
- c. There are no communities, residences, or water supply infrastructure in the vicinity of the Phoenix Complex and the necessity to provide an alternative drinking water supply is not likely. Provision of bottled water would be considered in the unlikely case of an emergency.

The Phoenix Complex anticipates spills only to soil, as there are no surface water bodies in the vicinity of the mine due to the arid conditions. Spills that might affect the ephemeral runoff are equivalent to spills to soil, as the runoff infiltrates to soil without possibility of reaching a surface water body. Section 5.14.3 of the Phoenix Mine Emergency Response Procedure has a general statement requiring the monitoring of the spill site to validate cleanup and impact on the environment. A similar statement is located in Section 6.7.7 of the Lone Tree Emergency Response Plan.

The Remediation of Cyanide Contaminated Soils Procedure details exactly how to monitor soils. Section 5.2 of this procedure describes how to collect representative samples, including sampling equipment; measures to prevent cross-contamination; sampling patterns (e.g., grid, perimeter); location documentation; sample handling and shipping; and required laboratory analysis. The minimum number of samples is two, with more as appropriate for the extent of the release and the sampling pattern. Section 5.3.2 of the procedure describes confirmatory sample after cleanup is completed, including the sample depth interval beneath the excavated surface and the cleanup threshold of less than 0.2 ppm WAD cyanide. Sampling procedures for groundwater

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monitoring are described in the Water Sampling and Monitoring Standard Operating Procedure.

The Remediation of Cyanide Contaminated Soils Procedure prohibits the use of hypochlorite, ferrous sulfate or hydrogen peroxide solutions when spills have reached flowing water bodies. The procedure details monitoring methods.

***Standard of Practice 7.6: Periodically evaluate response procedures and capabilities and revise them as needed.***

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 7.6**
- not in compliance with

The Phoenix Complex is in Full Compliance with Standard of Practice 7.6. The Complex periodically evaluates response procedures and capabilities and revises them as needed.

**Basis for Audit Finding:**

The Phoenix Complex emergency procedures and plans are reviewed at least annually, and more often if required after incidents, mock drills, or audits. The plans require reviews to be conducted annually or after emergencies. Changes to procedures and plans take into account information gathered in the field as well as the results of the simulations.

The Phoenix Complex conducts mock emergency drills based on likely cyanide release/exposure scenarios to test the response procedure, and incorporates lessons learned from the drills into its response planning. A mock drill conducted in Winnemucca in conjunction with all Newmont North America Sites that involved Cyanco and the Emergency Systems on May 25, 2017. The drill entailed a ruptured Cyanco/TransWood Truck. Another drill was conducted at the Phoenix Mine where a worker was sprayed with cyanide. The Phoenix Complex also conducted one tabletop exercise in the period between 2016 and January 2017 to test response procedures for cyanide exposure and release scenarios.

The cyanide related emergency response procedures are reviewed and revised following mock drills and actual incidents. The Phoenix Mine Emergency Response Procedure, Sections 1.0 and 5.25.2, includes provisions to review the procedure following any incident when it was necessary to implement the Procedure and to take in account information collected as result of simulations. Section 7.0, records reviews were conducted September 19, 2017 and again March 3, 2017. Section 8.0 of the Procedure describes the specifics of any changes to the procedure. The Lone Tree Mine Emergency Response Plan calls for reviews in Section 6.18.2, i.e. "Review of the plan will be conducted annually or after emergencies, reflecting updates of all information gathered on the field as well as the results of the simulations." The Plan, Section 7.0, shows that it was reviewed and modified July 24, 2017.

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**8.0 TRAINING: Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner**

*Standard of Practice 8.1: Train workers to understand the hazards associated with cyanide use.*

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 8.1**
- not in compliance with

The Phoenix Complex is in Full Compliance with Standard of Practice 8.1. The Complex trains workers to understand the hazards associated with cyanide use.

**Basis for Audit Finding:**

All Phoenix Complex employees are trained in cyanide hazard recognition as part of their MSHA New Hire Training. Employees assigned to the plants or TSF, where cyanide is an integral part of the operation, are also trained on the safe use and handling of cyanide through a process access training module. Contractors receive training on the use of cyanide at the sites. Visitors receive an information handbook that mentions the presence of cyanide in ponds and facilities; however, Phoenix Complex's staff escort visitors.

The Cyanide New Hire PowerPoint Presentation used as part of the MSHA New Hire Training includes the following topics:

- Caution Cyanide
- International Cyanide Management Code (including why is Newmont adopting the Code)
- Employee safety
- Protecting the environment and wildlife (heap pad design/construction, industrial artificial pond permits, leak detection, ground water monitoring wells, water pollution control permits).
- Liquid sodium cyanide
- Process overview including location of the cyanide offloading
- Cyanide presence in nature and Physical and chemical characteristics
- Safe handling
- Chemical hygiene
- Maintenance procedure
- Detoxifying cyanide
- Personal protective equipment
- Safety shower/eyewash
- Type of sodium cyanide related health hazard
- Poisoning symptoms, including routes of exposure
- First aid for cyanide overexposure
- Escape packs

Individuals who will be accessing the mill and other cyanide facilities receive additional training that includes

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the topics described above plus additional topics such as the location of the cyanide antidote kits, pH of sodium cyanide, and cyanide spill cleanup. Worker knowledge of cyanide hazards is confirmed with a test after the presentation.

The Phoenix Complex requires all personnel complete annual general refresher training related to cyanide. Refresher training is provided using the same International Cyanide Management Code Presentation provided for the process access training module. In addition, refresher training is provided during process meetings at the process areas where cyanide related safety topics are discussed

The Phoenix Complex retains employee training records. Records include cyanide-related training and test results demonstrating an understanding of the training.

**Standard of Practice 8.2: Train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.**

**Audit Finding:**

**in full compliance with**

**The operation is**  in substantial compliance with **Standard of Practice 8.2**

not in compliance with

The Phoenix Complex is in Full Compliance with Standard of Practice 8.2. The Complex trains appropriate personnel to operate the facilities according to systems and procedures that protect human health, the community, and the environment.

**Basis for Audit Finding:**

The Phoenix Complex trains its employees to perform their normal production tasks, including cyanide unloading, production and maintenance, with minimum risk to worker health and safety in a manner that prevents unplanned cyanide releases and exposures. The Phoenix Complex uses the Western Nevada Process Operations Technicians System to guide and track training.

The Phoenix Mine organizes training by process circuits and levels, including:

- Crushing
- Grinding and gravity separation
- Utilities, reagents, and filter press (includes cyanide offloading)
- Leach/carbon handling
- Carbon-in-pulp and carbon stripping
- Flotation and intensive cyanidation unit
- Tailings
- Technician levels 1 through 6
- Control room operator

Training topics related to cyanide exposures and releases are included in each circuit and level. Training methods include: on-the-job training; review of plant operating manuals; instruction in standard task and operating procedures; task observation by a competent person; and written exams. A checklist that itemizes each topic and requires sign-off by the trainer tracks training. The shift supervisor and training coordinator approve the

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checklist when all training is complete. For example, the Utilities, Reagents, and Filter Press circuit checklist includes under the Safety Section emergency response, cyanide antidote kits, Cyanide Code, confined space procedures, and others. This checklist also includes, under the Sodium Cyanide Storage and Distribution Section, an evaluation of the procedures for performing cyanide preparation and transfer to the storage tank, shutdown of the cyanide distribution system, and others.

The Lone Tree Mine also organizes training by process circuits and levels, including:

- Pad Piping/Layout Operation
- Equipment Operation
- Hydro-Jex Operation
- CIC Plant
- Lone Tree Leach (Major Circuit)
- Milk of Lime/Filter Press Operation (Major Circuit)
- Technician levels 1 through 5

Similar to the Phoenix Mine, Lone Tree Mine training topics related to cyanide exposures and releases are included in each circuit and level.

Additional training topics necessary for each job involving cyanide management are included in each circuit and level training. In addition, Cyanide Code annual refresher training includes the use of cyanide, cyanide detection, HCN exposure levels, response to HCN alarms, leach pad construction, groundwater monitoring wells, cyanide spill cleanup, liquid sodium cyanide, delivered pH, cyanide first aid, cyanide antidote, decontamination, response plan procedures, and others.

Employees assigned to a plant, tailings area, or an area where cyanide is an integral part of the operation are trained on the safe use and handling of cyanide through a process access training module. The Phoenix Complex also require that employees assigned to a plant, TSF, or an area where cyanide is used complete and obtain approval of task training before they are allowed to perform a task without supervision.

A supervisor and/or previously qualified operator provide task training utilizing the circuit checklists. The shift supervisor and training Specialist (training coordinators) approve the process circuit checklist when all training for a particular circuit or level is complete.

The Phoenix Complex ensures that employees continuously perform their cyanide-related activities safely by providing refresher training in two ways:

- Annual refreshers using the International Cyanide Management Code Presentation provided for the process access training module.
- Regular process meetings frequently include cyanide-related topics.

The Phoenix Complex confirms the effectiveness of cyanide training by both testing and observation. Also, the initial task training by circuit and level requires observation by qualified staff and a written exam. Safety interactions are used to confirm the effectiveness of task training even after the initial task training is completed and approved. The safety interactions cover all functional areas. Records are retained of written exams and the employees' understanding of cyanide.

The Phoenix Complex retains training records throughout an individual's employment. The records include the names of the employee and the trainer, the date of training, the topics covered, and test results demonstrating an understanding of the training materials.

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***Standard of Practice 8.3: Train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.***

**Audit Finding:**

- in full compliance with**
- The operation is**       in substantial compliance with      **Standard of Practice 8.3**
- not in compliance with

The Phoenix Complex is in Full Compliance with Standard of Practice 8.3. The Complex trains appropriate workers and personnel to respond to exposures and environmental releases of cyanide.

**Basis for Audit Finding:**

Personnel responsible for cyanide unloading, processing and maintenance are trained in procedures to be followed if cyanide is released. This training is provided as part of the annual refresher cyanide safety training (provided for the process access training module), the initial task training (provided with the process circuit checklists) and the annual environmental refresher training. Training covers spill and release definition, release response, cyanide spill cleanup, cyanide antidote kits, HCN gas release, required PPE, release reporting, and spilled material disposal.

The Phoenix Complex personnel responsible for cyanide unloading, processing and maintenance are trained in decontamination and cyanide first aid procedures. This training is provided as part of the annual refresher cyanide safety training (provided for the process access training module) and the initial task training (provided with the process circuit checklists). Training covers correct use of PPE; response to cyanide alarms; use of cyanide antidote kits; use of portable HCN monitors; use of fire extinguishers, eyewashes, proper pH and HCN levels; cyanide poisoning (routes of exposure); poisoning symptoms; first aid for cyanide overexposure; and decontamination procedures.

The Phoenix Complex conducts mock emergency drills based on likely cyanide release/exposure scenarios to test the response procedure, and incorporates lessons learned from the drills into its response planning. A mock drill conducted in Winnemucca in conjunction with all Newmont North America Sites that involved Cyanco and the Emergency Systems on May 25, 2017. The drill entailed a ruptured Cyanco/TransWood Truck. Another drill was conducted at the Phoenix Mine where a worker was sprayed with cyanide. The Phoenix Complex also conducted one tabletop exercise in the period between 2016 and January 2017 to test response procedures for cyanide exposure and release scenarios.

Emergency Response Coordinators and members of the ERT receive training in the procedures described in the Phoenix Emergency Response Procedure. In addition, the ERT receives specialized training in first aid related to cyanide, fire-fighting, hazardous material emergencies, advanced first aid, vehicle and equipment rescue, rope rescue, incidents command, and confined space rescue. This training includes the use of necessary response equipment.

The Phoenix and Lone Tree Mine Rescue team members train together every month. The Phoenix Mine Rescue team members participate in the Lone Tree drills. The Lone Tree members do not normally participate in the Phoenix drills because there are enough team members at Phoenix to take care of emergencies. Phoenix Mine Rescue team members respond to emergencies at Lone Tree. At this time there are two mine rescue team members at Lone Tree.

The Phoenix Complex has not designated a role for offsite responders in planning or response to cyanide

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emergencies except for the Battle Mountain General Hospital. The Complex has correspondence with hospital that has confirmed that they are aware of the potential to treat patients with cyanide exposure.

The Phoenix Complex provides annual refresher training for response to cyanide exposures and releases as part of their annual refresher cyanide safety training (provided for the process access training module) and the annual environmental refresher training. Annual cyanide safety refresher training records as well as annual environmental refresher training records for process and maintenance operators were reviewed for this audit (2016-2018).

The Phoenix Complex retains training records throughout an individual's employment documenting the training they receive. The records include the names of the employee and the trainer, the date of training; the topics covered, and test results demonstrating an understanding of the training materials.

**9.0 DIALOGUE: Engage in public consultation and disclosure.**

***Standard of Practice 9.1: Provide stakeholders the opportunity to communicate issues of concern.***

**Audit Finding:**

- in full compliance with**
- The operation is**  in substantial compliance with **Standard of Practice 9.1**
- not in compliance with

The Phoenix Complex is in Full Compliance with Standard of Practice 9.1. The Complex provides stakeholders the opportunity to communicate issues of concern.

**Basis for Audit Finding:**

The Phoenix Complex provides opportunities for stakeholder and public input by having an “open door” policy:

- The External Relation Specialist’s phone number and e-mail address are listed in two local newspapers (i.e., the Battle Mountain Bugle and the Humboldt Sun) as part of the “Newmont
- Business cards for the Senior External Relations Representative at the local Chamber of Commerce and Visitor Center.
- The Newmont.com website: <http://www.newmont.com/contacts/default.aspx>, includes contact information in case of stakeholder’s questions or concerns.
- Newmont Nevada Facebook, created on January 13, 2016. An article on the certification of one of the Nevada Newmont mine’s was posted.
- Contact information for the Senior External Relations Representative is provided as a handout at new hire orientation, community meetings, and events. The contact information consists of a phone number and email address.

The Complex also provides opportunities for face-to-face stakeholder and public input by:

- Quarterly community breakfasts in Battle Mountain.
- Workshops with the Battle Mountain Band of the Shoshone Tribe.
- Newmont conducts mine tours for interested parties. Public tours are conducted monthly and advertised in

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the Buggle “Newmont Notes” page.

- Booth at the Annual Health Fair in Battle Mountain.
- Opportunities also exist for public input during permit and licensing hearings.

The Complex’s staff also participates on various local committees, such as the Chamber of Commerce, Economic Development Authority, Local Emergency Planning Commission (LEPC), and the Nevada State Emergency Response Commission (SERC). They occasionally present information about cyanide, safety, and other mine issues at these meetings, thus allowing an opportunity for stakeholder input.

The Phoenix Complex logs all public and stakeholder concerns on an issues register to ensure that concerns are tracked and responded to.

***Standard of Practice 9.2: Initiate dialogue describing cyanide management procedures and responsively address identified concerns.***

**Audit Finding:**

- in full compliance with**
- The operation is**       in substantial compliance with      **Standard of Practice 9.2**
- not in compliance with

Phoenix Complex is in Full Compliance with Standard of Practice 9.2. The Complex initiates dialogue describing cyanide management procedures and actively address identified concerns.

**Basis for Audit Finding:**

The Phoenix Complex provides opportunities for face-to-face interactions with stakeholders as discussed in SP 9.1.1.

***Standard of Practice 9.3: Make appropriate operational and environmental information regarding cyanide available to stakeholders.***

**Audit Finding:**

- in full compliance with**
- The operation is**       in substantial compliance with      **Standard of Practice 9.3**
- not in compliance with

The Phoenix Complex is in full compliance with Standard of Practice 9.3. The Complex makes appropriate operational and environmental information regarding cyanide available to stakeholders.

**Basis for Audit Finding:**

The Phoenix Complex has developed written descriptions of the mine’s operations and cyanide management as handouts, PowerPoint presentations, and reports (such as the “Beyond the Mine” report and the “Sustainability & Social Responsibility, Community Report. The information is available to the public and stakeholders via tours,



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workshops, public meetings, community breakfasts, and websites. The Complex has also developed a video on how gold is produced that can be viewed at the local visitors center.

Newmont has produced a video entitled “How Gold is Produced”. This video is displayed at the Visitor Center in Battle Mountain. The video has been provided to schools and in tours to the site, and talks about the use of cyanide to produce gold.

The Phoenix Complex has WPCP Fact Sheets describing the use and management of cyanide at the sites. These public documents are available from the Phoenix Complex or from the Nevada Department of Environmental Protection.

According to the US Census Bureau website, approximately 88.7% of the people in Humboldt County, Nevada have a high school education or higher, indicating that the population is largely literate.

The Phoenix Complex has developed procedures to internally and externally report any incident resulting in a release of cyanide. Also, the Complex is required to submit reports to the Mine Safety and Health Administration that would include any cyanide-related worker exposures or deaths.

The Complex has made information on cyanide releases and exposures, i.e. (a) Cyanide exposure resulting in hospitalization or fatality; (b) Cyanide releases off the mine site requiring response or remediation; (c) Cyanide releases on or off the mine site resulting in significant adverse effects to health or the environment; (d) Cyanide releases on or off the mine site requiring reporting under applicable regulations; and (e) Releases that are or that cause applicable limits for cyanide to be exceeded, publicly available via the Newmont website “Beyond the Mine”. This website reported incidents by these categories for 2015, 2016, and 2017. Spills and releases were also included in annual monitoring reports from 2015 to 2017 for the Water Pollution Control Permits. Based on this information, no cyanide exposure or releases for a. through e. occurred during the recertification period.