SUMMARY AUDIT REPORT
GOLD MINING OPERATIONS – BOROO GOLD MINE

International Cyanide Management Code Audit

Prepared for:
Centerra Gold Inc. and
Boroo Gold Company Ltd.

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

SAR FINAL REPORT
October 28, 2014

Submitted by:

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SUMMARY AUDIT REPORT

Name of Gold Mine:	Boroo Gold Mine
Name of Facility Owner/Operator:	Boroo Gold Company Ltd.
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Location detail and description of operation:

Boroo Gold Company Ltd. (BGC) operates the Boroo Gold Project located in Selenge Province, in northern Mongolia, approximately 135 km northwest of Ulaanbaatar, the national capital, and about 230 km to the south of the international boundary with Russia. BGC is a wholly owned subsidiary of Centerra Gold Inc., a Canadian based gold mining company. The mine entered commercial production in March of 2004. The location of the mine is shown below in Figure 1.

Cyanide is purchased by BGC from Anqing Shuguang Chemical Co. Ltd. (Shuguang) in 1,000 kg Intermediate Bulk Containers (IBCs) that are delivered to the mine in 20-foot steel shipping containers and stored in the containers on a concrete containment pad located within a secured yard until needed.

The processing plant was designed for a throughput of 1.8 M tonnes of ore per year. The crushed ore is fed directly to a semi-autogeneous (SAG) mill. Cyclones divide the ore into two streams, with the cyclone underflow reporting to the ball mill and the cyclone overflow reporting to the carbon in leach (CIL) circuit. About 20% of the total cyclone underflow reports to a gravity circuit. The cyclone overflow is thickened prior to the leaching circuit that consists of two pre-leach tanks and six CIL tanks. The recovered gold is subsequently stripped from the carbon and again put in solution to be recovered by electrowinning, followed by smelting and the production of doré bars. The tailings, after processing of the ore, are detoxified to meet a target cyanide level of less than 1 mg/L using an air-sulphur-dioxide process. The tailings are discharged by gravity to the permanent tailings management facility (TMF) about 5 km down gradient from the process plant.

Figure 1 – Location of Boroo Mine

The tailings management facility (TMF) is designed for zero discharge and is located in the Ikh Dashir River valley. It consists of a tailings line, tailings dam, and a decant water reclaim system to pump reclaimed water from the tailings pond back to the mill process. To minimize the potential for seepage, the TMF was constructed by the placement and compaction of a low permeable clay layer over the base of the impoundment area that ties into a High Density Polyethylene (HDPE) geomembrane on the upstream faces of the earthfill embankments.

A heap leach operation was constructed in 2008 and operated under temporary permit until 2009. The pad was allowed to drain down in 2010 and the associated carbon-in-column (CIC) plant and pregnant leach solution (PLS) pond were drained and mothballed, pending completion of negotiations with the Mongolian Government for renewing the operating permit. The heap leach pad and CIC plant began operation again in 2012 prompting startup of cyanide shipments to be renewed in late 2012.

SUMMARY AUDIT REPORT

Auditors' Finding

The operation is
- ☒ **in full compliance with**
- in substantial compliance
- not in compliance *the International Cyanide Management Code.*

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Date(s) of Audit: November 7, 2011 – November 11, 2011

I attest that I meet the criteria for knowledge, experience and conflict of interest for ICMC Verification Audit Team Leader, established by the International Cyanide Management Institute and that all members of the audit team meet the applicable criteria established by the *International Cyanide Management Institute* for ICMC Verification Auditors. I attest that this Summary Audit Findings 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 ICMC Verification Protocol for Gold Mining Operations* and using standard and accepted practices for health, safety and environmental audits.

Signature of Lead Auditor — 28 October 2014 Date

Signature of Auditor — 28 October 2014 Date

SUMMARY AUDIT REPORT

1. 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.***

☒ in full compliance with Standard of Practice 1.1

The operation is in substantial compliance with

not in compliance with

Boroo Gold Company (BGC) has been purchasing sodium cyanide from Anhui Anqing Shuguang Chemical Co. Ltd. (Shuguang) processing plant in China since 2005, Shuguang became certified as fully compliant as a cyanide production facility under the Code on 31 March, 2010, and was subsequently recertified on 12 September, 2013..

BGC's contract with Shuguang for scheduled cyanide shipments dated 2012 specifies that the manufacturer must be certified with the International Cyanide Management Code. Since BGC purchases from a certified manufacturer they are considered to be in "full compliance" with this Standard of Practice of the Code.

2. 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.***

☒ in full compliance with Standard of Practice 2.1

The operation is in substantial compliance with

not in compliance with

BGC has two contracts that address cyanide transportation from the supplier/manufacturer to the mine site: a contract with Shuguang for the production and transportation of cyanide from the Shuguang plant in Anqing City, China, through the Chinese-Mongolian to the ZaminUud freight rail yard; and as part of the Boroo Supply Chain, a contract with Monlogistics Worldwide Co. Ltd as contractor and freight forwarder for the transportation from ZaminUud freight rail yard to the Ulaanbaatar (national railway) Wood Yard and onward to the Boroo mine site. The contracts provide clear lines of responsibility. The

Shuguang contract stipulates requirement to be ICMC certified and places the responsibility for shipment from the production plant to the Chinese-Mongolian border on Shuguang. BGC takes possession of the cyanide on arrival of the cyanide at the ZaminUud freight rail yard and is responsible for transportation of cyanide for the Boroo Supply Chain. Both contracts include designated responsibilities as provided by the Code. Packaging of cyanide is in approved 1,000 kg IBC's with appropriate safety marks, classification, placards and associated documentation which conform to relevant international standards regarding the proper loading, handling and transport of sodium cyanide. Signage is provided in pictograms, and where necessary, in Chinese and Mongolian.

BGC is responsible for unloading the sodium cyanide (in IBC's) in 20-foot containers onto the storage pad at the Boroo mine site. BCG inspects and verifies their cranes prior to unloading and follows specific procedures. All vehicles used to transport cyanide from Ulaan Baatar Wood Yard to Boroo site either belong to BGC, or are leased through Monlogistics. BGC maintains both the owned and leased vehicles as well as cranes used to handle the consignments. All safety aspects of transportation, including training for contractor's drivers/operators are orchestrated by BGC staff. Shuguang is responsible for safety and training of transporters for the Anqing City to ZaminUud freight rail yard portion of the route. Security requirements for cyanide shipments are specified in the contract documents. The BGC contract with Shuguang specifies that responsibilities extend to subcontractors.

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

☒ **in full compliance with Standard of Practice 2.2**

The operation is
in substantial compliance
not in compliance

BGC's 2012 contract with Shuguang for scheduled shipments specifies that they must be certified with the International Cyanide Management Code (ICMC) as manufacturer, transport and use in gold production. The 2012 contract with Monlogistics specifies the requirements for the transportation from ZaminUud to the Boroo mine site. .

At the time of the certification audit, the cyanide transporter through China (Anqing Shuguang Supply, Sales & Transportation Co., Ltd.) and the transporter within Mongolia (Boroo Supply Chain) were in the process of gaining certification under the Code. However, at that time cyanide was not being shipped because the heap leach was not in operation and sufficient supplies of cyanide were available on site for continued operation of the CIL circuit. BGC reinitiated shipment of cyanide to the mine in December 2012. Shuguang gained transportation certification as Anqing Shuguang Supply, Sales and Transportation Co., Ltd. on May 16, 2013, for the route between the process plant and Erlian, and on August 19, 2014 for the route between Erlian and ZaminUud. The Boroo Supply Chain gained transportation certification on July 1, 2013.

3. 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.***

☒ in full compliance with Standard of Practice 3.1

The operation is in substantial compliance with
not in compliance with

Cyanide is only delivered to the mine site in solid briquette form.

BGC conducted a *"Risk Assessment for Reagent Storage at Boroo Site"* June 2003. The chemical storage pad at BGC was constructed in 2003 and provides a hazardous materials storage area for shipping containers. During full operation, BGC unloads containers at Boroo mine site approximately one to three times per year. As the Heap Leach had not been operational since May 2009, the requirement for cyanide was reduced and the most recent shipments of cyanide occurred in November 2009 and November 2010. Subsequently, a shipment took place in December 2012 and was audited for the Boroo supply chain.

IBC boxes of sodium cyanide briquettes are stored in the locked weatherproof shipping containers in which they were transported and delivered. The cyanide containers are stored on their own dedicated concrete containment off-loading and storage pad to segregate them from other hazardous chemicals. The cyanide is located within a fenced and locked compound that is located away from the communities, the Boroo mine camp and the mill. There is no surface water in the proximity of the pad. The pad is bermed and slopes such that any surface run-off or spill would flow to a collection sump that BGC monitors and pumps out as required.

All mixing of cyanide occurs in the Mill Reagent area at the mine site. Mixing also occurs in the CIC Plant when the plant is in operation. The cyanide mix tank and storage tank are each provided with overfill protection, specifically an automatic level indicator. The forklift driver and warehouse shipper/receiver wear full PPE when opening the cyanide containers to remove IBC's. Natural ventilation would prevent the build-up of cyanide gas; however monitors are used for verification of potential hydrogen cyanided gas when the container is opened. The containers are unloaded on the concrete pad and transferred onto a truck for delivery to the mill as cyanide is required for mixing, with quantity limited to the number of boxes required to complete cyanide mixes scheduled.

All cyanide mixing, storage and process tanks are located within concrete containments. An engineering report concluded that the mix and storage tank containment areas in the Mill and CIC plant have sufficient capacity to contain greater than 110% of the volume of the largest tank, and provide a competent barrier in the event of leakage.

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.***

☒ in full compliance with Standard of Practice 3.2

The operation is in substantial compliance with
not in compliance with

The empty cyanide shipping containers are cleaned by the Mill Storage operator and are stored empty (labeled) on site, until required to transfer for the next shipment. These containers are only used for cyanide. The cyanide IBC wood boxes are not reused. BGC uses a rinse spray system at the bag splitter to triple rinse the bags prior to disposal. The wood and rinsed plastic bags are removed daily from the mix area and transported to a dedicated burn pit at the west side of the tailings pond and incinerated. The residual ash is covered with soil.

BGC has developed and implemented written procedures for mixing cyanide to prevent exposures and releases during cyanide unloading and mixing. The area is posted and secure during cyanide transfer and mixing. There is constant radio communication with the mill control operator during cyanide mixing and transfer. The emergency showers and eyewash are tested prior to cyanide mixing.

Only qualified and trained forklift operators transfer the IBCs from the Reagent storage area into the reagent mixing area, with no stacking of IBCs. Mechanical exhaust ventilation to the cyanide mix and storage tanks is turned on and operates continuously during the mixing procedure. After every sodium cyanide mixing event, the mix area is hosed down with water. Two operators are required to be present during a mix. Operators are in radio and visual contact with the control room. The reagent operators are required to wear specific and appropriate personal protective equipment. There are SCBA (self-contained breathing apparatus) escape packs readily available in the instance of a spill. A first aid kit is brought to the mixing area during a mix and readily available. Spills materials are stored in the reagent area and readily available.

4. 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.***

☒ in full compliance with Standard of Practice 4.1

The operation is in substantial compliance with
not in compliance with

Active cyanide facilities at the Boroo operation include the cyanide off-load and storage compound; cyanide mixing/storage tank; acacia reactor; cyanide leach and adsorption circuit; acid wash and carbon strip; pregnant and barren tanks; detoxification plant; tailings management facility (TMF); and associated pumps, piping and secondary containments. The heap leach pad with associated carbon-in-column (CIC) circuit, pregnant leach solution (PLS) pond and emergency pond were not in operation at the time of the audit, but were brought back into operation in 2012 after the permit for the heap leach operation was issued.

BGC has developed a robust Health & Safety Management System (HSMS) and Environmental Management System (EMS), which are based on the ISO 14001 and OSHAS 18000 models involving the Plan, Do, Check and Act cycle (and which are audited biannually through Centerra). BGC have developed and implemented operator manuals; safe work practices; operating procedures and instructions; and training, monitoring and inspection programs for the safe and environmentally sound operation of the cyanide facilities.

The Boroo facility design and operational procedures were established to meet the requirements of Mongolian regulations and recommendations set out in the Environmental Impact Assessment (EIA) for the mine project. These requirements address occupational health and safety, environmental protection and monitoring, reclamation, public relations, as well as technical aspects such as facility design and operations and materials handling. The tailings design criteria and assumptions for operation of the TMF are presented in the Tailings Facility Operations, Maintenance and Surveillance Manual.

The TMF was designed as a zero discharge facility with a capacity to contain all tailings generated over the anticipated life of the project. Any dam seepage would be pumped back into the facility. A sufficient freeboard is maintained at all times to store the projected tailings volume (conservatively based to take into consideration low density tailings resulting from freezing in the winter months) and the 100 year rainstorm event and maintain a minimum freeboard of 0.5 m. Weak acid dissociable (WAD) cyanide concentrations discharged to the tailings facility are required to be less than 1 mg/L.

BGC has a comprehensive change management process that applies to all changes that may impact on safety, health, environmental or regulatory compliance. The procedure captures changes to process and plant equipment; new hazardous products purchases; organizational changes; changes to safety, health and environmental procedures and supporting documents; changes performed by the maintenance and operations departments; and capital projects. The procedure sets out roles and responsibilities including the requirement for contractors to adhere to the procedures and a requirement for review and sign-off by senior safety and environmental managers.

The mill standard operating procedures include addressing non-standard operation situations. These include emergency shutdown procedure, upset or failure of the detoxification circuit and procedures for transferring from mains power to backup generator power in the event of power failure. The Maintenance department has procedures for decontamination and cleaning of tanks and equipment in preparation for maintenance or taking equipment out of service. In the event of an abnormal condition developing at the

TMF, the *Tailing Facility Operations Maintenance and Surveillance Manual* includes emergency planning and response procedures for potential scenarios such as overtopping of dams, excessive seepage and piping, exposure of tailings due to low water, static or seismic induced dam failure, excessive erosion; spillway blockage, malfunctioning valves, and effluent with metals or cyanide contamination in excess of compliance limits. In the event of a major rupture, sluice gates have been installed at all drainage culverts along the pipeline route. Except during periods of precipitation, these culverts remain closed and thereby provide emergency containment for released tailings slurry.

All cyanide process circuits are inspected daily. These inspections are recorded on operator checklists and any deficiencies are tracked in a workplace logbook. The inspection programs include inspection and documentation of all cyanide tanks, pumps, pipelines, and containments. In addition, operators complete area specific logsheets to document operational parameters including solution flow rates, pH, cyanide concentrations, reagent addition, etc. Visual inspections are conducted of the TMF and associated structures to ensure their integrity and safe operation. Although the heap leach circuit was not in operation during the audit, daily visual inspections and monitoring of water levels in ponds and sumps continue to be undertaken. Completed inspection checklists and log books include details of the date of inspection, name of inspector, and any deficiencies noted. Equipment related deficiencies noted on checklists are entered into the MINCON ELLIPSE maintenance database system where required actions are prioritized and tracked to completion. All records are retained.

BGC has implemented a time-based preventative maintenance (PM) program for critical equipment. The PM schedule provides a listing of the equipment along with the planned time for maintenance. The PM system is managed using MINCON ELLIPSE, which generates PM work orders on an established schedule. Corrective maintenance activities are manually entered into the system and scheduled according to criticality. Corrective maintenance for safety related equipment is coded for immediate action. In addition to routine maintenance, thermographic and ultrasonic testing is performed annually on equipment and tanks, and internal inspections are conducted on tanks during scheduled maintenance shutdowns. All production pumps are doubled for critical equipment to allow switching if a pump needs to be taken out of operation for service or repair.

Power for the operation is supplied from the main Mongolian grid. Although the power supply is generally stable with few interruptions, the mine maintains emergency generators capable of supplying power required for vital services in case of power outages. There are three separate 648 KVA standby generators: one provides backup power to the camps, one to the CIC building and leach pad, and one to the mine workshop, Site Administration building and warehouse. There is a 1,000 KVA rated generator for the mill. During a power outage, this generator is able to power all of the mill operations, except for the crusher and grinding circuit. Generators are inspected weekly and tested monthly as part of the preventative maintenance program, and records are maintained.

The PLS pond for the heap leach is designed to retain 24 hours of drain down in the event of a power outage. The PLS pond will overflow into the lined emergency storm pond if additional capacity is required.

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

☒ **in full compliance with Standard of Practice 4.2**

The operation is
in substantial compliance with
not in compliance with
not subject to

To meet the 1 mg/L WAD cyanide concentration limit permitted in discharge to the tailings impoundment, the concentration of cyanide in the leach circuit must be maintained at about 80 mg/L or less, even though ore characteristics would warrant use of higher cyanide concentrations in the leach/adsorption circuit to obtain higher gold recovery. Cyanide addition rates are closely monitored and controlled by the Mill operators through collection and titration analysis of samples every 2 hours from various locations in the CIL circuit. The cyanide addition rate is adjusted up or down to maintain the cyanide concentration in the last adsorption tank between 30 mg/L and 50 mg/L. The CIL circuit is maintained at greater than pH 10.0 through monitoring the pH and adjusting the lime feed as needed.

Samples are also collected every 2 hours from the feed to the detox circuit and tails from the detox circuit and analyzed for WAD cyanide to ensure effective operation of the plant and that WAD cyanide concentrations in the tails going to the TMF are less than 1 mg/L.

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

☒ **in full compliance with Standard of Practice 4.3**

The operation is
in substantial compliance with
not in compliance with

BGC has developed an effective program to manage the water balance to prevent overtopping of ponds associated with the TMF and the heap leach facility. These facilities were designed and are operated to have sufficient capacity to contain run-off generated during a 100 year 24 hr storm event. During the operation of these facilities, the following factors are considered: solution application rates to the heap leach facility; tailings discharge rates from the detox circuit; precipitation rates; evaporation rates; impacts of freezing and thawing on the density of tailings in the impoundment; seasonal restrictions on the ability to reclaim water from the impoundment for process water in the mill and operation of the ETP; and provision of backup power in the event of a mains power outage.

Solution inputs to the TMF are tailings from the mill and precipitation. The TMF was designed to have adequate capacity to contain the runoff from a 100 year 24 hour storm event, estimated at 104 mm of rain based on calculations provided in the project Environmental Impact Assessment (EIA). This amounts to a water level rise of 127 mm within the impoundment based on current impoundment dimensions. This volume can be contained under normal operating conditions and is within the operating minimum design freeboard of 0.5 m.

Solution losses from the TMF include reclaim water, evaporation and potentially seepage. The volume of reclaim water pumped back to the mill is recorded daily. The volume of water lost through evaporation is estimated using a formula provided in the project EIA. The TMF was designed and constructed to minimize the potential for seepage and no seepage was reported in 2010.

Water is reclaimed from the impoundment area and pumped back to the mill for process water. Because of winter freezing conditions, reclaim is only viable between April and November and this seasonal restriction is incorporated into the design and operation of the TMF. During the winter months, the deposition density of the tailings is affected by ice development and therefore accurate quantification of slurry deposition is difficult. Surveys of the tailings pond elevations are therefore undertaken monthly (except during the winter when the impoundment is frozen) to ensure accurate information of deposition volumes is maintained.

There is a standby generator dedicated to the heap leach circuit in the event of a mains power loss or outage. Nevertheless, the PLS pond at the heap leach facility is designed with a capacity to contain 8 hours of operational storage plus, in the event of a power outage, 24 hours of heap leach drain down. If additional capacity is required, the PLS pond will overflow into the emergency pond. The emergency pond and PLS pond have the combined capacity to contain 100 year 24 hr storm flow from the leach pad, collection ditch and collection ponds while maintaining a freeboard of 0.75 m.

There is a net negative water balance at the tailing facility due to evaporation from the impoundment being over double the annual precipitation volume entering the impoundment. This situation, coupled with the volume of water reclaimed for use in the mill, low annual precipitation (300 mm), and relatively small 100 yr 24 hr storm event (104 mm), there is a low probability that overtopping would occur.

BGC conducts year round inspections of the tailings facility and seasonal inspections of the decant system for reclaim water. These include informal daily inspections undertaken by tailings operators; weekly documented inspections of all structures, including diversion ditches, by the Geotechnical Engineer, Mine Operations General Foreman and Safety and Environmental Superintendents; weekly maintenance inspections of the decant system; and monthly inspections by environmental staff of piezometers, monitoring wells and seepage drains to check for potential seepage from the impoundment. The heap leach circuit was not in operation at the time of the audit; nevertheless BGC continued to undertake daily inspections and maintenance of the facility and ponds during the shut-down period. The operation of the heap leach circuit was reestablished in late 2012.

The TMF was designed to operate with a minimum freeboard of 0.5 m. This provides adequate volume to contain the 100 yr 24 hr maximum storm event. The tailings facility is normally operated with a much greater freeboard. At the time of the audit, the elevation of the pond was 925.97 m (i.e., about 6.5 m below the current crest of the dam). BGC schedules a construction of a dam rise to begin prior to the freeboard decreasing to less than 1.5 m.

The BCG weather station was installed at Boroo in 2006. The station is fully automated and measures hourly air mean, maximum and minimum temperatures, rainfall amount, net radiation, wind speed and direction, air pressure and air relative humidity. The site specific meteorological data collected is used to check and update, as necessary, the precipitation and evaporation rates used in the TMF design and water balance. The original design was based on data available from Baruunkharaa (20 km from mine site) and Zuunkharaa (35 km from the mine site) weather stations. The data collected to date shows no significant deviation from the values used for the original design of the tailings and heap leach facilities. The 5 years of data collected to date is currently too short a time period to warrant review of the 100 yr 24 hr design storm event.

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

☒ **in full compliance with Standard of Practice 4.4**

The operation is
in substantial compliance with
not in compliance with

The TMF and the PLS pond (when operating) are the only facilities where open cyanide solutions are present.

BGC has been successful in preventing wildlife mortality related to cyanide in the tailings impoundment by ensuring the tailings discharge from the detox circuit is less than 1 mg/L WAD cyanide as required as part of BGC's obligation to operate. This requirement is achieved by limiting cyanide concentrations in the CIL circuit and treating the tails using a modified INCO sulphur dioxide-air detoxification process prior to discharge through the tailings pipeline.

During operation of the heap leach, solution in the PLS pond would contain WAD cyanide in excess of 50 mg/L. The pond is provided with bird balls to cover the solution to exclude birds from coming into contact with cyanide. Except on the side-slopes of the heap-leach pad, the drip emitters are buried. BGC indicated that during operation of the leach pad, surface ponding of solution on the leach pad was not a problem. No wildlife mortalities were reported during the period of operation of the heap leach pad. The absence of solution ponding on the leach pad, the use of bird balls to cover the PLS pond, and the absence of wildlife mortalities is evidence that BGC has systems to effectively prevent significant wildlife mortality.

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

☒ **in full compliance with Standard of Practice 4.5**

The operation is
in substantial compliance with
not in compliance with

The TMF has been designed as a zero discharge facility. No supernatant water is discharged to surface water. The surface water of the Boroo River (located approximately 3 km from the TMF) is sampled upstream, midstream and downstream for chemical analysis, including free cyanide, and all Free cyanide concentration were below the analytical detection limit of 0.01 ppm, and therefore below 0.022 criteria.

The TMF was constructed to minimize the potential for seepage by the placement and compaction of a low permeable clay layer over the base of the impoundment area that ties into a HDPE geomembrane on the upstream faces of the earth fill embankments. Piezometers installed through the dam, monitoring wells down-gradient of the dam, and inspection of seepage collection structures indicate that no seepage from the facility has occurred. The results of analysis of groundwater collected from piezometers show concentrations of free cyanide in the groundwater is less than 0.022 mg/L.

The PLS pond is constructed with a double HDPE liner with interstitial monitoring. In 2009, a leak was detected in the pond liner. Inspection indicated that the leak was limited to the inner liner and was subsequently repaired. No impact to groundwater was detected in monitoring wells located on the down-gradient side of the pond.

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

☒ **in full compliance with Standard of Practice 4.6**

The operation is
in substantial compliance with
not in compliance with

BCG has implemented specific measures to manage seepage to protect the beneficial use of groundwater. The TMF was designed as a zero discharge facility by the placement and compaction of a low permeable clay layer over the base of the impoundment area that ties into a HDPE geomembrane on the upstream faces of the earth fill embankments. Toe drains and finger drains are provided to collect any seepage.

The heap leach pad and PLS pond are lined to prevent groundwater impact. The heap leach pad consists of four cells constructed over two impermeable barriers; a compacted low permeable silty clay over which is a low density polyethylene (LDPE) geomembrane liner. These liners are protected by a cover of crushed permeable fill. Monitoring sumps are installed at the minimum elevation of leach pad to check for potential seepage.

The PLS pond liner system consists of a compacted low permeable silty clay, overlain by a LDPE liner and HDPE geomembrane liner. A leak detection system consisting of a geonet sandwiched between the geomembranes on the slope and bottom of the pond is connected to a corner leak detection sump and well system.

Piezometers are installed through the TMF dam and monitoring wells are installed down-gradient of the dam and the heap leach circuit. These and the seepage drains and leak detection sumps are monitored

weekly.

BGC monitors groundwater to ensure compliance with Mongolian regulatory requirements of 0.005 mg/L free cyanide and 0.1 mg/L total cyanide. Review of groundwater analysis results for samples collected in March 2011 from nine monitoring wells located around the TMF and Heap Leach facility show that free and total cyanide concentrations in all wells were below the respective maximum permissible levels.

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

The operation is

☒ **in full compliance with Standard of Practice 4.7**
in substantial compliance with
not in compliance with

The sodium cyanide is delivered in 1,000 kg IBC boxes, packed in 20-foot steel weatherproof shipping containers. The containers remain locked and sealed and are stored within the secure storage compound on a concrete pad with containment berm that slopes to a sump. Any liquid found in the sump is pumped directly to the mill or tailings line. The containers are unloaded on the concrete pad and transferred using a fork lift onto a truck for delivery to the mill as cyanide is required for mixing.

All cyanide mixing, storage and process tanks are located within concrete containments. During the audit, no information was available on the capacities of these containments; however, the concrete was observed to be well maintained, in good condition, and there was no noticeable evidence of cracking or degradation. Engineering drawings showed that the cyanide mix and storage tanks in the mill and CIC plant, pregnant solution tanks, and detoxification tanks are installed on reinforced concrete bases constructed into the concrete containment floors. The leach and CIL tanks however, were installed on ring beam foundations that did not provide competent containment beneath the tank. Subsequent to the field component of the audit, BCG installed a leak detection system beneath each leach and adsorption tank and implemented a daily monitoring program to check for potential leakage. Since the plant has only been in operation since 2003 and all equipment is inspected and maintained on a scheduled basis through BGC's inspection and preventative maintenance program, it is the auditors opinion that no immediate or substantial risk to health, safety or the environment existed during construction and implementation of this system.

An engineering study commissioned by BGC subsequent to the audit determined that the containment areas of the cyanide tanks had sufficient capacity to contain greater than 110% of the volume of the largest tank, with exception of the leach/CIL tank containment area which was less than 110% of the volume of the largest tank. Subsequent to the field component of the audit and in response to the results of the engineer assessment, BGC constructed an additional containment basin on the west side of the existing leach/CIL tank containment to provide more containment capacity for the leach/CIL tanks, based on design recommendations presented in the engineering report. The combined original and new containment basins now provide sufficient capacity to hold 110% of the volume of the largest tank.

All secondary containments are equipped with sumps and dedicated automatic pumps to collect and remove cyanide solution and slurry spillage for return to the appropriate circuit, tank or process.

Because the leach/CIL tanks had concrete containment (although undersized) and associated sumps with dedicated pumps to direct spills back into the circuit to allow capture of the majority of spills likely to occur; and the tanks, valves and piping were being effectively maintained through BGC's inspection and preventative maintenance program, it was the auditors opinion that no immediate or substantial risk to health, safety or the environment was deemed to exist during construction of the addition containment.

The heap leach pad and PLS pond are provided with leak detection sumps that are monitored daily (even while the heap leach circuit is not being operated) for evidence of potential leakage.

BGC has provided cyanide process pipelines with spill prevention and containment measures to collect leaks and prevent releases. All pipes in the process circuits are located above ground and over concrete containment inside the mill building and CIC plant. The exceptions are process pipelines on a bridge connecting the mill building with the adjoining CIL circuit and the tails pipeline on a bridge connecting the mill building and the detox plant. The pipelines on these bridges are provided with spill containment trays that would direct any leakage from piping to one of the tank containment areas.

Except for the tailings line, all process pipelines are provided with secondary containment. The tailings line is located within an unlined gravity fed ditch system. In the event of a leak, flow from the ditch would be toward the lower ground on the up-gradient side of the tailings access road. Sluice gates have been installed on drainage ditch culverts that pass under the road. These gates remain closed except during periods of precipitation. Therefore in the event of a tailing pipe rupture, the area up-gradient of the road will provide temporary containment for released tailings slurry and prevent potential impact to the Boroo River. The containment area is unlined, but since the treated tailings entering the pipeline have WAD cyanide concentrations less than 1.0 ppm, the potential for impacting soil or underlying groundwater is negligible.

BGC uses steel and HDPE pipeline for conveyance of cyanide solutions and slurries. Cyanide mixing, storage and process tanks, and associated piping are steel. These materials are compatible with cyanide and high pH solutions.

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 Standard of Practice 4.8**
in substantial compliance with
not in compliance with

BGC implemented Quality Assurance and Quality Control programs as required by the Government of Mongolia *Law on Construction* during design and construction of the Boroo mine facilities. The *Regulation on Commissioning Buildings and Facilities* under this law requires the formation of State and Technical Committees to monitor and approve the design and construction. The committees are made up of representatives of the client, design engineer, contractor, as well as state inspectors and representatives from various government agencies and departments that have specific regulatory roles in the construction project.

The Technical Committee is responsible for conducting detailed inspections of the erection works to ensure that equipment installation, technological lines and engineering service facilities conform to design and safety, labour and fire safety, hygiene and environmental protection requirements indicated in the norms and regulations, structure, product and material quality standards and technical specifications. The State Committee is responsible for conducting expert examination and approval of design drawings and, as needed, to assign experts to conduct examinations of construction works and issue applicable conclusions. The State Committee may impose liabilities on contractors and design and drawing agencies if they have infringed the Construction Law or other applicable laws, regulations and norms.

Members of the Technical Committee sign and certify after they ascertain that defects and breaches detected in respective sectors of representing authorizes are remedied. On completion of construction and prior to commissioning a building or facility and bringing it into service, the Technical Committee approve and sign a Technical Commissioning Act (TCA) that the structure conforms to design work and is ready for commissioning. The TCA is submitted to the Government of Mongolia with copies of all related documents (engineering drawings, construction and erection performance records, meeting notes, design changes, etc.). The submission is reviewed by the State Commission for completeness and if deemed complete, the Head of the Commission issues a registration number based on the Act and a signed and stamped State Commissioning Act (SCA). The SCAs are retained by BGC and provide confirmation that QA/QC assurance programs were implemented during the construction of the cyanide facilities.

The suitability of construction materials are considered during the design of facilities and meet the regulatory requirements for their intended use and load. Design drawings are reviewed and approved by appropriate Government departments before construction is authorized. The required soil compaction criteria for earthworks are determined by qualified engineering companies and incorporated into the facility design specifications. A formal daily construction logbook must be maintained. This record is signed-off as work progresses by the parties responsible for the construction, and details all construction modifications, correction of identified deficiencies, and completion and acceptance of construction works. QA/QC records are maintained. These include results of earthwork inspections and compaction testing; welded seam testing of geomembrane liners, and specification detail for construction materials and equipment.

QA/QC records retained by BGC are in the form of signed Acts by the Technical and State commissions. Records were available for all construction at Boroo and include cyanide facilities at the mill, heap leach

and TMF.

For the TMF expansions, the heap leach circuit, CIC plant and ponds, and the warehouse outside storage area construction, BGC has retained copies of construction drawings and QA/QC monitoring documentation and Acts. BGC's current practice is to retain copies of documentation for all new construction and facility modifications. Although not all engineering drawings for original construction have been retained onsite, copies were available and could be obtained from Government archives if needed. The Government keeps the originals of all engineering drawings, QA/QC documentation and construction log-books associated with commissioning of a facility.

Each State Commission Act includes sign-off by the BGC Mine Manager, Director, Environment, Construction Engineer, the construction contractor, and senior inspectors of various state departments including Construction and Machinery, Environmental Hygiene, Nature and Environment, National Archives and Fire Fighting.

The signed and stamped Acts provides confirmation from all parties that QA/QC assurance programs were implemented during the construction and the facilities were constructed as designed.

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

☒ **in full compliance with Standard of Practice 4.9**

The operation is in substantial compliance with

not in compliance with

BCG developed an Environmental Protection Plan and Monitoring Program that is submitted annually to the Ministry of Nature, Environment and Tourism of Mongolia (MNET) for approval. The monitoring program details the locations, schedule and analysis parameters for soil, surface water, and groundwater sampling. Written procedures have been developed for conducting environmental monitoring activities. These procedures describe the equipment decontamination, sampling method, sample preservation requirements, shipping procedures (including chain-of-custody requirements). As part of the environmental monitoring program, BGC has implemented a Wildlife and Livestock Management Procedure. In addition to maintaining bird balls on cyanide laden ponds and fencing to prevent wildlife and livestock access to the tailing facility, the procedure requires reporting of dead or sick animals and maintaining a Wildlife Observation Log.

BGC's Environmental department has the qualified and experienced personnel responsible for all monitoring programs, including developing and preparation of the Annual Environmental Protection Plan and Monitoring Program. Analyses are undertaken by laboratories approved by the Mongolian government. For QA/QC purposes, BGC splits samples with regulatory implications and sends the splits to a US-EPA certified western laboratory. Standard internationally established cyanide analysis methods are used.

BGC has a comprehensive program for monitoring cyanide concentrations in tailings prior to discharge through the tailings pipeline to the TMF to ensure that WAD cyanide concentrations are less than 1 mg/L. The TMF is operated as a zero discharge facility and monitoring to date confirms that there has been no release of process water through seepage or other means.

No wildlife fatalities associated with cyanide have occurred during the operation of the Boroo mine.

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

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

☒ **in full compliance with Standard of Practice 5.1**

The operation is
in substantial compliance with
not in compliance with

BGC has a written Cyanide Decommissioning Plan (CDP), specifically developed to address the decommissioning of the process plant area and heap leach facility and water management at the tailings facility. The CDP forms an integral part of BGC's Mine Closure Plan (Draft, January 2011). The CDP addresses the reduction of cyanide stock; removal of excess cyanide stock from the warehouse; decontamination of tanks, vessels, piping, concrete surfaces and other equipment in the plant and process areas; draining and removal of cyanide from the heap leach pad; flushing for tailings pipeline and pumps; removal, salvage and/or demolition of plant and associated equipment; and investigation and cleanup of contaminated soil.

The CDP addresses removal of surface water from the tailings facility, and covering and re-contouring the tailings to direct excess water from the facility into the perimeter drainage system. The CDP includes a decommissioning cost estimate and a schedule for decommissioning activities.

The Mine Closure Plan is revised periodically to reflect proposed changes in mine operations and the CDP is revised accordingly.

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

☒ **in full compliance with Standard of Practice 5.2**

The operation is
in substantial compliance with
not in compliance with

A cost estimate for decommissioning the cyanide facilities is provided in the CDP. The costs were updated, subsequent to the site component of the audit, to reflect 2012 hourly general labour and equipment rates for a third party contractor in Mongolia to complete the work. The estimate did not include decommissioning of the heap leach facility, as this facility was drained and rinsed free of cyanide in 2009 following expiry of BCG's temporary permit to operate the heap leach facility. This facility was incorporated back into the CDP after the heap leach began operation again. BGC reviews the CDP and associated decommissioning costs annually.

The Mongolian government does not require financial guarantees; however, BGC has established self-guarantee as a financial assurance mechanism to fund site closure. A financial evaluation using internationally accepted financial ratios and based on Centerra's 2010 audited financial statements was conducted by professional financial accounting company KPMG. The results of the evaluation showed that all conditions were met and that BGC has the financial strength to meet its site closure obligations with regards to ICMI's requirements. Subsequent to this audit, Centerra confirmed the most recent Mine Closure Plan update is dated August 7, 2014, and as of 30 September 2014 the balance of cash and cash equivalent is sufficient to cover the current decommissioning cost.

6. WORKER SAFETY: ***Protect workers' health and safety from exposure to cyanide***

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

The operation is

☒ **in full compliance with Standard of Practice 6.1**
in substantial compliance with
not in compliance with

BCG has developed written policies, procedures, standard operating plans (SOPs) and safe work practices (SWPs) that describe the management and operation of the cyanide facilities, with particular emphasis on minimizing worker exposure. These procedures and instructions were developed to eliminate, reduce and control actual and potential exposures and hazards related to cyanide. Operating plans and safe work procedures/ instructions are prescriptive for unloading cyanide at the mill storage pad, transferring cyanide to the mill reagent area, mixing at the reagent area, hauling reagent waste, plant operations, confined spaces entry and maintenance operations.

BGC highlights their "4 Golden Rules" and safety in all communications, procedures, instructions and training. Hazardous warning and PPE requirement signs are posted, most of them in two languages (English and Mongolian) and/or using pictograms. Signage is used to designate areas where cyanide is present. Specific SOPs and SWPs require the use of specific PPE.

Pre-work inspections are performed and documented on checklists to ensure safety equipment is available and operational. Work orders are created and tracked to completion when deficiencies are identified. In the cyanide areas, these inspections include efficacy of emergency showers, eyewash stations, PPE,

MSDSs, and posted warning signs. When the Safety department conducts inspections, corrective action items are entered into the RATS (Remedial Action Tracking System). Tracking responsibilities are delegated internally or to other departments, as applicable, to address and respond to deficiencies.

Cyanide antidote kits and oxygen are available in areas of risk. Additional ampoules are stored in a refrigerator in a sealed container in an 'emergency room' located near the mix area. Cyanide antidote kits are under the direction of the International SOS (contracted) physicians, and readily available.

BCG has a comprehensive change management process that applies to all changes that may impact on safety, health, environmental or regulatory compliance. The procedure sets out roles and responsibilities including the requirement for contractors to adhere to the procedures for review and sign-off by senior safety and environmental managers. A change control log is maintained.

Boroo actively solicits and considers worker input. BCG works constructively with all employees and the Occupational Health, Safety and Environment Committee (OHSEC) to identify and address environment, health and safety and other issues. OHSEC is comprised of management and employees and meets every month. Minutes from the meetings are posted. To meet the requirements for their *SAFE Production* program and generate a safe and healthy work environment, BGC has created a blame-free safety culture that encourages employees to report any incident/ accident that occurs as a result of their own action(s).

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

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

BGC has determined an ideal pH of greater than 10 for cyanide solution in the leach circuit for optimizing the process and a minimum of pH 9 to prevent the evolution of HCN gas. Caustic is added to the mix tank to ensure that pH is greater than 11 prior to a cyanide mix to prevent the generation of HCN gas. The pH meters are calibrated weekly and noted on a logsheet. Samples are collected every 2 hours, analyzed and reported for cyanide and pH. The CIL circuit is maintained at greater than pH 10.0 by adjusting the lime feed.

BGC has ambient, fixed monitoring devices in appropriate locations in the mill with HCN sensors which are fitted with pre-programmed audio alarms in the work area, with all units in the mill providing a visual blinking light. The fixed wall HCN monitors are calibrated monthly and documented. Hand-held, direct-reading HCN monitoring instruments are available. The Safety department verifies ambient hydrogen cyanide concentrations and reports on the Weekly Flash and the monthly Safety Statistics Report. BGC has individual hydrogen cyanide monitoring devices for Operators.

The operation has identified areas and activities where potential worker exposures exist. Risks identified were reduced to residual levels using mitigative measures/ hazard control activities, which for cyanide, included the installation of HCN monitoring instruments and training of all staff with respect to cyanide awareness. All HCN exceedences of 10 ppm are automatically noted in the mill control room and logged and appropriate action taken.

Warning signs are posted in areas where cyanide is stored, used or handled. Signs indicating no smoking or eating or drinking were posted and smoking is not permitted in any of the BGC mine site buildings. During cyanide transfer and mixing, portable cyanide warning signs are set up and the mix area is cordoned-off.

Emergency showers and eye wash stations are readily available in the areas where cyanide is stored and handled, and are tested during pre-inspection of safety equipment prior to cyanide mixing. Their location is noted on a mill site plan (which is used for training purposes). The emergency shower and eyewash stations are inspected and tested by Maintenance on a monthly schedule and during safety inspections carried out quarterly by the Safety department. Dry powder fire extinguishers are located in strategic locations, and posted on a mill site plan. Fire extinguishers are tested monthly and recorded.

All reagent areas, mix, storage and leach/CIL tanks are labeled or placarded as cyanide containing, with signage generally in both English and Mongolian languages. BGC has colour coded and labeled piping containing cyanide to identify the contents and direction of flow. Material Safety Data Sheets (MSDSs), first aid procedures, PPE requirements and other awareness information on cyanide safety are available in English and Mongolian (latter is primary language of the workforce). The MSDSs are available in various locations on site, and are an integral part of training.

BGC has a fully developed and implemented procedure to report, investigate and track cyanide related incidents. All incidents and near misses are entered into an electronic file in the Remedial Action Tracking System (RATS) database. A written narrative description of the incident event, with photos, usually accompanies the incident report. The results of an incident may initiate a ‘change’ which follows and is documented through the Management of Change process. No incidents related to cyanide have been reported since mine inception (2003).

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

The operation is

☒ **in full compliance with Standard of Practice 6.3**
in substantial compliance with
not in compliance with

BGC maintains response equipment and first aid supplies, readily available in areas where cyanide is stored or handled, for use in the instance that a cyanide exposure occurs. These equipment and supplies include water, oxygen, a resuscitator, cyanide antidote kits and communication systems. Specific cyanide

first aid using oxygen is the first health/medical intervention, and all mill operators have been trained in the locations and use of oxygen. BGC has a written protocol for responding to a cyanide exposure developed by their physicians**.** All first aid equipment is inspected monthly and logged on an inspection form.

BGC has a fully trained medical staff and emergency response team (ERT) to provide first aid and/or medical assistance. There are full-time physicians at the Boroo mine site, with cross shifts, and assistance from a full-time nurse, contracted through International SOS. Every location on the mine site is accessible within 15 minutes. Only the medical staff are permitted to use the sodium thiosulphate intravenous antidotes. The first aid equipment used by the Emergency Response Team (ERT) is inspected on a weekly basis as part of their regular ERT training exercises.

The plan and procedures are not specific in the roles of outside responders as the community infrastructure is not available to deal with cyanide related emergencies. BGC have appropriate medical staff and equipment on-site 24/7 and would take the lead during an emergency and have trained and qualified senior personnel to coordinate such a response. BGC physicians have trained local village physicians. BGC has an on-site fully equipped ambulance that can accommodate two patients. The closest full services hospital is located in Ulaanbaatar, a two-hour drive.

BGC has extensive experience with transporting dangerous and toxic goods, as all chemicals are sent by convoy, usually from Ulaan Baatar to the Boroo mine site. BGC periodically reviews and evaluates their ERP for adequacy (at least annually), and conducts mock emergency drills on a quarterly basis. These drills involve cyanide spill response scenarios at least annually.

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

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

	☒ in full compliance with Standard of Practice 7.1
The operation is	in substantial compliance with
	not in compliance with

BGC has an *Emergency Response Plan - 2011*" (ERP) that covers the BGC operations at the Boroo mine site, Ulaan Baatar office and Transportation. The ERP is a general document for the entire operations and has provision for guidance with respect to accidental releases of cyanide. The ERP addresses people, environment and property. The ERP is reviewed annually and updated whenever there are material changes in BGC's management structure, nature of BGC operations or other factors that may alter the effectiveness of the Plan. The ERP is available and distributed in both English and Mongolian.

The ERP addresses ground vehicle incidents, including spills on the road to the Boroo mine site and release of cyanide during the transfer of cyanide between the mill storage pad and the mill reagent area and is specific for transport of solid cyanide briquettes packed in IBC boxes. Mock emergency scenarios conducted during the last year have tested response to chemical (cyanide) spills for these situations. In Mongolia, BGC is responsible for response and remediation actions, as local infrastructure is inadequate.

The ERP describes specific responses including evacuation of areas, use of cyanide antidotes and first aid measures, control of releases at source, as well as impact assessment and mitigation and provides procedures for post-emergency reviews to address measures to prevent future releases. There are SOPs and SWPs that provide details for specific emergency situations.

The ERP provides the guidance required, as well as the responsibilities and communication requirements by specific staff in the instance of particular types of exposure and/or releases. The ERP provides response actions for ten emergency types (on-site spills; fire and explosion; camp; hazardous vapour release in or around the mill; extreme weather conditions; prolonged loss of essential services (power, heat); hostage taking, kidnapping, missing or lost persons, labour or political unrest, riots, sabotage or bomb threat; epidemics; earthquakes; serious injury/fatality, and dam failure or open pit failure). The *Tailings Facility Operations, Maintenance and Surveillance Manual* provides specific measures and immediate activities to be undertaken for potential types of emergency, and addresses all aspects required by the Code. The ERP is supplemented by specific operating instructions.

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

The operation is

☒ **in full compliance with Standard of Practice 7.2**
in substantial compliance with
not in compliance with

BGC involves its own staff in the development, review and update of the ERP and emergency planning process, and maintains a crisis management system which incorporates emergency measures. The ERP was developed in 2003 when Boroo was in pre-operational mode, and has been updated and modified as required to incorporate operational changes in mine infrastructure (e.g., addition of the heap leach facility in 2007) and development, and safe work procedures. Changes are made as required to incorporate modifications in corporate policies, procedures and guidance from Centerra. BGC solicits input from their employees through daily and weekly safety meetings and scenario drills. Mongolian ministries and local communities have been consulted and have provided input. Due to the remoteness of the mine site and the inadequate capacity of local communities to assist in emergencies, BGC has established the capacity and equipment to respond to all foreseeable emergency situations, including cyanide responses. The ERP has been approved by the State Specialized Inspections Agency (SSIA), the Disaster Agency and the State Mine Rescue on an annual basis.

BGC has provided information sessions, community outreach and site visits/tours and extensive information to the local communities, particularly with respect to transportation of hazardous materials, and specifically cyanide handling, use and storage at the mine site. BCG held a public consultation to seek comments after introducing their preliminary mine closure plan, had consultants there to answer questions, and sought input through a survey. The closest village, Baruunkharaa, is 22 km distant from the mine, and the effect of a cyanide release from the operation has been determined as negligible.

BGC has established communication channels with local communities, primarily between Bayangol soum and the mine site, including local community leaders and representatives, and made them aware of the nature of the risks associated with accidental cyanide release, and as well as the control and response plans in place.

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

☒ in full compliance with Standard of Practice 7.3

The operation is in substantial compliance with
not in compliance with

BGC has committed the necessary emergency response personnel, resources and equipment to implement their ERP and related SOPs and SWPs. The Emergency Management Headquarters (Control Center) has been identified, with an alternate location. This Control Center has the primary communication system(s) for off-site communications.

BCG has identified, trained and certified appropriate ERT members from appropriate employee groups, and provides scheduled, relevant training. ERT call-out procedures are clearly identified and 24-hour on-site contact information is provided. There are checklists for the required equipment, including PPE both for ERT convoy transport and site. Emergency response equipment is listed in the ERP and inspected and verified on a monthly basis during training, using a checklist, and the equipment is maintained appropriately. An ERT trailer is fully stocked and available at the Site Administration building and International SOS First Aid Post.

The ERP is not specific in the roles of outside responders as the infrastructure is not adequate to deal with such an emergency. BGC are fully qualified and equipped to handle on-site emergency response to fire, environmental and work exposures. The State Disaster Agency would assist with outside medical, militia, and/or fire department if incidents occur in the community. The ERP provides current contact information on the local external contacts (police, medical aid, ambulance, fire, earthmoving, state mine rescue team, etc.) as well as international reporting. Since the BGC ERP has been approved by the SSIA, the Disaster Agency and the State Mine Rescue on an annual basis, the various agencies are aware of their involvement if required.

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

☒ in full compliance with Standard of Practice 7.4

The operation is in substantial compliance with
not in compliance with

The ERP has procedures and current contact information for notifying management, regulatory agencies, and medical facilities in the event of an emergency. The ERP outlines the organization and responsibilities in an organization chart, and includes internal and external notifications, including government. There is a specific ERP Flowchart for response. Notification actions are detailed and normally practiced in one of the monthly ERT scenario training sessions.

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.***

☒ in full compliance with Standard of Practice 7.5

The operation is in substantial compliance with
not in compliance with

BGC has procedures for remediation, including recovery of solids, and disposal of spill clean-up debris. The ERP outlines the common controls in place to prevent unplanned (cyanide) spills. The ERP provides guidance for various spill occurrences, including specific scenarios for cyanide. There is individual response mechanisms provided for (a) spill of sodium cyanide briquettes/ powder onto land, (b) spill of sodium cyanide liquid onto land, and (c) spill of sodium cyanide liquid solution into a waterway, and (d) sodium cyanide gas releases into air.

There is no drinking water supply in the vicinity of cyanide storage, handling or mixing. Drinking water supply is in a totally separate area in the mill and at the camp.

Neutralization chemicals are prohibited for use during cleanup of transportation spills. The use of dilute solution of sodium hypochlorite or calcium hypochlorite for neutralization and the cleanup is only permitted after solid cyanide has been removed, and only on mine site land. This is permissible as there are no surface water bodies in the immediate vicinity. Since WAD cyanide concentrations are less than 1.0 mg/L in the treated tailings piped from the plant to the TMF, the potential for significant soil or groundwater impact from a tailings spill is minimal.

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

☒ **in full compliance with Standard of Practice 7.6**

The operation is in substantial compliance with
not in compliance with

BGC wrote their initial ERP and ERT Training Manual in 2003 and have updated both on a regular basis, with the current requirement being an annual review. There is evidence that it is reviewed and evaluated for adequacy, based on the actual operations, 'lessons learned' during mock exercise scenarios, and on the recommendations from internal and external audits.

The ERP is written in sections, so that contact information can be updated as required, although formal update to the ERP is only undertaken annually as required by Mongolian regulation.

Mock emergency drills are planned and conducted quarterly in addition to the regular ERT training, normally including a cyanide spill response at least annually. BGC periodically reviews and evaluates the ERP for adequacy (at least annually, and following every cyanide shipment).

Four mock emergency drills/scenarios were undertaken within the last year that involved cyanide (i.e., a vehicle accident with a possible hazardous chemical container on the access road to site; an unconscious person found on CIL plant floor; a cyanide reagent spill during a container transfer to the mill; and, an unconscious person found at cyanide mixing tank floor). The ERP and other relevant procedural documentation are reviewed and modified if required to correct any deficiencies or provide improvements from lessons learned from an emergency or mock drill. It is normal practice to conduct emergency refresher training for all site workers following the 'lessons learned' meeting of a mock scenario to review the learnings, the areas for improvement and the remedial actions taken.

The Boroo ERT is part of an ERT annual challenge, which includes ERT from other gold mining companies and its sister Kumtor Gold Company in Kyrgyzstan. The Boroo ERT has always placed high within the ten participants in the annual challenge, which they occasionally host..

8. 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.***

☒ **in full compliance with Standard of Practice 8.1**

The operation is in substantial compliance with
not in compliance with

BGC mine site requirements for training include cyanide awareness, hazards, health effects and symptoms of exposure, and procedures to follow in the instance of cyanide handling, use, exposure and/or spill. The Mill Operations Training department provides Induction Training, including classroom and practical training in safety for each new employee. A specific module on cyanide is provided. Additional specific and refresher training on cyanide is provided for particular job tasks, and refresher training is always given prior to a cyanide shipment. Records of attendance are retained, and an annual training matrix is used to track required training for each worker and indicates which training the worker has completed.

All cyanide training (initial and refresher) is recorded and retained for each employee for the duration of their employment. These records include attendance sheets and results of quizzes. BGC has retained all training records since mine startup in 2003.

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.***

☒ **in full compliance with Standard of Practice 8.2**

The operation is in substantial compliance with
not in compliance with

BGC has an extensive training program for all new employees, and is specific to the work area for the tasks that they will perform. Both classroom and practical training is provided. Skill-based and apprentice training is done for every job/task and records of hours of training on each job/task are retained for each employee. Twelve (of 27) ERT members work in Mills Operations or Mill Maintenance department.

Several training and awareness venues are used These include weekly shift safety meetings, and a Cyanide Safety Training Agenda which addresses cyanide safety, first aid treatment for cyanide, chemical awareness, high dangerous gas levels, emergency response procedures, reagent hauling from warehouse, hauling reagent waste, WHMIS, mill induction, PPE, and safety showers /eyewash stations. These training sessions have lesson plans, slide presentations, practical elements and quizzes.

The documented training matrix identifies each type of job, including cyanide awareness, use, handling, and emergency precautions. The Mill Training department provides the main trainers for workers that may encounter cyanide in the workplace. These trainers are experienced operators in the work areas that they are training employees. There is a progression of job skills required to become a trainer to ensure that they have the requisite knowledge and experience to instruct in the assigned tasks.

No employee is permitted to be on site or in any mine area prior to having the required training in all aspects of their job, including cyanide. A worker is not permitted to worker unsupervised until the trainer signs-off on the employee's ability to safely conduct the required work and the employee signs-off that he fully understands the requirements of the task.

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

☒ **in full compliance with Standard of Practice 8.3**

The operation is
in substantial compliance with
not in compliance with

All employees are trained in BGC's emergency response procedures and measures related to cyanide release. Employees in the warehouse storage area and reagent handling area are trained and versed in the procedures to be followed, and specific response procedures for solid (briquettes/ powder) and liquid spills and releases to soil and/or water. The appropriate types of responses have been addressed and documented, based on the initial Risk Assessment document (2003).

All emergency response captains and ERT members are thoroughly trained in the procedures and the equipment required for responding to a cyanide release. The Emergency Response Flow Chart outlines the roles and responsibilities of emergency responders, coordinators and BGC managers**.** The ERT receive weekly training, primarily from the Safety department, and also by the Mill Training department and the International SOS First Aid Post doctor, and are led by a team captain.

BGC has its own on-site capabilities for fire-fighting, HazMat clean-up and medical emergency and would take full control and responsibility for response to a cyanide release. The ERP includes an internal and external emergency (medical) contact list.

BGC have taken on the responsibility for the major response role if an offsite cyanide related emergency occurs. Local community services are unable to adequately respond to a cyanide incident, although community responders are included in emergency scenario training, on an occasional basis. Local medical facilities have been advised of the potential medical requirements in the instance of a cyanide spill related to the convoy; however, BGC is more likely to respond and/or advise because of the expertise and capacity of their medical staff and ERT. This role is appropriate due to the remoteness of the site.

The recommendations of action plans have resulted in a review and update/ modification of the ERP and emergency response training procedures, through the Management of Change Process.

9. DIALOGUE: Engage in public consultation and disclosure.

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

☒ **in full compliance with Standard of Practice 9.1**

The operation is in substantial compliance with
not in compliance with

BGC has been providing stakeholders with opportunities for their input and ways to make their concerns known since they have been in operation. BGC is guided by the principles of social responsibility and has programs to support their initiatives. BGC promotes the strategic goals of sustainable development, principles of a transparent public company as governed by its activities and the national requirement for local input. BGC provides the necessary reports and fully supports and operates in strict compliance with the Extractive Industries Transparency Initiative (EITI) since it was established in Mongolia. BGC uses a variety of methods for stakeholder input into their operations, including committees, news articles, brochures, questions, concerns and information about cyanide convoys, its use, storage, handling, and potential effects.

The function of information dissemination is performed through the Community Relations Officer, who maintains close contacts with representatives of regional, national and international media organizations. BGC management indicated that they meet with the soum and aimag administrations at least monthly to review community concerns and program.

BGC utilizes a number of mechanisms to ensure effective communication with interested parties. These mechanisms include regulatory filings (such as permit applications and reports), open houses, the media, informal and formal discussions with regulators, community representatives, and local business leaders. Visits to the Boroo site, meetings, forums, information dissemination, and outcomes are documented.

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

☒ **in full compliance with Standard of Practice 9.2**

The operation is in substantial compliance with
not in compliance with

BGC is proactive in meeting with stakeholders and receives requests to interact with them on a variety of subjects, including the Mine closure plan. Prior to commissioning, there was a public display in 2002 and a sociological study carried out. BGC Human Resources was instrumental in orchestrating a white paper for planning for an integrated mine closure plan in 2008. They held a public consultation to seek comments after introducing their preliminary mine closure plan, had consultants there to answer questions, and sought input through a survey.

BGC organizes excursions (approximately twice per month) to the mine site for various stakeholder groups to see how the mine works, to learn the working conditions and to showcase the high safety standards. These visits often include a tour of the mill, detox plant, heap leach and the reagent storage area, and including viewing of areas where cyanide is used or handled.

BGC participates in local training initiatives, including training of local physicians, community leaders and industry (i.e., mine rescue). A training session on "Cyanide Safety" was organized at the Boroo mine site on 20 October 2011, one of the training series organized by the National Committee responsible for policy coordination of toxic and hazardous chemical substances and the Ministry of Nature, Environment and Tourism. It was an all-day session, with extensive media and newspaper coverage (favorably covered), when invited local community members, emergency, firefighter and regulatory personnel viewed presentations on cyanide awareness, BGCs procedures for cyanide transport, storage and use, mock exercise scenarios involving cyanide spill and potential exposure, on exhibition at the Boroo mine site.

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

☒ **in full compliance with Standard of Practice 9.3**

The operation is
in substantial compliance with
not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

BGC has a written description of their activities, including the use and management of cyanide, and have provided these to the government and local community leaders. In their recent publication "For Safe and Responsible Mining in Mongolia", BGC explicitly indicates use of sodium cyanide in their operations BGC's significant Safety, Health and Environment aspects and hazards are communicated to external interested parties upon request only.

BGC publishes an Annual Environmental Report which is readily available, and distributed to Mongolian governmental ministries, local municipal ministries, and on request. The report includes detail on environmental incidents and spills, water quality monitoring, air quality monitoring, as well as results of environmental studies being undertaken. The information provided addresses cyanide as well as other chemicals and substances associated with gold mining operations.

BGC has made presentations in Mongolian languages during visits to local communities. Reports of these visits are summarized internally by the Director, Government and Community Relations and widely covered by the Mongolian media.

BGC would maintain full disclosure in the case of confirmed cyanide release or exposure incidents. BGC has developed a procedure which documents communication protocols to be undertaken during emergency situations. The 2010 Environmental Report identified "no reportable environmental incident occurred in 2010", and "Soil, water, waste rock and air quality are within permissible levels". Subsequent to the field component of the audit, the 2011, 2012 and 2013 Annual Environmental Reports were reviewed, with one reportable incident in 2013, and a summary of non-reportable incidents (Level I – II) provided. This information is also published in Centerra's annual Corporate Responsibility Report, available on their website.

CLOSING STATEMENT

The statements made in this report, and the conclusions presented in this report represent our professional opinion and are based on the conditions observed on the dates set out in the report, the information available at time this report was prepared, the scope of work, and any limiting conditions noted herein.

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