REPORT

April 2016

ICMC RECERTIFICATION SUMMARY AUDIT REPORT

Maricunga Mine
Copiapo, Region III, Chile

Submitted to:
International Cyanide Management Institute (ICMI)
1400 I Street NW, Suite 550
Washington, DC 20005
United States of America

And

Kinross Gold Corporation
Compania Minera Maricunga
Maricunga District
Region III, Chile

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1.0 SUMMARY AUDIT REPORT FOR GOLD MINING OPERATIONS

Name of Mine:	Maricunga Mine
Name of Mine Owner:	Kinross Gold Corporation
Name of Mine Operator:	Compania Minera Maricunga
Name of Responsible Manager:	Regulo Sanchez Troncoso
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2.0 LOCATION DETAIL AND DESCRIPTION OF OPERATION

2.1 Mine Location

The Maricunga open pit mine is located in the Maricunga mining district in central-east Chile (Figure 1). The property is approximately 120 kilometers (km) east of Copiapó and is between 4,200 and 4,500 meters (m) above sea level.

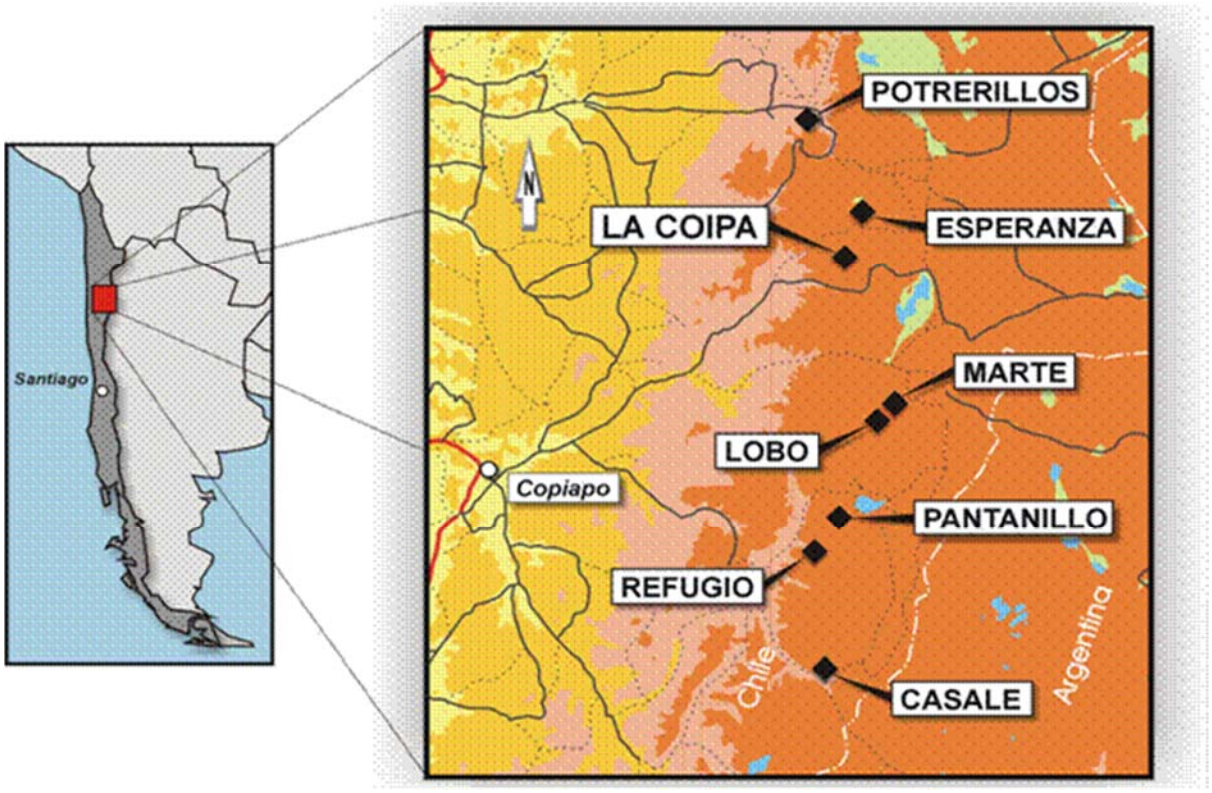

Figure 1: Regional Location Map

2.2 Background

Kinross acquired its original 50 percent interest and became operator of the Maricunga Mine on June 1, 1998, through the Kinam merger. In February 2007, Kinross acquired the remaining 50 percent through the acquisition of Bema Gold Corporation. Commercial production began on October 1, 1996. Five years later, mining activities were suspended and the operation was placed on care and maintenance due to low gold prices. In late 2002, a multi-phase exploration program commenced and in 2003 the mine was reopened. The mine went into commercial production in the fourth quarter of 2005 and achieved its average targeted production rate of 40,000 tonnes per day in November 2005.

Maricunga is an open pit mine. The ore is transported by haul truck to the three-stage crusher and then to the heap leach pad. Cyanide solution is applied by drip emitters at a concentration on the order of 0.5 grams

per liter (g/L) at a rate of approximately 10 liters per hour per square meter (L/hr/m^2). The solution percolates and is collected at the base of the pad by drains and pipelines that convey the rich solution to the solution ponds at the Adsorption-Desorption-Refining (ADR) Plant. The ADR Plant uses activated carbon for gold recovery. Cyanide is added to limit the adsorption of copper onto carbon, and a cold cyanide strip of the carbon is performed to remove copper. The cold strip Cu-CN solution is fed back to the heaps. The ADR plant consists of five carbon adsorption tanks, with Zadra pressure elution of carbon coupled with gold electrowinning. Overall gold recovery from ore to gold doré at Maricunga is 65 to 70 percent. The process flow diagram is shown in Figure 2.

A portion of the rich solution proceeds to the Sulfidization, Acidification, Recycling, and Thickening (SART) Plant for recovery of copper and regeneration of cyanide. SART involves adding chemical sulfide ions, such as sodium hydrosulfide (NaSH), to an acidified CN solution to precipitate copper, silver and zinc (if present) as metal sulfides, and convert cyanide to HCN, under weakly acidic conditions. HCN is a very soluble gas, and remains in solution until the Cu_2S, Ag_2S or ZnS are removed by thickening and filtration. Importantly, gold does not precipitate to any significant extent during the SART process, and remains in solution to be recovered on activated carbon. The HCN solution is then neutralized with lime or caustic soda, prior to recycling to the leach pad. The process flow diagram in Figure 2 also shows the SART circuit.

Other mine facilities include a permanent camp with access to the site from Copiapó provided by road. Power is supplied by the main power grid.

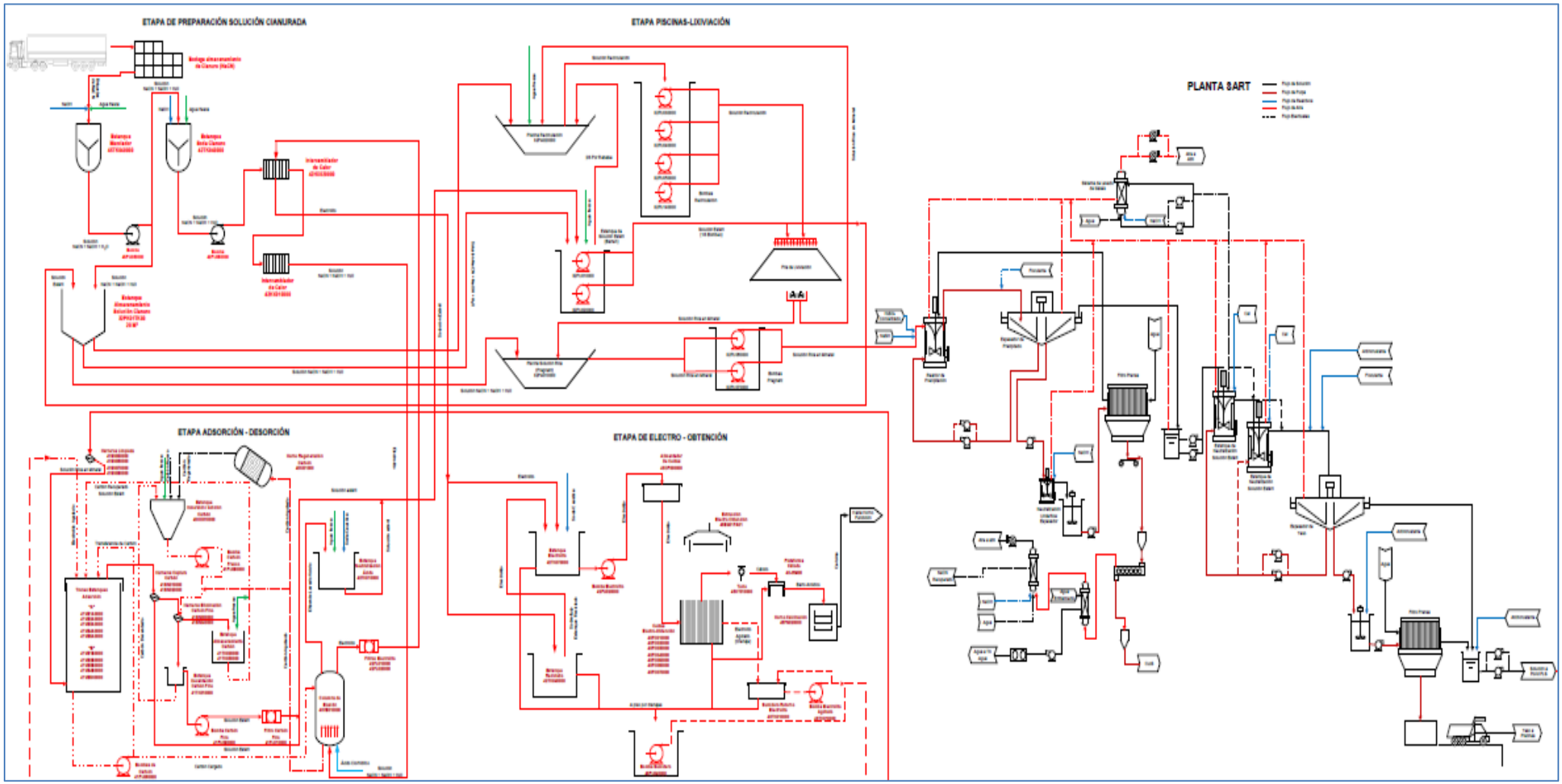

Figure 2: Process Flow Diagram

3.0 SUMMARY AUDIT REPORT

3.1 Auditors Findings

Maricunga is:	☒ **in full compliance with**	**The International Cyanide Management Code**
	☐ in substantial compliance with	
	☐ not in compliance with	
Audit Company:	Golder Associates	
Audit Team Leader:	Kent Johnejack, Lead Auditor and Technical Specialist	
Email:	kjohnejack@golder.com	

Maricunga has experienced compliance problems during the previous three-year audit cycle, which are discussed in this report under Standards of Practice 4.1, 6.3, and 7.3.

3.2 Name of Other Auditors

Name, Position	Signature
Ivon Aguinaga, Gold Mining Technical Specialist	Iván Aguinaga
Bruno Pizzorni, Gold Mining Technical Specialist	

Golder was involved in ground water investigations and sampling at Maricunga during the recertification period. Golder subcontracted to Mr. Bruno Pizzorni, Management Systems Solutions, Inc., as an independent auditor to address Standards of Practice 4.6.4 and 4.9.1 through 4.9.7 where a conflict of interest exists. Mr. Pizzorni performed a desktop review of Golder documents and did not visit the site.

3.3 Dates of Audit

The Recertification Audit was undertaken between November 1 and 5, 2015.

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 ICMI 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 Code (Code) Verification Protocol for Cyanide Gold Mine Operations and using standard and accepted practices for health, safety and environmental audits.

Maricunga Mine Name of Facility	Signature of Lead Auditor	April 21, 2016 Date

PRINCIPLE 1 – PRODUCTION

Encourage Responsible Cyanide Manufacturing by Purchasing from Manufacturers that 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**

Maricunga is

☐ in substantial compliance with **Standard of Practice 1.1**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 1.1, requiring the operation to 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.

For the first 2 months of the recertification period (i.e., November and December of 2012), Maricunga continued to receive cyanide under its contract with E.I. DuPont de Nemours and Company (DuPont). That contract terminated at the end of 2012. The DuPont contract was determined to be Code-compliant, as described in the previous recertification report. For the remainder of the recertification period (i.e., 2013, 2014, and 2015 to date), Maricunga purchased cyanide from Cyanco under a global contract between Kinross and Cyanco. Part 5.1 of the General Conditions of this contract states that both Kinross operations and Cyanco will remain signatories to the Code and abide by the Code's requirements for the term of the contract. Therefore, Maricunga's contracts with cyanide manufacturers have required Code certification throughout the recertification period.

DuPont was certified during late 2012 when they provided cyanide to Maricunga. The Cyanco Houston Plant was in the process of being certified in early 2013 and initial certification was announced in October 2013. Therefore, Maricunga has obtained cyanide from certified manufacturers throughout the recertification period, with some exceptions as described in the next paragraph.

Production at Cyanco's Houston Plant was delayed in early 2013 due to construction and start-up issues. At the same time, port workers in Chile went on strike and the cyanide demand at Maricunga increased due to a change in ore type containing more copper. Maricunga did not receive its first partial shipment of cyanide from Cyanco until mid-February 2013, and did not begin receiving its full complement of cyanide until mid-April 2013. Accordingly, Maricunga was forced to seek other sources of cyanide starting in late

December 2012 and extending through mid-April 2013. Maricunga obtained cyanide from other mines and various distributors in Chile, who in turn had obtained their cyanide from six ICMC certified manufacturers.

The port strikes again occurred in January 2014, but lasted only a month. Maricunga was again forced to obtain some cyanide from other Chilean mines and distributors, who in turn obtained cyanide from two ICMC certified manufacturers. The full Cyanco supply was re-established in February 2014.

In both the 2013 and 2014 instances of force majeure, the auditors consider that Maricunga acted in good faith to obtain cyanide from certified manufacturers and to re-establish the supply of cyanide from Cyanco as soon as possible. Therefore, Maricunga is in full compliance.

PRINCIPLE 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**

Maricunga is

☐ in substantial compliance with **Standard of Practice 2.1**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 2.1, requiring that the operation establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.

Maricunga has established clear lines of responsibility for properly transporting cyanide in their contracts with the producers and transporters. For the first 2 months of the recertification period (i.e., November and December of 2012), Maricunga continued to receive cyanide under its contract with DuPont. That contract was deemed compliant in the audit report for the previous cycle. For the remainder of the recertification period (i.e., 2013, 2014, and 2015), Maricunga has received cyanide under a Kinross-Cyanco contract. Cyanco is responsible for its contractors until the time of transfer at the Maricunga warehouse. The contract states that Cyanco and its contractors are responsible for packaging, labelling, storage, routes, security, safety, training, and emergency response. The contract also states that if Cyanco subcontracts any of the product handling or transport, then Cyanco shall provide documents satisfactory to Kinross that each subcontractor is compliant with the Code.

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**

Maricunga is

☐ in substantial compliance with **Standard of Practice 2.2**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 2.2, requiring that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.

For the first 2 months of the recertification period (i.e., November and December of 2012), Maricunga continued to receive cyanide from DuPont. The audit report for the previous cycle stated that DuPont's land and ocean supply chain to Chile was certified under the Code, including the transporter within Chile (Transportes Veresay, Ltd. [Veresay]). For the remainder of the recertification period (i.e., 2013, 2014, and 2015), Maricunga has received cyanide from Cyanco. Cyanco's Global Ocean Supply Chain from the Houston plant was pre-operationally certified in 2012 and initially certified in 2014. Cyanco has contracted the final land transport from Chilean ports to Veresay. Veresay was initially certified in 2010 and recertified in 2013. Therefore, the cyanide manufacturers' supply chain, whether DuPont or Cyanco, was certified throughout the entire recertification period.

In early 2013, port workers in Chile went on strike and the cyanide demand at Maricunga increased due to a change in ore type with more copper. Accordingly, Maricunga was forced to seek other sources of cyanide starting in late December 2012 and extending through mid-April 2013. In one instance, Maricunga obtained this alternative cyanide via the Port of Coronel rather than through their normal supply chain at the Port of Valparaiso, and therefore Maricunga had to arrange alternative transportation. Maricunga contracted with Sudamerica Agencias Aereas y Maritimas S.A. (SAAM), a non-certified transporter to haul 13 sea-land containers of cyanide from Coronel to Valparaiso. Maricunga also contracted with Veresay, a certified transporter, to escort the SAAM trucks, as well as to haul two sea-land containers of cyanide. Maricunga staff stated Veresay trained SAAM on Veresay's procedures for transport and emergency response. Once at Valparaiso, Veresay later transported these sea-land containers to Maricunga. In this instance of force majeure affecting transport, the auditors consider that Maricunga acted in good faith to escort the non-certified transporter's trucks, to train the non-certified transporters, and to re-establish certified transport as soon as possible. Therefore, Maricunga is in full compliance.

Maricunga provided purchase orders and a tracking spreadsheet summarizing cyanide imports. These documents confirmed use of the certified Cyanco supply chain to from Houston to Maricunga.

PRINCIPLE 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.**

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 3.1**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Handling and Storage Practice 3.1, requiring that cyanide handling and storage facilities are designed and constructed consistent with sound, accepted engineering practices, quality assurance/quality control (QA/QC) procedures, spill prevention and spill containment measures.

No changes or modifications have been made to these facilities since the initial certification audit (2008) and the previous recertification audit (2012). The only improvements during the recertification period were to the concrete pad between the cyanide warehouse and the mixing area, as well as to the construction of a ditch to collect water or solution that could be present in the concrete floor of the mixing area. The 2012 audit report indicated that the cyanide unloading, storing and mixing facilities were designed by a licensed professional engineering firm and that the design was developed from general guidance provided by DuPont (the previous cyanide supplier). The auditors reviewed the quality insurance and quality control (QA/QC) documentation for the improvements made during the recertification period to verify that they were designed and approved by a licensed engineer.

Maricunga has installed level indicators and high level alarms to prevent the overfilling of the reagent-grade cyanide storage tanks. In addition, Maricunga maintenance staff check the level sensors and alarms on a regular basis. The auditors reviewed examples of the preventative maintenance records for the recertification period to verify compliance. Maricunga has also implemented procedures to prevent overfilling by verifying that the mixing tank level is low enough to initiate the mixing. Tank levels before and after cyanide unloading are documented on checklists.

Maricunga has constructed the secondary containments for all of the cyanide storage tanks. The tank floors are concrete, coated with epoxy paint that is a competent barrier to leakage. The auditors observed that the secondary containments were in good condition.

The cyanide warehouse is an enclosed metal roofed/metal sided building and floored with concrete to minimize the potential for contact of solid cyanide with water. No surface water bodies are located in the vicinity of the cyanide facilities. The warehouse has ventilation fans providing airflow through the building when the main access doors are opened. The cyanide mixing tank and the soda tank that are located within the ADR building have a ventilation system to prevent the build-up of HCN gas. The cyanide distribution tank is located outside.

The warehouse and the cyanide mixing facilities are located within perimeter security fence of the ADR plant. Only authorized staff can access the area. No communities/settlements are located in the mine site area. The man-camp is located approximately 45 minutes' drive from the site. The auditors observed that reagent-grade cyanide tank valves were properly locked out.

The cyanide warehouse is a dedicated facility that only stores cyanide. As such, cyanide is stored apart from foods, animal feeds, acids, strong oxidizers, and explosives. Smoking is prohibited and signed accordingly.

Standard of Practice 3.2: 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.

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 3.2**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Handling and Storage Practice 3.2 requiring that cyanide handling and storage facilities are operated using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

Maricunga receives solid cyanide in form in nylon supersacks overpacked in plywood crates. Maricunga has developed and implemented tracking procedures to ensure the supersacks are not reused using a checklist. Maricunga triple rinses the inner plastic bags prior to sending them with the empty crates to the cyanide warehouse for temporary storage and then to a burning pit. The auditors observed rinsing of the inner plastic bags, reviewed the tracking log book, and visited the burn pit to verify compliance. No components are returned to the vendor.

Maricunga has developed and implemented cyanide mixing procedures that detail step by step the mixing procedure and includes the identification number of the tanks, valves and couplings. Maricunga has also developed and implemented procedures that describe the measures for safe handling of the cyanide

containers from the cyanide truck to the warehouse and from the warehouse to the mixing area. Procedures limit the stacking of the cyanide containers to three high. The auditors visited the cyanide warehouse to verify compliance. The Procedure for Spill Control during Unloading or Storage discusses how to clean up spills of solid cyanide or cyanide solution. The procedure requires that spills be cleaned up immediately. The Procedure for Cyanide Solution Preparation describes the measures for safe mixing of solid cyanide including the proper PPE; pre-work inspections of showers, eyewashes, and equipment; the target pH (11.0); and the need of two operators during mixing. The auditors observed a mixing event to verify the procedure is followed.

PRINCIPLE 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 including contingency planning and inspection and preventative maintenance procedures.**

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 4.1**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 4.1, requiring that the operation implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventive maintenance procedures.

Maricunga has developed a series of operating procedures that cover the management and safe operation of the Cyanide Unloading, Storage and Mixing Facilities; the ADR Plant, the Pregnant, Recirculation and Emergency Ponds; the SART Plant including PLS Pond and the Leach Pad Facilities. The procedures cover the management and operation of the cyanide facilities including process descriptions, operating tasks, inspections, maintenance and shut down procedures. The procedures detail specific measures for cyanide-related tasks and activities.

Procedures also detail measures in situations where there is an upset in a facility's water balance, including a power failure. In addition, procedures describe cyanide management contingency measures in the case of contingencies caused by natural events (e.g., extreme snowmelt or snowstorm events, earthquakes, or prolonged freezing temperatures); contingencies in operating systems (e.g., damaged systems; power failures; increases in leak rates; abrupt leaks, breaks or obstruction in pipes; unusual instrument readings; fire; and cessation of operations or closure.

Procedures, operating manuals, and design reports identify the assumptions and parameters on which the cyanide facility design was based (e.g. pond freeboard requirements, operational volumes, design storm event, and design draindown from the leach pad facilities), as well as applicable regulatory requirements.

Maricunga has implemented management of change procedures at the mine level and the corporate level. At the mine level, the proposed change is assessed through management of change forms that include the participation of the environmental and health and safety areas. A detailed evaluation and risk assessment is also conducted for each change. The approved change is communicated to workers and training is provided, if necessary, prior to the change implementation. In addition to this change management

procedure, Kinross also has Corporate Authorization for Expenditure (AFE) processes to evaluate and approve changes requiring significant expenditures. A part of the AFE approval process an evaluation for Code compliance is conducted. The auditors reviewed examples of completed management of change forms and AFE assessments associated with changes during the recertification period to verify that the procedures were implemented. The forms were completed according to the procedures and were approved by the areas involved in each change.

Maricunga inspects the cyanide facilities on an established daily to monthly basis, which is sufficient to assure and document that they are functioning within design parameters. In addition, planned inspections of the cyanide process facilities are conducted by the area supervisors/superintendents monthly. The auditors reviewed completed examples of the inspection forms to verify compliance.

Auditors visited the site on September 2015 to conduct a pre-recertification audit and observed the following deficiencies:

- Presence of excessive salts in tanks and pumps at the ADR plant. Presence of salts and leaks causing the salt formations was not documented in the inspections forms showing a lack of understanding of the operators in terms of Code requirements related to inspections.
- The inspection of the leak collection system of the PLS Pond was not included as part of the inspection program of the SART Plant and therefore, this system had not been monitored since its installation.
- The water level of the Emergency Pond was not recorded in the inspection form on a regular basis. The inspection of pipelines and valves at the SART Plant and ADR Plant had been conducted (by interview with process people) but was not specifically documented in the inspection forms.
- Presence of debris and materials in the secondary containment channels of the pipelines around the process ponds and at the leach pad area.

Maricunga corrected these deficiencies in a timely manner. Auditors did not observe salts or leaks at the process areas during the November 2015 site visit, thus demonstrating that the leaks were repaired and the inspections improved. The inspection forms were revised to incorporate the inspections of the PLS Pond leak collection system and the inspection of pipelines and valves at the plants. Pipeline secondary containment channels were cleaned and debris and material not included in the original design were removed. The auditors reviewed photographs from September to December 2015 to verify that the clean-up and repairs were completed. Inspections associated with the deficiencies described above were correctly implemented since September 2015. Maricunga also provided training to process personnel in Code requirements in terms of inspections. Auditors toured the cyanide facilities during the November 2015 site visit, as well as reviewed revised inspection forms and training records, to verify that the deficiencies were corrected.

In addition to the above discussed, Maricunga has provided inspection related documentation from November 2015 to April 2016 (including records of regular inspection conducted by the operators, supervisor inspection records with photographs of the cyanide areas inspected, and completed work orders for all the deficiencies identified in the inspections conducted from November 2015 to April 2016) to provide evidence that the operation has continued with the implementation of the corrective actions described above. Based on the information provided by Maricunga, the auditors consider that the inspection programs have been implemented effectively, that sufficient time has passed to demonstrate that the site has retaken control and that full compliance will be maintained in the future. Therefore, the auditors consider that Maricunga is fully compliant under this question.

The Maricunga preventative maintenance program is designed to assure the continuous and safe operation of the equipment for cyanide management. Maricunga uses the JD Edwards system for identifying, assigning responsibility, scheduling, and tracking the completion of the preventive maintenance activities. The JD Edwards system identifies future activities for regular preventative maintenance and includes information on the task requirements and completion. The maintenance program includes elements necessary for cyanide safety such as back-up generators, non-destructive testing of the cyanide tanks, cyanide tank pumps, valves, tanks, and thickness of carbon steel pipelines.

Maricunga has five 1.5 MW generators located at the generator house (power house) to operate the critical components at the cyanide facilities in the event of a power outage. The five generators are capable of supplying 6 MW in total. Maricunga has developed procedures describing the measures for the start-up of the emergency generators and listing the critical areas/equipment that will operate during power outages. Critical equipment includes the cyanide pumps associated with the ponds. In addition to the backup generators, the solution pond system has been designed with storage capabilities including a 24-hour draindown volume from the leach pad facilities in case of a power failure. Maricunga maintains the generators on a regular basis. Maintenance work orders were reviewed to verify compliance.

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

Maricunga is

- ☒ **in full compliance with**
- ☐ in substantial compliance with **Standard of Practice 4.2**
- ☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 4.2, requiring that the operation limit the use of cyanide to that optimal for economic recovery of gold so that the waste tailings material has as low a cyanide concentration as practical.

Not applicable at Maricunga because the site is a heap leach operation and there is no milling or tailings disposal.

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

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 4.3**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 4.3, requiring the operation to implement a comprehensive water management programme to protect against unintentional releases.

A probabilistic water balance model was developed by Knight Piésold as part of the design of the Leach Pad Expansion for Phases V and VI in 2009. This model was updated by Knight Piésold in January 2011. The model is comprehensive in that it covers the life of mine (i.e., all the phases of the pad), process ponds, and the Emergency Pond. The model is probabilistic in that it includes a design storm duration and storm return (100-year, 24-hour) with a sufficient degree of probability that overtopping of the pond system can be prevented during the operational life of the facility.

In addition to the model prepared by Knight Piésold, Maricunga developed an operational water balance model in October 2015 that is updated on a monthly basis. This model is also comprehensive and probabilistic in that it includes the appropriate facilities and a 250-year design storm. The model includes the appropriate input parameters with reasonable values.

Maricunga inspects and monitors its ponds on a daily basis to prevent overtopping. Ponds are equipped with level sensors. Ponds are also documented on the process inspection forms. Operational procedures provide capacities, operating levels, and freeboard for the ponds. Ponds were designed with 1 m of freeboard. The auditors reviewed time series graphs and pond level data for the ponds that showed that the required freeboard was maintained during the recertification period. The graphs showed that the Emergency Pond did not receive process solution except during short periods of a couple of days each in March and August 2015. The ponds, therefore, were designed and operated with adequate freeboard.

Maricunga measures precipitation in the form of snow at the Helipuerto Meteorological Station located within the Maricunga mine site at an elevation of 4,500 m. Snow level has been recorded at this station since April 2014 only. The auditors reviewed a spreadsheet of snow level data from April 2014 to 2015 to verify compliance. Given that the latest design water balance was prepared in 2011 using data from the 22 years of data from the El Indio Station approximately 250 km to the south, the auditors agreed with

Maricunga staff that it was premature for a formal comparison of measured snowfall to design assumptions. However, Maricunga staff stated that they will continue recording snow levels at the site for future comparisons. Data from the Helipuerto Station is used for the operational water balance updates.

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

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 4.4**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 4.4, requiring the operation implement measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions.

Maricunga has implemented measures to restrict access by wildlife and livestock to all open waters where WAD cyanide exceeds 50 mg/L WAD cyanide. The only open waters where WAD cyanide exceeds 50 mg/L WAD cyanide are the Recirculation Pond and the Pregnant Pond with the associated PLS Pond. The PLS Pond is a small pond at the SART Plant connected to the Pregnant Pond that was added to the pond system with the construction of the SART Plant. The Emergency Pond was maintained empty during the recertification period except during short periods of a couple of days each in March and August 2015.

The Recirculation Pond and the Pregnant Pond with the associated PLS Pond are fenced to restrict access by wildlife and livestock to these ponds. Maricunga installed bird balls in these ponds in September 2014. Prior to this date, Maricunga restricted wildlife access to the ponds by a wireline grid system, acoustics deterrents and pyrotechnics devices, as described in the 2012 Detailed Audit Report. This system was developed by bird management experts for the bird species identified in the pond area. A monitoring program was developed to assess the success and progress of the system. This monitoring program has been implemented since the previous recertification audit at the required monitoring frequencies (as described in Procedure GCNPE481). Auditors reviewed fauna monitoring records for recertification period to verify compliance, as well as observed the deterrent system and the presence of bird balls at the ponds.

Three minor and isolated bird mortalities occurred during the recertification period at the process ponds. The mortalities occurred at different times during the recertification period and therefore the auditors consider each instance to be isolated.

Maricunga has developed a procedure for the control of ponding on leach pads. The procedure defines measures to follow in case of ponding, including the definition of what level of ponding is considered excessive. The procedure also includes contingency measures in case ponded solution runs outside the

heap surface. The procedure is implemented by means of regular inspections. The auditors did not observe ponding at the time of the site visit.

Based on observations during the site visit, Maricunga applies leach solution to the heap using drip emitters buried approximately 80 centimeters deep to prevent freezing and ponding. Therefore, overspray is not an issue.

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

☒ **in full compliance with**

Maricunga is
☐ in substantial compliance with **Standard of Practice 4.5**
☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 4.5, requiring the operation implement measures to protect fish and wildlife from direct or indirect discharges of cyanide process solutions to surface water.

Maricunga does not discharge cyanide solutions to surface waters and operates with zero discharge of process solutions. Maricunga monitors for cyanide in four surface water compliance points and in two internal points on a regular basis. Analytical data from November 2012 to May 2015 showed that total cyanide concentrations were below the laboratory detection limit, which was below the 0.022 mg/L free cyanide threshold (assuming that all total cyanide exists as free cyanide). Only three isolated values slightly greater than 0.022 mg/L were observed at two monitoring points in February 2013. No impact to beneficial uses has occurred.

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

☒ **in full compliance with**

Maricunga is
☐ in substantial compliance with **Standard of Practice 4.6**
☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 4.6, requiring the operation implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of groundwater.

Maricunga has implemented solution management and seepage control systems to protect groundwater below and downgradient of the operation. The heap leach and pond facilities are constructed with synthetic liners to reduce the potential for seepage and protect beneficial uses, and the solution ponds employ leak detection systems. Piping related to the heap leach facility is contained within lined channels. The ADR plant is constructed with a concrete floor and stem walls, which provide containment for the tanks located within the plant. The SART Plant was constructed with reinforced concrete secondary containments for the tanks. Pipelines are within the tank concrete containments provided inside the plant or within HDPE-lined containment. The PLS pond is HDPE-lined with a leak collection system. The expansion the Emergency Pond included transfer solution pipelines with HDPE-lined secondary containments.

Maricunga monitors for cyanide in two groundwater compliance points on a regular basis. The numerical standard established by the applicable jurisdiction for groundwater protection is 0.20 mg/L total cyanide. The use of groundwater below or downgradient of the facility is agriculture. Analytical data from November 2012 to May 2015 showed that total cyanide concentrations at the compliance monitoring wells were generally below the laboratory detection limit. Only three isolated values slightly greater than the laboratory detection limit, but well less than the standard of 0.20 mg/L, were observed during the recertification period. The operation is, therefore, protective of the designated beneficial use of groundwater.

Golder was involved in ground water investigations at Maricunga during the recertification period. Golder subcontracted to Mr. Bruno Pizzorni, Management Systems Solutions Inc., as an independent auditor to address Standard of Practice 4.6.4 where a conflict of interest exists.

Review by Independent Auditor (Bruno Pizzorni)

In 2013, Maricunga detected an uncontrolled flow of solution under the liner in the Phase V of the leach pad. Maricunga completed a drain system in 2014 that controlled the leak. In addition, Maricunga commissioned several geophysical studies to delineate the potential extent of the plume. Golder was hired in 2015 to review the geophysical results, as well as other data, and make recommendations for additional investigation; this work is in progress in 2016. The independent auditor reviewed analytical cyanide data from the regulatory compliance monitoring wells located downgradient of the pad. No increased levels of cyanide were detected above the limits for the beneficial use of groundwater, and therefore, a corrective action plan for groundwater remediation is not needed at this time. The independent auditor concludes that this question is not applicable because seepage has not caused cyanide concentrations in groundwater to exceed the applicable standard.

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

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 4.7**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 4.7 requiring that the operation provide spill prevention or containment measures for process tanks and pipelines.

Maricunga has spill prevention and containment measures for the all of the cyanide process tanks. No changes or modifications have been made to the secondary containments for cyanide process tanks since the previous recertification audit. New cyanide tanks have been incorporated into the cyanide facilities with the SART Plant. The SART Plant secondary containments for the cyanide solution tanks include reinforced concrete floors, walls, curbs, and automated sump pumps with level controls within the individual concrete containments to transfer collected solutions back into the process circuit. The auditors observed that all secondary containments were in good condition and suitable for use.

The initial certification audit and the previous recertification audit also concluded that the secondary containments for cyanide tanks are sized to hold a volume greater than that of the largest tank within the containment and any piping draining back to the tank, and with additional capacity for the design storm event (as indicated in the 2012 Detailed Audit Report).

The auditors reviewed the containment volume calculations for the secondary containment areas of the Precipitate Area and the Neutralization Area of the SART Plant. The secondary containment of the Precipitate Area has been designed with a total volume equal to 132 percent of the volume of largest tank within the containment. The secondary containment of the Neutralization Area has been designed with a total volume equal to approximately 200 percent of the volume of largest tank within the containment (the Gypsum Thickener). Therefore, the secondary containments of the SART Plant have adequate capacity. The auditors observed that all cyanide tank containments were in good condition.

Maricunga has automated pumps within collection sumps in the containment areas to automatically remove cyanide solution and return it to the process circuits. Maricunga has developed a procedure that describes contingency and response measures for failure of the sump pumping system as well as for the neutralization and disposal of solutions collected in secondary containments.

Maricunga has constructed pipelines with either spill prevention or containment measures to collect leaks and prevent releases. Pipelines not within the lined area of the leach pad or the ADR Plant containments

are located within HDPE-lined containment channels. Maricunga constructed steel channel troughs for the overhead pipelines transferring cyanide solution between the ADR Plant building and the Train C building. Maricunga installed flow meters on these pipelines to measure flow differential and detect leakage as well as leak detection systems as spill preventive measures for the existing buried pipeline segments. Inspections of the pipeline leak collection systems are conducted on a regular basis. Also, video surveys of underground lines between Train C building and solution pond discharge point are implemented.

No perennial or ephemeral surface water bodies are located in the immediate vicinity of the process facilities that require special protection needs for pipelines.

Cyanide tanks and pipelines are constructed of materials compatible with cyanide and high pH conditions such as carbon steel, stainless steel and HDPE.

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.

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 4.8**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 4.8 requiring that operations implement QA/QC procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

QA/QC programs have been implemented during construction of the cyanide facilities that are new or modified since the previous 2012 recertification audit. The auditors reviewed record of construction reports, which include as-built drawings, and QA/QC testing reports and certificates to verify compliance. Below is a list of the three new or modified cyanide facilities since the previous recertification audit conducted in 2012:

- Phase VI Leach Pad Expansion in 2012 (including Cells A, B, C D, E and F). The QA/QC program was conducted by Knight Piésold and PL Services.
- SART Plant in 2012. The QA/QC program was conducted by Jacobs, Echevarria Izquierdo, Montajes Industriales S.A. and other companies.
- Expansion of the Storage Capacity of the Emergency Pond (2014). The QA/QC program was conducted by Knight Piésold and PL Services.

Programs addressed the suitability of materials, adequacy of soil compaction for earthworks, and installation of geomembrane liners and piping. In general, the record of construction reports includes

materials quality certificates and laboratory testing reports. Also, the QA/QC documentation includes End of Construction certificates for earth works, lining, pipelines, soils and others approved and signed by the company responsible of the QA/QC activities.

Maricunga has retained the QA/QC documentation in the library managed by the Projects Department as well as electronically. The auditors observed both the physical documentation and electronic files to verify compliance.

Maricunga retained qualified engineering personnel to provide construction quality assurance services associated with the cyanide facilities.

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

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 4.9**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 4.9 requiring that operations implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and groundwater quality.

Golder was involved in groundwater sampling at Maricunga during the recertification period. Golder subcontracted to Mr. Bruno Pizzorni, Management Systems Solutions Inc., as an independent auditor to address Standards of Practice 4.9.1 through 4.9.7 where a conflict of interest exists.

Review by Independent Auditor (Bruno Pizzorni)

Maricunga has developed and implemented environmental written procedures for monitoring activities relating to cyanide for surface water and groundwater and for monitoring and recording all wildlife mortality occurring on site.

The operation has sampling and analytical protocols developed by a Chemical Engineer with 30 years of experience in laboratory analysis who is the Chief of the Scientifics and Technologic Investigations Chemical Laboratory Institute (IDITEC) from the Atacama University. Operation protocols have been updated by Maricunga's environmental personnel with several years of experience in the field. Maricunga has environmental monitoring programs developed to evaluate the performance of the cyanide management systems on wildlife, process ponds, leak detection systems, and surface and groundwater quality. The plans and procedures specify how and where samples should be taken, the preservation techniques, chain of custody procedures, shipping instructions and cyanide species to be analysed. The

water quality sampling procedures present the requirements for documenting sampling conditions and procedures. The Excel spreadsheets for fauna Census in the Vicinity of the Process Pond and chain of custody forms include information about the weather conditions and procedures used.

Maricunga is a zero discharge facility and does not discharge process water to the environment. Maricunga monitors surface water and groundwater quality downgradient of the site to ensure that indirect discharges are not occurring. Surface and ground water monitoring are completed twice a month in general.

Maricunga monitors wildlife mortalities related to cyanide solutions. Maricunga has implemented a wildlife presence monitoring conducted on a frequency varying from daily to biweekly depending on the bird migration season.

Based on the above paragraphs, monitoring is conducted at frequencies adequate to characterize the medium being monitored and to identify changes in a timely manner.

PRINCIPLE 5 – 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.**

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 5.1**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 5.1 requiring that the site plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.

Maricunga has prepared a current closure plan that covers the cyanide facilities and includes the appropriate decommissioning activities. The 2014 closure plan includes the cyanide warehouse, heap leach pad, ADR Plant, SART Plant, the process ponds (i.e., pregnant and recycling), the emergency pond, piping, pumps, and associated appurtenances. The 2014 closure plan includes disposition of residual chemicals and demolition, as well as neutralization, rinsing, and disposition of draindown solutions for the heap leach pad. Decontamination is covered in an operational procedure. The applicable governmental agency, Servicio Nacional de Geologia y Mineria (SERNOGEOMIN), approved the 2014 closure plan in 2015 via a regulatory resolution.

The 2014 closure plan includes a closure schedule in the form of a Gantt chart. Demolition of the ADR Plant and SART Plant is scheduled for Years 7 to 11 of the closure period, while neutralization and rinsing of the heap leach pad is scheduled for Years 7 to 13.

Maricunga provided evidence of three different closure plans for the period from 2006 to 2015. The evidence consisted of a combination of the actual plans and regulatory resolutions approving the plans the auditors accepted these documents as evidence that Maricunga has undertaken periodic review and revision of its plans.

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

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 5.2**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with the Standard of Practice 5.2 requiring that the site establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.

Maricunga prepared a cost estimate as part of the 2014 closure plan. The total direct cost for the entire mine closure is approximately double that of the subset of decommissioning activities for the cyanide facilities. Maricunga provided a 2014 spreadsheet and a 2015 response to regulatory comments that showed closure costs were based largely on contractor quotes, and that therefore the costs represent third party implementation.

Maricunga provided evidence of two different closure plans with associated cost estimates. A 2009 regulatory resolution included estimated costs for the total mine closure, as did the 2015 regulatory resolution (which was based on the 2014 closure plan). Note that while the regulatory resolutions were issued 6 years apart, the actual estimates were prepared 5 years apart. The auditors accepted these documents as evidence that Maricunga has undertaken periodic review and revision of its costs.

The applicable governmental agency, SERNOGEOMIN, approved the closure cost estimate via Resolution No. 2039 in 2015. This resolution requires posting of funds according to a defined schedule. The amount posted will equal the subset of costs for cyanide decommissioning with the submittal due in August 2016. The auditors accepted the regulatory resolution as evidence that Maricunga has arranged financial assurance with the applicable regulatory agency in a manner satisfactory to that jurisdiction.

PRINCIPLE 6 – 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 eliminated, reduce and control them.**

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 6.1**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 6.1 requiring that the site identify potential cyanide exposure scenarios and take measures as necessary to eliminate, reduce and control them.

Maricunga has developed operating procedures that describe the management and operation of the cyanide facilities. These procedures cover the safe operation of the entire cyanide management. The procedures have been developed for the cyanide unloading, storage and mixing facilities; the ADR Plant, the Pregnant Pond, Recirculation Pond and Emergency Pond; the SART Plant including PLS Pond and the Leach Pad Facilities. The procedures have been updated, as needed, to reflect changes in procedures and new cyanide facilities during the recertification period. The procedures describe the use of PPE and address work inspections for cyanide related tasks.

Maricunga has implemented pre-work inspections for cyanide related activities through the completion of an Operational Risk Analysis (ARO). An ARO is a formal documented process that requires a review of the tasks to be completed, evaluation of risks associated with these tasks, selection of the appropriate PPE, identification of operating procedures and review of other precautions to follow to ensure the work task is completed safely. AROs are conducted daily for non-routine operation tasks including cyanide activities such cyanide unloading, mixing, maintenance and others. In additional, Maricunga inspects the cyanide mixing tank level prior to and after the cyanide mixing and verify the pH values prior to mixing. This is documented in the ADR Plant daily production report and the cyanide solution preparation checklists.

In addition, inspections of the cyanide facilities are conducted on a regular basis. Inspections include cyanide tanks, pipes, pumps, secondary containments, safety devices (e.g. safety showers, eyewash stations, cyanide kits and fire extinguishers), liners, heap leach pad, and wildlife, and cover the cyanide unloading, mixing and storage areas, the ADR Plant, SART Plant, the process ponds and leach pad areas. Inspection and pre-inspection records were reviewed to verify compliance.

Maricunga has implemented management of change procedures at the mine level and the corporate level. At the mine level, the proposed change or modification is assessed through different management of change forms that include the participation of the environmental and health and safety departments. A detailed evaluation and risk assessment is also conducted as applicable for each change. The approved change is communicated to workers and training is provided, if necessary, prior to the change implementation. In addition to this change management procedure, Kinross also has Corporate Authorization for Expenditure (AFE) processes to evaluate and approve changes requiring significant expenditures. A part of the AFE approval process an evaluation for Code compliance is conducted. The auditors reviewed examples of completed management of change forms and AFE assessments associated with changes/modifications that occurred during the recertification period to verify that the procedures were implemented. The forms were completed according to the procedures and were approved by the area staff involved in each change.

Maricunga has safety meetings and conducts task observations to provide information and training to employees, as well as to solicit input from employees on worker safety issues.

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.

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 6.2**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 6.2 requiring that the site operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.

Maricunga monitors and maintains the proper pH to prevent the formation of HCN as recommended in the procedures. Fixed HCN monitors are installed in areas of potential exposure to cyanide (6 in the ADR Plant and 13 in the SART Plant). In addition, procedures require that all workers, including maintenance workers use a portable HCN monitor to conduct work inside the ADR Plant and the SART Plant. HCN sensors are set at 4.7 ppm low level alarm and 10 ppm high level alarm. HCN monitors are maintained, calibrated, and inspected as recommended by the manufacturer. The auditors reviewed calibration records from throughout the recertification period to verify compliance. Records for maintenance, testing and calibration of HCN monitoring equipment were retained for all the recertification period.

Warning signs are posted in areas where cyanide is used to alert workers that cyanide is present and that smoking, eating and drinking are not allowed. Pipes carrying cyanide are marked and the direction of flow is indicated with arrows on the pipe. In addition, Cyanide mixing, storage and process tanks are also marked as containing cyanide. Compliance was verified by visual inspection.

Showers, low-pressure eye wash stations, and dry powder fire extinguishers are located at strategic locations throughout the operation and are maintained, inspected, and tested on a regular basis. Safety showers and eyewash stations were operational. Compliance was verified by visual inspection and review of inspection records from throughout the recertification period.

MSDSs and first aid procedures for cyanide are in each cyanide first aid kit (including the plant operator room). The instructions are in Spanish, the language of the workforce. Maricunga also has placed signs containing cyanide related first aid procedures at the process areas. Verification was through visual inspection of the MSDSs and the signs.

Maricunga implemented procedures that require all incidents involving cyanide exposure be investigated and evaluated to determine if its programs and procedures to protect worker health and safety and to respond to cyanide exposures are adequate or if changes are necessary. Maricunga stated that no cyanide exposure incidents occurred between November 2012 and October 2015, and therefore there are no examples of completed investigations for cyanide exposures. In lieu of cyanide exposure incidents, the auditors reviewed an example of completed incident investigation for a cyanide spill incident to verify that procedures were implemented.

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

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 6.3**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 6.3 which requires that the site develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

Maricunga provides equipment for response to cyanide exposure and the communication means to coordinate their use. Maricunga provides water via the eyewashes and showers located throughout the process plants including the cyanide mixing and storage tank areas. Maricunga also has cyanide antidote kits, radio and telephone at the process plants. Cyanide kits include including include amyl nitrite and

oxygen. The cyanide kits at the onsite clinic also include sodium nitrite and sodium thiosulfate. In addition, automated external defibrillators (AEDs) are located in the clinic and the onsite ambulances.

Cyanide antidote kits (amyl nitrite and oxygen) located in the process areas are inspected twice a month. The cyanide antidote kits are inspected per shift by Mutual de Seguridad (Mutual), a contractor. All the kits have been replaced as specified by the manufacturer's expiration date and are stored at the recommended temperature.

The auditors observed that most of the 2014 and 2015 inspections of the oxygen tanks and the ambulances located in the clinic were not documented and therefore the auditors could not confirm that these inspections were conducted. These gaps in documentation were attributed to poor record keeping, as inspection procedures appear to have been followed (by interview with the onsite doctor at the time of the site visit, and the inspection of the oxygen bottles and the onsite ambulance). This deficiency in documentation was immediately corrected by Maricunga and training in inspection requirements and record keeping was provided to Mutual personnel. The auditors reviewed November 2015 to April 2016 weekly inspection records for the oxygen bottles and the ambulances located at the onsite clinic. These inspections were properly conducted and documented for 5 consecutive months, therefore the auditors consider that the period of record from November 2015 to April 2016 is sufficient to demonstrate that the operation has retaken control of the situation and that full compliance will be maintained in the future. Therefore, the auditors consider that Maricunga is fully compliant under this question.

Maricunga has developed written emergency response procedures to respond to cyanide exposures during unloading, mixing and process activities. Procedures cover cyanide first aid including amyl nitrite administration, emergency transportation, recovery, decontamination, and emergency communication, and reporting.

Maricunga has its own onsite capability (equipment and trained staff) to provide first aid assistance to workers exposed to cyanide. Maricunga has cyanide antidote kits located in different locations of the process plants and in the clinic. Maricunga has emergency responders and cyanide first aid trained personnel per shift as well as onsite doctors, nurses and paramedics. Maricunga contracts Mutual to provide clinical and emergency response services in accordance with Chilean regulatory requirements. Mutual is also responsible for the transport of workers exposed to cyanide to locally available qualified off-site medical facilities. Maricunga has developed procedures to transport workers exposed to cyanide to the hospital in Copiapo by ambulance or helicopter. Maricunga has made formalized arrangements with the Atacama Clinic in Copiapo through Mutual. Mutual has a contract for medical services with this clinic. The Atacama Clinic is the primary medical facility as indicated in the response procedures.

Maricunga conducted two cyanide exposure mock drills during the recertification period. Maricunga evaluated the mock drills and identified corrective actions. Debriefs were conducted to discuss lessons learned and corrective actions. Auditors reviewed the mock drill reports and supporting documentation (including training records) to verify that the action items identified for the mock drills were completed.

PRINCIPLE 7 – 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.

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 7.1**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 7.1 which requires that the site prepare detailed emergency response plans for potential cyanide releases.

Maricunga has developed emergency response procedures that address emergency response to potential accidental releases of cyanide. Maricunga procedures address potential scenarios such as: 1) cyanide intoxication; 2) accidents during cyanide transportation; 3) releases during unloading and mixing; 4) release of cyanide during fires and explosions; 5) pipe, valve or tank ruptures; 6) overtopping of ponds; 7) power outages and pump failures; 8) uncontrolled seepage; 9) failure of the heap leach facility; 10) cyanide spill control and clean-up; 11) decontamination and emergency evacuation; and 12) emergency communication. These procedures describe measures for evacuation, first aid, antidote use, PPE, decontamination, containment, cleanup, monitoring, and notifications.

With respect to transportation incidents, Maricunga does not assume responsibility for cyanide until the cyanide is delivered in the cyanide warehouse. However, Maricunga's procedures include actions to follow in case of a spill or exposure during transportation in coordination with the cyanide supplier. Cyanco, the cyanide supplier, is responsible for the emergency response, as well as for the remediation and clean-up of any cyanide release during transportation emergency.

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

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 7.2**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 7.2 which requires that the site involve site personnel and stakeholders in the planning process.

Maricunga solicits the input of its workforce and external response entities in the emergency response planning through safety meetings, training sessions and mock drills.

Worker input in developing and evaluating health and safety procedures occurs via direct communication between supervisors and operators, during weekly safety meetings, and during preparation of the AROs. In addition, process personnel and emergency response members participated in the cyanide mock drills conducted in 2015.

Only two external entities have a role in the Maricunga emergency response process, Mutual and Aerorescate. Maricunga has engaged in consultation with these two entities during the recertification period to include their emergency response procedures current. Mutual is the Maricunga provider for clinical and emergency response services. This is a Chilean regulatory requirement. Mutual is also responsible for the transport of workers exposed to cyanide to locally available qualified off-site medical facilities. Maricunga has a contract with Mutual (renewed in July 2015). The new contract requires Mutual to provide two doctors, two nurses and ten paramedics at the site and provide medical services as required 24 hours a day, 7 days a week. Mutual has identified the Atacama Clinic in Copiapo (as well as other medical facilities such as the Regional Hospital in Copiapo) as the local medical facility that is adequate and qualified for cyanide intoxication medical treatment. The Atacama Clinic is the primary medical facility. Maricunga has made a formalized arrangement with the Atacama Clinic through Mutual. Mutual has a contract for medical services with this clinic. The auditors reviewed a copy of the November 4, 2015 letter sent by Mutual to Maricunga. The purpose of the letter was to certify that all its associated medical facilities in Copiapo are adequate and have qualified medical physicians and cyanide antidotes to respond to cyanide exposures. Mutual has provided input into emergency response planning by developing the first-aid procedure for cyanide exposure that is provided with each emergency response kit. Mutual paramedics and doctors also provide cyanide first aid training and participate in emergency response and mock drill exercises and the follow up debriefings.

Maricunga has also has a contract with Aerorescate S.A., a helicopter response company based in Copiapo, for emergency evacuation. Maricunga has developed a Diagram for External Support for Cyanide Intoxication describing the procedures to transport workers exposed to cyanide to the hospital in Copiapo by ambulance or helicopter. The diagram includes emergency contact phone numbers of Maricunga, Aerorescate and Mutual. These procedures have been provided to Aerorescate and Mutual. The auditors reviewed records of the training in these procedures provided by Maricunga to Mutual personnel as well as a November 17, 2015 email notifying Aerorescate of these procedures.

As indicated in Maricunga emergency response procedures, the Estero de la Laguna Stream (located approximately 1.9 km downstream of the cyanide facilities) may be affected in case of a catastrophic

release from the site and therefore this could affect the Colla communities located along the path of this stream, downstream of the mine site. The procedure for Dialog with Communities and Stakeholders has identified one Colla community in the influence area of the mine site and six Colla communities outside the area of influence of the mine site but along the cyanide transportation route. Maricunga creates opportunities for interaction with the Colla people via monthly roundtable meetings and open houses. Cyanide-related information is provided via a pamphlet and a presentation. The auditors reviewed emergency response procedures and records of communication with the Colla communities as well as interviewed safety and community relation people to verify compliance.

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

☒ **in full compliance with**

Maricunga is

☐ in substantial compliance with **Standard of Practice 7.3**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 7.3 which requires that the site designate appropriate personnel and commit necessary equipment and resources for emergency response.

Maricunga has committed in their emergency response plans and procedures the necessary emergency response equipment and first aid to manage cyanide incidents at the operation and to coordinate transportation to local hospitals for further treatment, if needed.

Procedures describe the responsibilities of the emergency response coordinators (i.e. Mine General Manager, Environmental Superintendent, Safety Superintendent and others). Maricunga has a list with the emergency response members by crew including 24-hour contact information. Maricunga has developed a training program for emergency responders. The training program includes training in first aid, cyanide related emergency response procedures, HAZMAT, Use of the Self Contained Breathing Apparatus (SCBA) and others. Maricunga has identified its emergency response equipment in equipment inventories and several checklists including cyanide antidote kits, HCN monitors, shower and eyewash stations, extinguishers, SCBAs, chemical suits, and others. Checklists are used to document the inspection of the emergency response equipment.

All emergency equipment and supplies are inspected monthly by the emergency response members. The auditors observed that most of the 2013, 2014 and part of the 2015 inspections were not documented and therefore the auditors could not confirm that these inspections were conducted. These gaps in documentation were attributed to poor record keeping as inspection procedures appear to have been followed (by interview with safety personnel). This deficiency in documentation was immediately corrected

by Maricunga and training in inspection requirements including record keeping was provided to emergency response personnel. The auditors reviewed appropriate November 2015 to April 2016 records of the inspections of the emergency response equipment. The auditors consider that the period of record from November 2015 to April 2016 is sufficient to demonstrate that the operation has retaken control of the situation and that full compliance will be maintained in the future. Therefore, the auditors consider that Maricunga is fully compliant under this question.

Only two external entities have a role in the Maricunga emergency response process, Mutual and Aerorescate. Maricunga has confirmed that these entities are aware of their involvement.

Mutual is the Maricunga provider for clinical and emergency response services. This is a Chilean regulatory requirement. Mutual is also responsible for the transport of workers exposed to cyanide to locally available qualified off-site medical facilities. Maricunga has a contract with Mutual (renewed in July 2015). The new contract requires Mutual to provide two doctors, two nurses and ten paramedics at the site and provide medical services as required 24 hours a day, 7 days a week. Mutual has identified the Atacama Clinic in Copiapo (as well as other medical facilities such as the Regional Hospital in Copiapo) as the local medical facility that is adequate and qualified for cyanide intoxication medical treatment. The Atacama Clinic will be the primary medical facility. Maricunga has made a formalized arrangement with the Atacama Clinic through Mutual. Mutual has a contract for medical services with this clinic. The auditors reviewed a copy of the November 4, 2015 letter sent by Mutual to Maricunga. The purpose of the letter was to certify that all its associated medical facilities in Copiapo are adequate and have qualified medical physicians and cyanide antidotes to respond to cyanide exposures. Mutual has provided input into emergency response planning by developing the first-aid procedure for cyanide exposure that is provided with each emergency response kit. Mutual paramedics and doctors also provide cyanide first aid training and participate in emergency response and mock drill exercises and the follow up debriefings.

Maricunga has also has a contract with Aerorescate S.A., a helicopter response company based in Copiapo, for emergency evacuation. Maricunga has developed a Diagram for External Support for Cyanide Intoxication describing the procedures to transport workers exposed to cyanide to the hospital in Copiapo by ambulance or helicopter. The diagram includes emergency contact phone numbers of Maricunga, Aerorescate and Mutual. These procedures have been provided to Aerorescate and Mutual. The auditors reviewed records of the training in these procedures provided by Maricunga to Mutual personnel as well as a November 17, 2015 email notifying Aerorescate of these procedures.

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

☒ **in full compliance with**

Maricunga is ☐ in substantial compliance with **Standard of Practice 7.4**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 7.4 which requires that the site develop procedures for internal and external emergency notification and reporting.

Procedures GCNPL701, GCNPE751 and GGGPR030 detail the procedures including current contact telephone numbers for notifying Maricunga management, government agencies (e.g., SERNAGEOMIN, ONEMI, CONANA others), medical facilities via Mutual, and others. These procedures and Procedure GCNPR901 include procedures for communication with the media and the communities. The Manager of Corporate Affairs is the designated spokesperson through which all communication to the public will be funneled.

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

☒ **in full compliance with**

Maricunga is ☐ in substantial compliance with **Standard of Practice 7.5**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 7.5 which requires that the site incorporate in response plans and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals.

Maricunga has described specific remediation measures for cyanide releases. Procedures include measures to contain, recover and clean up cyanide spills. Spilled cyanide solutions within the process plants will be returned to the process circuit. Emergency containment structures would be constructed, if necessary and possible, to minimize the extent of the release. Where possible, solid cyanide will be cleaned-up with shovels and brooms. If the cyanide comes into contact with snow or water but can be kept contained, lime will be applied to raise the pH to 11. Spilled cyanide solutions will be neutralized with sodium hypochlorite or hydrogen peroxide. Contaminated soil and other material will be disposed of in the leach pad area. The procedures require the monitoring of the affected area after cleaning and describe what final cyanide concentration will be allowed in residual soil as evidence that the release has been completely

cleaned up. Procedures prohibit the use of chemicals where spills may impact surface water. The auditors reviewed the procedure and interviewed environmental personnel to verify compliance. In addition, procedures require that contaminated water and/or soils are monitored after a cyanide spill. These procedures describe measures for water and soil sampling including sampling methodologies, and parameters (e.g. cyanide).

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

The operation is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 7.6**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 7.6, which requires that the site periodically evaluate response procedures and capabilities and revise them as needed.

Maricunga reviews its emergency response procedures annually and after incidents and mock drills, if needed. No cyanide emergency occurred at Maricunga during the recertification period. No action involving the review of the emergency response procedures was identified in the mock drills. However, Maricunga reviewed and revised its emergency response procedures annually during the recertification period to improve emergency response actions. The auditors reviewed the revision section (that lists the revision dates) in the emergency response procedures to confirm that these procedures were reviewed and revised as needed. Maricunga conducted two mock drills based on likely cyanide release/exposure scenarios to test the response procedure, and incorporated lessons learned from the drills into its response planning. The auditors reviewed the mock drill reports and supporting documentation (including training records) to verify that the action items identified for the mock drills were completed.

PRINCIPLE 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**

Maricunga is

☐ in substantial compliance with **Standard of Practice 8.1**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 8.1 which requires that the site train workers to understand the hazards associated with cyanide use.

Maricunga provides initial training and refresher training to all employees and contractors with the potential to be exposed to cyanide on cyanide hazard awareness. The training is provided as part of the new hire training (called “New Man”) as well as the annual Cyanide Code training. Training includes Cyanide Code information, cyanide use, cyanide physical characteristics, cyanide storage, safety cyanide handling, first aid procedures, HCN intoxication limits, pH vs HCN relationship, cyanide related fire, cyanide antidote, cyanide kit location, emergency plans, decontamination, spill containment, and PPE.

Maricunga retains all cyanide training records including test results demonstrating an understanding of the training. Verification was by interview with process and training personnel, interviews with operators, review of employee training materials, and review of records from throughout the recertification period.

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**

Maricunga is

☐ in substantial compliance with **Standard of Practice 8.2**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 8.2 which requires that the site train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.

Maricunga requires that all staff working with cyanide be trained in cyanide hazard recognition as part of the annual Cyanide Code training. All personnel in job positions that involve the use of cyanide and cyanide management receive the Right to Know (or Derecho a Saber [DAS] in Spanish) training that covers health

and safety risks associated with the activities conducted at each process areas, including cyanide activities. In addition, staff assigned to the plants and the leach pad facilities, where cyanide is an integral part of the operation, receive task training prior to working with cyanide independently. Individual training is provided for each cyanide task and includes task procedures. Procedures include the purpose of the procedure, required PPE, safety considerations, and the task steps. Training elements for specific jobs are identified in the "Procedure Refresher and Document Reception" forms developed for each process area, as well as in the training tracking spreadsheets. These forms and the spreadsheets list the procedures to be covered as part of the task training. Task training for operators is provided by supervisors or process personnel who have several years of experience in the mine process.

Maricunga ensures that staff continue to perform their cyanide activities safely by providing refresher training on cyanide management via annual refresher training on the Cyanide Code, annual task procedures and task observation by supervisors. Maricunga undertakes written tests to evaluate the effectiveness of the cyanide hazard awareness training, as well as of the DAS training. In addition, following task training, new operators work first with a group of experienced operators for several weeks. The new operator is then observed at the end of this period by his supervisor to evaluate performance. The supervisor will observe the individual to determine if that individual is able to perform the tasks on their own.

Training records are retained throughout an individual's employment. The records include the names of the employee and the trainer, the date of training, and the topics covered. The test results demonstrating an understanding of the training materials are also retained.

Verification was by interview with training and process personnel, review of training tracking spreadsheets, and review of training records including quizzes.

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

☒ **in full compliance with**

Maricunga is

☐ in substantial compliance with **Standard of Practice 8.3**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 8.3 which requires that the site train appropriate workers and personnel to respond to exposures and environmental releases of cyanide.

Personnel responsible for cyanide unloading, mixing, production, and maintenance, as well as emergency coordinators and emergency responders, are trained in procedures to be followed if cyanide is released, as well as in decontamination and first aid procedures. These procedures are described in the cyanide

emergency response procedures. These procedures address cyanide spills, leaks, fire involving cyanide, cyanide first aid, rescue procedures, amyl nitrite administration procedures, emergency transportation, recovery, decontamination, process pump failures, and cyanide spill sampling. In addition, the procedures describe evacuation procedures, emergency contact information, and reporting requirements. Maricunga provides annual refresher training in emergency response procedures through the annual task training received by process personnel responsible for cyanide activities, as well as in the annual refresher training for emergency responders. Annual training for emergency responders also includes the use of response equipment. Emergency responders and process employees participated in mock drills on likely cyanide release/exposure scenarios.

Maricunga has made local response agencies and communities familiar with those elements of its cyanide emergency response procedures related to cyanide through training sessions, meetings and contracts. Verification was by document review and interviews.

Maricunga conducted two mock drills based on likely release/exposure scenarios during the recertification period. Drills were evaluated from a training perspective to determine if personnel have knowledge and skills required for effective response. Auditors reviewed the mock drill reports and supporting documentation (including training records) to verify that the action items identified for the mock drills were completed.

Training records are retained and include the name of the employee and the trainer, the date of training; the topics covered, and test results demonstrating an understanding of the training materials. Verification was through interview with training personnel and review of training records.

PRINCIPLE 9 – DIALOGUE

Engage in Public Consultation and Disclosure

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

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 9.1**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 9.1 which requires that the site provide stakeholders the opportunity to communicate issues of concern.

Kinross manages the community relations for Maricunga in coordination with that for the nearby La Coipa Mine and Lobo-Marte Project, given that the areas of influence overlap for these operations. The direct area of influence for Maricunga is the tribal lands for the indigenous Colla people along the Rio Jorquera. The Colla are a transhumant grazing culture with dispersed, temporary occupation of the land. Approximately 30 people use the tribal lands along the Rio Jorquera. The indirect area of influence includes the town of Tierra Amarillo and the city of Copiapo, which are located approximately 3 hours and 4 hours away from Maricunga by road.

Kinross provides opportunities for the public to communicate issues of concern with an open door policy implemented via in-person contacts, mail, email, telephone, Twitter, Facebook, and a website. Contact details are publicized in newspapers, radio, television, website, a pamphlet, and presentations.

The effectiveness of these means in providing opportunities for input is supported by a tracking spreadsheet. The number of contacts is summarized by quarter, typically with several hundred contacts per quarter. Grievances are also tracked, typically with several per quarter. These grievances are usually related to animals injured or killed on the roads; none were related to cyanide during the recertification period.

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

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 9.2**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 9.2 which requires that the site initiate dialogue describing cyanide management procedures and actively address identified concerns.

Kinross manages the community relations for Maricunga in coordination with that for the nearby La Coipa Mine and Lobo-Marte Project, given that the areas of influence overlap for these operations. The direct area of influence for Maricunga is the tribal lands for the indigenous Colla people along the Rio Jorquera. The Colla are a transhumant grazing culture with dispersed, temporary occupation of the land. Approximately 30 people use the tribal lands along the Rio Jorquera. The indirect area of influence includes the town of Tierra Amarillo and the city of Copiapo, which are located approximately 3 hours and 4 hours away from Maricunga by road.

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

Maricunga is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 9.3**

☐ not in compliance with

Summarize the basis for this finding:

The operation is in FULL COMPLIANCE with Standard of Practice 9.3 which requires that the site make appropriate operational and environmental information regarding cyanide available to stakeholders.

Kinross disseminates information regarding cyanide management in both written and verbal forms. A pamphlet on cyanide describes the form of cyanide used, how it is manipulated, first aid measures, and general actions in case of a cyanide-related emergency. Approximately 2,500 pamphlets were distributed in 2014 alone. A 2015 presentation includes the same information as the pamphlet but in slide form. This presentation is accompanied by a verbal explanation as it is being given. Information was also delivered verbally during the monthly roundtable meetings (“mesas de trabajo”) with the Colla people. The corporate

community relations manager stated that approximately 17 percent of the local population is illiterate, indicating that written descriptions are suitable for most residents in the area of influence.

Maricunga has developed a written procedure for reporting exposures and releases. Maricunga staff stated that there were no exposures or releases that required reporting during the recertification period, and that therefore no information was made publically available. If there had been exposures or releases requiring reporting, Maricunga stated they would have done so in accordance with their written procedure and reportable quantity thresholds. The auditors reviewed four internal investigation reports to verify that the threshold for the cyanide reportable quantity was not exceeded, and that therefore Maricunga was not required (according to their procedures) to report the spills to the government where the information would become publically available.

Report Signature Page

GOLDER ASSOCIATES INC.

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Date: April 21, 2016

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At Golder Associates we strive to be the most respected global group of companies specialising in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organisational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

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Golder Associates

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