



July 2018

## ICMC RECERTIFICATION SUMMARY AUDIT REPORT

# Cerro Vanguardia Mine Province of Santa Cruz, Argentina

REPORT

**Submitted to:**

International Cyanide Management Institute (ICMI)  
1400 I Street NW-Suite 550  
Washington, D.C. 20005  
United States of America

**And**

Cerro Vanguardia S.A.  
Avda San Martin 1032  
9310, Puerto San Julián  
Santa Cruz, Argentina

**Project Number:** 1787057

**Distribution:**

ICMI – 1 pdf  
CVSA –1 pdf





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## 1.0 SUMMARY AUDIT REPORT FOR GOLD MINING OPERATIONS

**Name of Mine:** Cerro Vanguardia Mine  
**Name of Mine Owner:** AngloGold Ashanti  
**Name of Mine Operator:** Cerro Vanguardia S.A. (CVSA)  
**Name of Responsible Manager:** Luis Rivera  
**Address:** Avenida San Martín 1032, 9310, Puerto San Julián  
**State/Province:** Santa Cruz  
**Country:** Argentina  
**Telephone:** + 54 2962 496129  
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## 2.0 LOCATION DETAIL AND DESCRIPTION OF OPERATION

### 2.1 Mine Location

The Cerro Vanguardia Mine is located in Santa Cruz Province in the far south of Argentina, at an elevation of 200 meters above sea level (masl), as shown in Figure 1. The mine is operated by Cerro Vanguardia S.A. (CVSA) a subsidiary of AngloGold Ashanti.

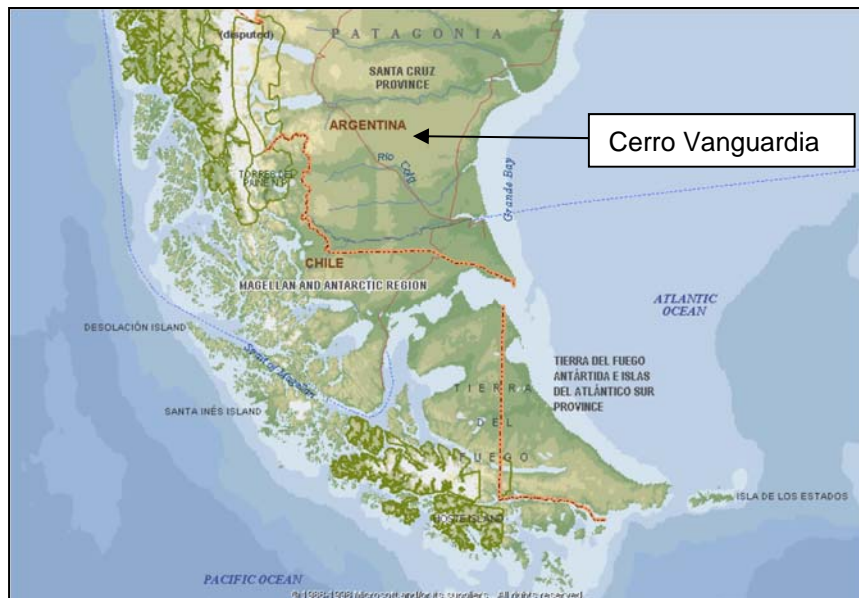


Figure 1: Regional Location Map

### 2.2 Background

The Cerro Vanguardia deposit is a series of veins, and mined using open pit techniques. There are around 15 open pits with variable contents of gold, silver and base metals. Ore is mined at a rate of 1 million tons per year with an average gold grade of 9.5 grams per tons (g/t) and of silver 111 g/t. The Cerro Vanguardia mineral processing plant has a capacity of approximately 3,000 tons per day. The process involves the following steps:

- High grade ore:
  - Three stages of crushing
  - Stockpiling and blending
  - Grinding in a ball mill
- Low grade ore:
  - Heap leach facility (HLF)
  - Pregnant leach solution (PLS) pond
  - Barren tank
  - Emergency pond



- Cyanide leaching in tanks (CIC)
- Washing and thickening in Counter-Current Decant (CCD) units
- Leach solution clarification
- Carbon in leach (CIL)
- Elution
- Precipitation of gold and silver using zinc powder (Merrill Crowe process)
- Smelting to form metal doré
- Cyanide recovery using volatilization (Cyanisorb)
- Cyanide destruction using hydrogen peroxide
- Deposition of tailings in a tailings storage facility (TSF)

CVSA has modified two cyanide facilities in the 2017 audit cycle:

- CCD III was added to the existing CCD I and CCD II
- The TSF embankment was raised from 215.5 meters (m) to 218.5 m



### 3.0 SUMMARY AUDIT REPORT

#### Auditors Findings

in full compliance with

The International  
Cyanide Management  
Code

Cerro Vanguardia is:  in substantial compliance with

not in compliance with


**Audit Company:** Golder Associates

**Audit Team Leader:** Kent Johnejack, Lead Auditor and Mining Technical Specialist

**Email:** kjohnejack@golder.com

This operation has experienced compliance problems during the previous three-year audit cycle which are discussed in this report under Standard of Practice 4.4 (Operations).

#### Name of Other Auditors

Name, Position	Signature
Bruno Pizzoni, Independent Reviewer	

Because Golder was involved in the Quality Assurance/Quality Control for the most recent raise of the TSF, as well as the 2014 Mine Closure Plan, Golder contracted with an independent reviewer to prevent a conflict of interest for Standards of Practice 4.8, 5.1, and 5.2.

Sergio Gonzalez, a Golder employee from the Argentina operating company, also participated as a trainee.


#### Dates of Audit

The Recertification Audit was undertaken over 4 days between September 25 and 28, 2017.

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 and that all members of the audit team meet the applicable criteria established by the International Cyanide Management Institute for Code Verification Auditors.


I attest that this Summary Audit Report accurately describes the findings of the verification audit. I further attest that the verification audit was conducted in a professional manner in accordance with the International Cyanide Management Code Verification Protocol for Cyanide Mine Operations and using standard and accepted practices for health, safety and environmental audits.

Cerro Vanguardia Mine  
Name of Facility

  
\_\_\_\_\_  
Signature of Lead Auditor

July 18, 2018  
Date

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\_\_\_\_\_  
Signature of Lead Auditor

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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

The operation is

in substantial compliance with

Standard of Practice 1.1

not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 1.1, requiring the operation 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.

CVSA has purchased 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. CVSA purchases solid sodium from Australian Gold Reagents Pty. Ltd. (AGR). Section 11 of the Master Purchasing Agreement requires that both parties shall comply with the Code and maintain compliance with the Code. AGR was most recently recertified in January 2014 and August 2017, which covers the recertification period for CVSA. CVSA has not obtained cyanide any independent distributors during the recertification period.



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.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 2.1

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

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.

CVSA has established clear lines of responsibility for transportation. All ICMI requirements related to packaging, labeling, storage, routes, transport, loading/unloading, training, security, and emergency response are clearly defined in the contract between CVSA and AGR. This contract also has a clause that states that the responsibilities of the seller extend to all subcontractors in relation to compliance with the Code.

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

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 2.2

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

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.

CVSA contracts and uses only transporters certified under the Code. AGR as the sales agent, is the consignor and is responsible for overall management of cyanide transportation. AGR's Argentina Supply Chain was most recently certified in 2015. Víctor Masson Transportes Cruz del Sur SA (Cruz del Sur) is a cyanide transporter in Argentina that transports AGR's cyanide from Punta Arenas, Chile, to CVSA. Cruz del Sur was certified in 2014 and 2017 as being compliant with the Code. The auditors reviewed examples

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of purchase orders, certificates of analysis, International bills of lading, merchandise declarations, CVSA checklists, and convoy monitoring records to verify compliance.

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A handwritten signature in black ink, appearing to read "Kent R. Johnson", written over a horizontal line.

Signature of Lead Auditor

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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.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 3.1

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of 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.

CVSA receives solid cyanide in wooden boxes. Both the cyanide storage warehouse and the preparation area in the plant achieved compliance during the initial certification audit. They are the same as those found in full compliance in 2011 and approved by the Argentine authorities. The warehouse and plant are located by itself in a secure compound and there are no perennial watercourses or waterbodies in the vicinity of the warehouse. The auditors observed the cyanide warehouse and preparation area to be in good condition during the 2017 site visit.

The preparation area in the plant has three high-strength cyanide tanks equipped with ultrasonic level sensors that report to the plant control room and activate audible and visual alarms at the tanks. Pumps would be shut down automatically to prevent overflows if pre-set levels were exceeded. CVSA provided a spreadsheet showing that the level sensors were maintained throughout the recertification period. The auditors also observed that tank levels on the screen in the control room

As noted in the 2011 initial certification report, the high-strength cyanide tanks in the plant preparation area are located on reinforced concrete plinths that prevent seepage to the subsurface and within concrete secondary containment that is a competent barrier to leakage. CVSA staff stated there have been no changes since 2011. The auditors observed the concrete plinths and secondary containment to be in good condition during the 2017 site visit.

CVSA stores cyanide with adequate ventilation to prevent build-up of hydrogen cyanide (HCN) gas, under a roof and off the ground to prevent contact with water, within secure areas to prevent unauthorized access, and separate from incompatible materials. The cyanide storage warehouse is three-sided with the remaining side open to the air. The preparation area within the plant is equipped with a ventilation fan and

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the tanks vent to outside the building. The warehouse has a roof and concrete floor. Both the warehouse and the preparation area have multiple layers of security with the last layer being locked gates with access limited to authorized operators. No materials other than cyanide area stored within the warehouse and preparation area.

**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.**

in full compliance with

The operation is

in substantial compliance with

**Standard of Practice 3.2**

not in compliance with

**Summarize the basis for this finding/deficiencies identified:**

The operation is in full compliance with 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.

CVSA has developed and implemented procedures to manage empty cyanide boxes and bags to prevent re-use, exposures, and spills. CVSA does not return cyanide containers to the supplier. CVSA washes the empty bags with a dilute sodium hydroxide solution before rinsing and transporting both boxes and bags to the onsite hazardous waste accumulation area. This area is a curbed concrete pad surrounded by a fence with a locked gate. CVSA sent the empty boxes and bags via a certified transporter (SERPEI) to a hazardous waste landfill managed by Taym in Cordoba, Argentina for most of the recertification period, as evidenced by shipping manifests and return certificates of disposal. However, in March 2017 the landfill in Cordoba was damaged by a flood and shut down; a clear case of *force majeure*. CVSA corresponded with the provincial regulators to find an alternative disposal option, but in the meantime stored the boxes and bags in the on-site hazardous waste accumulation area. In March 2018, a different landfill in Puerto San Martin, Pelco, was authorized by the Argentinian government to receive hazardous wastes. CVSA provided shipping manifests and return certificates to verify that offsite disposal of bags and boxes had resumed via a certified transporter (Marbec) to Pelco in May 2018.

CVSA has developed and implemented procedures to prevent releases and exposures during cyanide unloading, transfer, and mixing activities. The procedure for handling cyanide describes operating valves and pumps during mixing solid cyanide. The procedures for unloading and storing the boxes at the warehouse and transferring the boxes from the warehouse to the plant describe the steps to prevent ruptures and punctures. The procedure for unloading and storing the boxed cyanide limits stacking to three layers high. A separate procedure addresses spill cleanup for both solid and liquid cyanide. The procedure for handling (mixing) solid cyanide requires personal protective equipment (PPE) (i.e., hard hat, rubber

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boots/gloves, Tyvek overalls, face shield, safety glasses, and respirator), radio, portable HCN monitor, and video observation from the control room. The auditors reviewed the procedures and observed a mixing event to verify compliance.

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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.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 4.1

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

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.

CVSA operates under the several high-level management plans, including ISO 14001, ISO 9001, OHSAS 18001, as well as corporate standards for chemicals, incidents, waste, water, and closure. At the local level, CVSA operates under a cyanide management plan, as well as other plans, procedures, and documents that define regulatory requirements, design criteria, and operating parameters. Freeboard, pH, and allowable Weak Acid Dissociable (WAD) cyanide concentrations are defined. CVSA has also developed a set of procedures for the safe and environmentally sound operating of the cyanide facilities. The procedures include inspections and maintenance. The auditors observed that the procedures have been updated every 2 years as required by the document control procedure.

CVSA has developed a change management procedure that identifies changes that may affect the potential for cyanide exposures and releases. The auditors reviewed a completed form, signed by the plant manager, the safety manager, and the environmental manager, for changing the cyanide destruct circuit from sulfur dioxide to hydrogen peroxide.

CVSA has contingency procedures to deal with process upsets such as shutdown at the Cyanisorb plant, upsets at the plant, generator usage in power outages, and events at the plant, TSF, and HLF. Temporary cessation is addressed in the closure plan.

CVSA has inspected the cyanide facilities using physical and digital forms by multiple departments at frequencies ranging from daily to quarterly. Operators complete inspections of the plant and its various circuits using the daily log sheets. Engineering staff complete monitoring and inspections for the TSF. Maintenance staff complete inspections according to a planned schedule in the SAP database. CVSA has inspected cyanide tanks and vessels for structural integrity and signs of corrosion and leakage.

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Maintenance staff conduct formal visual inspections of tanks and vessels every 6 months with key tanks subjected to non-destruction testing on a rotating 5-year schedule. CVSA has inspected secondary containments regularly and subjects them to in-depth inspection, crack sealing, and epoxy re-application every 3 years. CVSA has tracked the flow rate, pH, and WAD cyanide concentration weekly in the Leachate Collection and Recovery System (LCRS) for the PLS Pond using a spreadsheet. Pipelines, pumps, and valves have been inspected regularly and documented on the daily log sheets, inspection forms, and SAP database. The TSF, PLS Pond, and Emergency Pond have been inspected weekly using forms that document water levels and/or volume. The auditors consider that the frequency of the inspections of the cyanide facilities is sufficient to document and assure that the cyanide facilities are functioning as intended.

CVSA has documented inspections on written and digital forms. The documentation includes the inspection date, the inspector's name, and remarks where deficiencies are noted. Follow-up actions are processed through completion using the SAP software for maintenance.

CVSA has implemented a maintenance program to ensure that equipment and devices function properly for safe cyanide management. CVSA uses the SAP database to manage preventative and corrective maintenance. The auditors reviewed maintenance histories for the recertification period for randomly selected cyanide equipment to verify compliance: Cyanisorb cyanide storage tank; cyanide transfer pump at the plant; tailings pump; barren pump, and the Cyanisorb building ventilation fan.

CVSA has its own power plant for primary power. In the event of a power plant interruption, CVSA has six backup generators to power critical functions at the cyanide facilities. CVSA has developed written procedures for testing and using these generators. CVSA conducts weekly start-up tests and monthly preventative maintenance.

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

in full compliance with

The operation is

in substantial compliance with

**Standard of Practice 4.2**

not in compliance with

**Summarize the basis for this finding/deficiencies identified:**

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.

The ore at CVSA comes for a number of open pit mines and an underground mine. CVSA has conducted bottle roll testing during the recertification period to confirm the established dosing curve. CVSA has

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evaluated both manual and inline titration to control cyanide addition. The Metallurgy Chief stated that inline titration was abandoned because the tailings destroyed the instruments. CVSA has implemented a strategy of manual titration every 4 hours at three points in the plant to control cyanide addition. The auditors reviewed an example spreadsheet for the bottle roll testing, the dosing curve, and examples of the plant daily log sheets to verify compliance. The manual strategy to control cyanide addition notwithstanding, the main method that CVSA uses to minimize cyanide in tailings is the cyanide destruction circuit. Moreover, the Cyanisorb circuit to recover cyanide minimizes the overall use of cyanide at the mine.

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

in full compliance with

The operation is

in substantial compliance with

**Standard of Practice 4.3**

not in compliance with

**Summarize the basis for this finding/deficiencies identified:**

The operation is in full compliance with Standard of Practice 4.3, requiring the operation to implement a comprehensive water management program to protect against unintentional releases.

CVSA has developed water balances for the TSF and the HLF. These are the same water balances that were evaluated in the 2015 recertification audit report and found compliant. These water balances are comprehensive and probabilistic, and consider the relevant factors in a reasonable manner and as appropriate for the facilities and the environment. The relevant inflows and outflows for the TSF include precipitation, evaporation, tailings discharge, seepage, decant return flows and retained water in the tailings. Inflows and outflows for the HLF include irrigation rates, return pumping rates from the ponds, precipitation, and evaporation. Extreme precipitation events have been modeled. There is negligible run-on from upgradient as the TSF and HLF are elevated above surrounding ground. Impacts of freezing and thawing are not relevant given the regional weather. Backup generators are available at both the TSF and HLF. CVSA does not discharge from the TSF or HLF to surface waters. The groundwater level does not influence the water balances as it is approximately 70 m below ground surface.

CVSA has implemented the TSF and HLF water balances to prevent releases from overtopping via written procedures, regular inspections, and reporting. The auditors reviewed the procedures, inspection forms, and reports to verify compliance. During the site visit, the auditors observed solution levels to be at reasonable levels to prevent overtopping.

CVSA has designed and operated the TSF and the HLF with adequate freeboard throughout the recertification period. According to the Quarterly TSF Reports, the minimum freeboard is 1.5 m and the actual freeboard during the recertification period ranged from approximately 2 to 7 m, CVSA has operated



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the PLS Pond and Emergency Pond at the HLF with their required freeboards of 1 m and 2.7 m, respectively, throughout the recertification period, as evidenced in a time series graph.

CVSA has measured precipitation and evaporation at the site meteorological station throughout the recertification period and summarized the data in spreadsheets. CVSA staff stated that to date the operational parameters for the TSF and HLF have not been modified because the data have not indicated significant differences to the design parameters.

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

in full compliance with

The operation is

in substantial compliance with

**Standard of Practice 4.4**

not in compliance with

**Summarize the basis for this finding/deficiencies identified:**

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.

CVSA has implemented measures to restrict access by wildlife from open waters at the site. There are no livestock in the vicinity of the site. Measures for the TSF include chain link fencing and the cyanide destruction circuit. Measures for the plant include chain link fencing. Measures for the HLF include chain link fencing around the pad; chain link fencing with a concrete curb around the PLS and Emergency Ponds; and bird balls on the PLS Pond. The auditors observed these measures to be in good condition.

The auditors required that physical restrictions be implemented for the PLS Pond because the concentrations of WAD cyanide were greater than 50 parts per million (ppm). CVSA ordered birdballs from a US-based vendor shortly after the end of the site visit, but the birdballs had not yet arrived at site by the time of the deadline for submittal of the recertification documents to the ICMI. The anticipated arrival time was uncertain because of the time required to clear customs at the port of Buenos Aires. Therefore, a Corrective Action Plan was prepared, and a finding of substantial compliance was determined, because CVSA had acted in good faith to order the birdballs but the arrival date at site was not in their control. CVSA submitted photographs of the PLS Pond with birdballs covering the entire surface of the solution on May 5, 2018. A Corrective Action Completion Report was submitted to the ICMI on May 8, 2018. The auditors concluded that CVSA completed the corrective action in a timely manner and is fully compliant.

CVSA applies leach solutions to the HLF via buried drip emitters, thus eliminating the potential for significant ponding on the heap surface, as well as the potential for overspray. The auditors did not observe significant ponding in the active cells at the HLF during the site visit.

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**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

**The operation is**

in substantial compliance with

**Standard of Practice 4.5**

not in compliance with

**Summarize the basis for this finding/deficiencies identified:**

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.

CVSA does not have direct or indirect discharges from the cyanide facilities to surface water. However, CVSA does have a direct discharge from mine dewatering, a non-cyanide facility, to two lakes near the mine. Analytical results from weekly samples collected at Laguna La Charca and Laguna Flamenco showed non-detect concentrations for total, WAD, and free cyanide throughout the recertification period. CVSA does not have a surface water mixing zone and is not engaged in any surface water remediation.

**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

**The operation is**

in substantial compliance with

**Standard of Practice 4.6**

not in compliance with

**Summarize the basis for this finding/deficiencies identified:**

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.

CVSA has implemented the measures to manage seepage from the cyanide facilities to protect beneficial use of groundwater. These measures include the cyanide destruct circuit for tailings; geomembrane lining for portions of the TSF; seepage collection facilities around the TSF; management practices to minimize the supernatant pool and maximize the beach at the TSF; geomembrane lining of the HLF and associated ponds; secondary containments at the plant and pipelines; and groundwater monitoring.

Argentina has not established designated beneficial uses for groundwater and there are no applicable standards or established points of compliance. However, the Environmental Supervisor stated that the Environmental Impact Statement for the mine established a baseline for cyanide in groundwater and that an increase from that baseline would be considered an exceedance. The baseline is non-detect

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concentrations for total, WAD, and free cyanide. Groundwater sampling around the TSF, HLF, and plant to date have not detected total, WAD, or free cyanide. The auditors reviewed laboratory data sheets from throughout the recertification period to verify compliance.

CVSA does not use tailings for underground mine backfill and is not engaged in groundwater remediation.

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

in full compliance with

The operation is

in substantial compliance with

**Standard of Practice 4.7**

not in compliance with

**Summarize the basis for this finding/deficiencies identified:**

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.

CVSA has provided secondary containment for all cyanide-related tanks, columns, and vessels. For all but the new CCD III facility commissioned in 2015, the existing secondary containments and their capacities achieved compliance during the initial certification audit in 2011. The new CCD III facility for this audit cycle is equipped with concrete secondary containment. CVSA provided drawings and calculation packages that showed this containment is connected to the containments for CCD I and II and accordingly has more than 110 percent capacity of the largest vessel in the CCD III facility. CVSA has installed sumps and pumpback systems in all secondary containments to return spilled solutions to the process circuit and does not discharge collected solutions to the environment. The auditors observed the secondary containments and sumps to be in good condition.

As noted in the initial certification report, CVSA has installed all tanks on solid concrete bases except the leach tanks. The leach tanks are on ring beams, but CVSA has installed four monitoring wells in the vicinity of the leach tanks (CVMP1-4) to check for cyanide in groundwater. To date, cyanide has not been detected in groundwater around the plant. CVSA has also developed written procedures for containing spills and monitoring areas affected by cyanide spills, should this be required. The auditors reviewed groundwater monitoring data and procedures to verify compliance.

CVSA has installed secondary containment for all cyanide-related pipelines. The pipelines in the plant are located within concrete secondary containments. The pipelines between the plant and HLF are installed in a geomembrane-lined ditch. The pipelines between the plant and the TSF are installed inside a rectangular metal conduit. In 2017, CVSA constructed a geomembrane-lined dump pond at the low point in the pipeline

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profile between the plant and TSF to better protect the seasonal surface water lakes in the vicinity of the TSF. The auditors observed these pipeline containments to be in good condition.

CVSA has constructed all cyanide-related tanks and pipelines of high density polyethylene (HDPE), mild steel or stainless steel, all of which are considered compatible with cyanide and high pH conditions.

**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.**

in full compliance with

The operation is

in substantial compliance with

**Standard of Practice 4.8**

not in compliance with

**Summarize the basis for this finding/deficiencies identified:**

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.

The plant was constructed between 1997 and 1998. Fluor Daniel was the contractor. A full quality assurance/quality control (QA/QC) program was implemented during construction. The records of the facilities built before 2011 were reviewed in the initial certification audit and found to be in full compliance with the requirements of the Code. The records of construction for the new or modified facilities in 2015 were reviewed in the first recertification report and found to be in full compliance at that time.

CVSA has modified the TSF dam and constructed a new thickener (CCD III) since the for this second recertification audit. Golder was involved in the TSF raise and therefore engaged an independent reviewer to evaluate the evidence for that project. Golder was not involved in the CCC III project and no conflict of interest existed for review of that information.

CVSA has retained quality assurance records as physical copies in a library. The Golder auditor observed this library and spot checked the documents to verify compliance.

Golder Review for CCD III

CVSA has implemented a QA/QC program for the new CCD III that included suitability of materials and construction, as well as qualified review of the results. To verify compliance, the auditors reviewed an execution plan, the testing plan and results signed-off by a qualified engineer, a start-up report, and a final project acceptance certificate signed by the CVSA project manager.

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Independent Review for the TSF Raise

This facility has detailed QA/QC documentation. The QA/QC program has addressed the suitability of the materials being used for the work, which comprise earth moving, filling and compaction, concrete, installation of HDPE geomembrane, geonet, and piping. The QA/QC records were kept and were available for review. The QA/QC documentation has been signed off by qualified engineers from specialist engineering companies such as Golder Associates, Burgwardt and SIGSA.

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

in full compliance with

The operation is

in substantial compliance with

**Standard of Practice 4.9**

not in compliance with

**Summarize the basis for this finding/deficiencies identified:**

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.

CVSA has developed written programs for monitoring groundwater, surface water, and wildlife. A table summarizing the annual monitoring program is developed each year, and is accompanied by a written procedure for water sampling and a scope of work for laboratory analysis. Protocols have been developed and regularly updated by qualified staff in the Environmental Department with degrees in biology, environmental science, and environmental management. The protocols specify sampling methods; chain of custody procedures; handling and shipping of samples; containerization; preservation; cyanide species to be analyzed; and field sampling information and locations. CVSA records weather conditions on a field sheet with wildlife activity and human influences noted at the bottom of the form. The auditors reviewed protocols and field forms from throughout the recertification period to verify compliance

CVSA has monitored for possible cyanide in surface water and groundwater downgradient of the site. Groundwater monitoring wells are located around the plant (4), TSF (12); and the HLF and process ponds (5). CVSA also monitors in two seasonal surface water bodies in the vicinity of the TSF. The frequencies vary from monthly to quarterly for groundwater, and weekly for surface water when present, which the auditors consider adequate to characterize the medium being monitored and to identify changes in a timely manner. The auditors reviewed annual monitoring programs and monitoring results from throughout the recertification period to verify compliance.

CVSA inspects for wildlife mortalities at the TSF weekly and the HLF daily. Given that CVSA destroys cyanide to less than 50 ppm WAD cyanide in the tailings before deposition, the auditors consider the weekly inspection frequency for the TSF to be adequate. CVSA has developed a written procedure for toxicological

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analysis of animal tissues suspected of cyanide intoxication. CVSA staff stated that there were no mortalities related to cyanide intoxication during the recertification period. The auditors reviewed inspection forms and the procedure to verify compliance.

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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.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 5.1

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

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.

Golder prepared the 2014 version of the CVSA Mine Closure Plan and therefore contracted with an independent reviewer to evaluate the evidence for Standard of Practice 5.1.

Independent Review

The 2014 Mine Closure Plan provides the written procedures for decommissioning all the CVSA cyanide facilities at the cessation of operations. Additionally, the 2014 Mine Closure Plan includes an implementation schedule for the decommissioning activities. The closure plan has been updated twice previously in 2005 and 2010.

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

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 5.2

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

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.

Golder prepared the 2014 version of the CVSA Mine Closure Plan and therefore contracted with an independent reviewer to evaluate the evidence for Standard of Practice 5.2.

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### Independent Review

Section 12 of the 2014 Mine Closure Plan provides an estimation of third party basis for unit costs associated with final closure. Argentine Mining Legislation does not require specific financial guarantees for mine closure activities. CVSA has established self-insurance as the financial assurance mechanism to cover estimated costs for cyanide-related decommissioning activities as identified in its Mine Closure Plan. A professional financial auditor registered with the Professional Council of Economics of the Province of Santa Cruz, provided a certified statement (Certification of Financial Ratios, dated May 27, 2017) demonstrating that, based on its assessment using an accepted method of financial evaluation, that CVSA has sufficient financial strength to fulfill the decommissioning obligations. In its certified statement, the financial auditor indicated that financial evaluation methodologies were in accordance with the norms for other related services established in Section VII.C of the second part of Technical Resolution No. 37 of the Argentine Federation of Professional Councils of Economic Sciences for the issuance of special reports.

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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.

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 6.1

not in compliance with

Summarize the basis for this finding/deficiencies identified:

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.

CVSA has developed a set of procedures covering the tasks related to cyanide to minimize the exposure of workers. Each procedure describes the activities and precautions to undertake cyanide-related tasks such as unloading, mixing, plant operations, confined space entry and equipment decontamination. In the lower part of each procedure, the type of clothing, PPE, tools, other equipment and materials are specified.

CVSA has continued using the "Document Control Software" SE SUITE to manage the review and changes to procedures. Each document is scheduled for review every 2 years or after a mock drill, an incident, or a change in the operating process. The auditors observed that the procedures provided were current in accordance with the 2-year review period.

CVSA actively solicits and considers worker input in developing and evaluating their procedures. The Hygiene and Safety Committee meets monthly and supervisors must review a minimum of four procedures per month with the collaboration of a Health and Safety Coordinator. In addition, employees can request changes. The auditors reviewed examples of meeting minutes of the Hygiene and Safety Committee from throughout the recertification period to verify compliance.

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.

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 6.2

not in compliance with

Signature of Lead Auditor







### Summarize the basis for this finding/deficiencies identified:

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.

CVSA has determined that a pH greater than 11 is appropriate to limit the evolution of HCN gas during mixing and production activities. This pH has been maintained using a computerized management system, SAP, which automates the pH circuit and, if necessary, adds lime to the solution in the correct amount. Weekly calibration of the pH meters is performed by CVSA staff.

CVSA has identified areas where there is potential risk for workers who may be exposed to cyanide, for example: mill, plant (including the preparation area, CIL, CIC, and Merrill Crowe circuits), and the Cyanisorb circuit. Safe work procedures have been developed for work in these areas. CVSA has installed an electronic system to detect HCN gas levels in the areas listed above. This system allows continuous monitoring of HCN gas levels and communicates the results to plant employees via large overhead screens strategically located at the entrances of the plant and the Cyanisorb area.

CVSA has both fixed and portable HCN monitors that are set for pre-alarm at 3 ppm and evacuation at 10 ppm. Pre-alarm means operators will verify the situation in the field and take corrective actions as needed until the situation returns to normal. The fixed units have alarms that are visual (lights) and audible (sirens). CVSA has maintained, tested, and calibrated the HCN monitors during the recertification period according to a maintenance plan in which the instrument and the frequency of maintenance are specified. Quarterly calibration records from SIAFA Laboratories and Argentina Thermometry were observed to verify compliance.

CVSA has installed signage where cyanide is present to advise workers that smoking, open flames, eating, and drinking are prohibited, as well as of the PPE requirements. The messages are clear, as well as the color coding and meaning of the signs.

CVSA has installed showers and low pressure eye wash stations where cyanide is present. CVSA has also installed non-acid sodium bicarbonate extinguishers strategically located throughout the operation. CVSA has documented inspections for monthly for showers, eye wash stations, and fire extinguishers.

CVSA has identified tanks and piping containing cyanide to alert workers of their contents and the direction of flow. All cyanide-related pipes are identified by a color code, purple. The direction of the flow is indicated with arrows of sufficient size to be visible.



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CVSA has located Material Safety Data Sheets (MSDS) in the cyanide facilities. CVSA has also developed and placed first aid procedures in the areas where cyanide is present. First aid procedures include examination of the victim, medical attention by the rescue brigade, symptoms of poisoning, antidote application, and first aid, among others. The MSDS and first aid procedures are available in Spanish, the local language.

CVSA has developed procedures to inform, investigate and evaluate incidents of cyanide exposure. CVSA provided an incident report for elevated HCN concentrations (without hospitalization or treatment) in the plant to demonstrate use of the incident investigation procedure.

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

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 6.3**

not in compliance with

**Summarize the basis for this finding/deficiencies identified:**

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.

CVSA has water, oxygen, a resuscitator, antidotes, communication, and alarm systems at the plant, preparation, and Cyanisorb areas. Water is available via showers located at strategic locations. CVSA has autonomous breathing equipment and emergency medical cabinets located in strategic locations. Emergency medical cabinets are equipped with oxygen, a resuscitator, a radio and a telephone. Cyanokits are located at the medical services. Areas where cyanide is present are monitored by video camera systems. The fixed HCN monitors are equipped with visual and audible alarms. Each employee must carry a radio.

First aid equipment is regularly inspected to ensure that the elements are available and in adequate condition for their use. Materials and equipment are replaced as recommended by the manufacturers' due dates. The currently available Cyanokits are stored in a refrigerated environment at the medical center and are valid until January 2018. The auditors reviewed inspection records to verify compliance.

CVSA has developed emergency response procedures to respond to cyanide exposures: PO-SUS-SME-024 "Emergency Action for Cyanhydric Acid Intoxication (HCN)" and PO-SEG-SME-003 "Medical Care".

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CVSA has a medical center and ambulances. The medical team is made up of two doctors, one nurse and one radiologist. CVSA has two ambulances. The ambulances are equipped with oxygen tubes and resuscitators. In the medical center, there are beds, oxygen tubes, resuscitators, Cyanokits, and other equipment.

CVSA has developed two written plans to respond to cyanide exposures involving transport to offsite medical facilities: PLN-SSMA-SME-001 Work Plan in Emergencies with Cyanide with the Community and CIC-PLN-APPENDIX 3.6 - Appendix 3\_6 Transport. CVSA will give first aid to victims of cyanide in a state of intoxication by administering Cyanokit by medical services and once the patient is stabilized, transporting them to the hospital in Puerto San Julián or Puerto Deseado.

CVSA has agreements with the hospitals of Puerto Deseado and Puerto San Julián for the treatment of patients exposed to cyanide. CVSA has included in its training plan, the training of external response agencies to treat patients intoxicated with cyanide.

CVSA periodically conducts mock drills for various exposure and spill scenarios to test and improve their response skills. CVSA has developed a procedure to carry out mock drills (R-PO-GGO-005/1). The auditors reviewed an annual simulation plans that showed most recently in 2017 three simulations were carried out.

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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.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 7.1

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

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.

CVSA has developed a Sodium Cyanide Management Plan with appendices and associated procedures to deal with possible cyanide spills and exposures. The planning documents consider three levels of emergency depending on the magnitude of the cyanide incident: 1 is slight; 2 is significant; and 3 is catastrophic. It is a level 3 emergency when there is one or more deaths, multiple injuries, serious injuries, serious environmental damage, prolonged impairment of operations, or impact at the provincial or national level. The planning documents address catastrophic releases of HCN; transportation accidents; releases during unloading, preparation, fires, explosions, tank ruptures, valve failures, overtopping, seepage, and failures. CVSA has emergency generators for the cyanide facilities to mitigate power outages and an emergency procedure for the Cyanisorb circuit.

CVSA works together with its supplier, AGR, to ensure safety during transport and that emergency response plans are updated. The land transport company, Cruz del Sur, has evaluated and identified road conditions such as the presence of animals, geographical features, seasonal climate, available communications, and service stations. CVSA staff and HAZMAT Argentina accompany Cruz del Sur during transport.

The Sodium Cyanide Management Plan, its appendices, and associated procedures describe measures for external and internal situations. Outside of the property, the situations are the loss of cyanide during transport from Punta Arenas to CVSA, such as breaking or opening of the containers to spill, emission of smoke, fire, collision, civil unrest, assault, and armed robbery. Within the property, the situations are spill of dry solid cyanide, spill of cyanide in water, spill of cyanide solution, and high concentrations of cyanide gas. Response measures include isolation, signage, barricading, and evacuation. The CVSA Crisis Plan also contains actions to be taken to protect communities near the affected areas.

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

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 7.2**

not in compliance with

**Summarize the basis for this finding/deficiencies identified:**

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.

CVSA has involved and trained its workforce, stakeholders and regional communities in cyanide emergency response planning. All employees involved in tasks with cyanide receive emergency response training. CVSA communicates with communities and authorities regarding emergency response plans. The Community Relations program explains the risks involved in mining activity and how they are prevented. CVSA has developed a work plan with the community to respond to cyanide incidents. As part of this plan, the authorities of Puerto San Julián, Buena Piedra, Puerto Santa Cruz, and Rio Gallego, have been trained in emergency response. Local medical staff has been trained to treat patients intoxicated by cyanide. CVSA has ongoing communication with its workers, as well as with the external agencies to keep the planning current.

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

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 7.3**

not in compliance with

**Summarize the basis for this finding/deficiencies identified:**

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.

The Sodium Cyanide Management Plan, its appendices, and associated procedures contain sections that designate emergency response coordinators and define their roles, functions, and responsibilities, including commitment of resources during an emergency. The planning documents also identify the emergency brigade members and crisis management team; require training with the most rigorous training provided to the brigade and the personnel who are in contact with cyanide; have a chart that shows the steps to follow in case of emergency with the phone numbers; and list the emergency response equipment and PPE along with inspection requirements.



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CVSA has confirmed that outside agencies are aware of their involvement and has included them in training. The work plan for communities includes the details of the participation of external entities (such as the police, firemen and other civil defense authorities). Training has been carried out in Puerto San Julián, Rio Gallego, Puerto Santa Cruz, and Piedra Buena with emergency response groups (police, firefighters, hospitals, etc.).

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

in full compliance with

The operation is

in substantial compliance with

**Standard of Practice 7.4**

not in compliance with

**Summarize the basis for this finding/deficiencies identified:**

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.

The Sodium Cyanide Management Plan and its appendices include the contacts of the external response managers: police, firefighters, and doctors. Item 4.1 shows the communication procedure to be followed. The Sodium Cyanide Management Plan and its appendices also include response procedures and contact information for communication of accidents involving cyanide that may affect the surrounding communities.

**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

The operation is

in substantial compliance with

**Standard of Practice 7.5**

not in compliance with

**Summarize the basis for this finding/deficiencies identified:**

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.

CVSA has incorporated measures for recovery or neutralization of solutions or solids into the Sodium Cyanide Management Plan and has a specific procedure for detoxification of soil or other contaminated media. A spill monitoring procedure describes how to manage clean-up debris. Bottled drinking water is provided on site.



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CVSA has prohibited the use of sodium hypochlorite, hydrogen peroxide and ferrous sulfate in surface water bodies in an appendix to the Sodium Cyanide Management Plan. CVSA has also developed two procedures for environmental monitoring after a spill. They address monitoring of the nature and extent of impacts, as well as sampling information.

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

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 7.6**

not in compliance with

**Summarize the basis for this finding/deficiencies identified:**

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.

CVSA continually evaluates and revises all procedures, including its emergency planning documents. Each document is valid for 2 years or by default after a drill, an incident, or a change in the operating process. Although there have been no revisions related to drills or incidents, the Sodium Cyanide Management Plan, the main plan for emergency response related to cyanide, was last updated in August 2017 with the next revision scheduled for July 2019.

CVSA periodically conducts mock drills for various exposure and spill scenarios to test and improve their response skills. CVSA has developed a procedure to carry out mock drills. The auditors reviewed annual simulation plans that showed most recently in 2017 three simulations were carried out.



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.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 8.1

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

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.

CVSA has trained workers to understand the hazards associated with cyanide use during the recertification period. The "General Induction" is provided to all persons who enter CVSA, including visitors and contractors, whereas the "Specific Induction" with more detail is provided for personnel entering the plant. CVSA also has implemented a "Personnel Training Program" divided into two phases. Phase I applies to personnel working in areas where cyanide is present (i.e., plant, HLF, and TSF). Phase II applies to personnel who are in direct contact with cyanide. CVSA has required that all its employees receive a refresher of the courses related to cyanide every year. The Human Resources Department maintains physical and digital files (using a database) with new and refresher training records. Each area of the operation maintains files with training records on specific cyanide hazards. The auditors reviewed examples of attendance lists and evaluations to verify compliance.

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.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 8.2

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

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.

CVSA has trained workers to carry out their daily production tasks in a safe manner and to prevent unplanned cyanide releases. Formal training has been given in work procedures for cyanide-related tasks including unloading, mixing, production, and maintenance. Training has been based in a survey of learning

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needs and carried out according to an annual schedule which shows the name of the training and the months of the year when they will be taught.

CVSA has identified the elements of training required for each job that involves the handling of cyanide in the training materials via a matrix of risk identification and risk assessment. The Work Procedures (PETS), Operating Procedures (PO), Plans (PLN), and Cyanide Code procedures (CIC), include the objective of the procedure, activities, required PPE, and associated risks, and contingency plans. Workers must provide proof of training to their supervisors before being allowed to work. CVSA has evaluated the effectiveness of training by observation and by written testing.

CVSA personnel receive training from qualified professionals in tasks related to cyanide management. The instructors are generally supervisors that have accumulated years of experience, but some training is provided by vendors with special expertise.

CVSA has provided annual refresher training to ensure that employees continue to perform their jobs in a safe and environmentally protective manner. The Training Center database helps track staff retraining.

The training records are kept in the Training Center database. Each area of the operation has files of individual employees with specific cyanide hazard training records. Information is detailed in the attendance lists, including date, subject, participants, duration, trainer, evaluation, and the corresponding signatures.

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

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 8.3**

not in compliance with

**Summarize the basis for this finding/deficiencies identified:**

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

CVSA demonstrated that employees working in unloading, mixing, production and maintenance activities have received training in procedures to follow during cyanide releases. Training schedules for 2015, 2016 and 2017 were observed and examples of training records on selected procedures were reviewed.

CVSA has distributed members of the emergency brigade to unloading, mixing, production and maintenance areas where cyanide is present to reduce response time. CVSA has trained the emergency brigade both by participation in drills and by training with an external company. The brigade is permanently available. They have received training in first aid, rescue, and Hazmat and decontamination. They have

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participated in simulations and drills according to annual plans using emergency response equipment to test and improve their response skills.

CVSA has made offsite emergency responders familiar with cyanide-related emergency planning via a community emergency work plan. CVSA has provided training in emergency response to police, firefighters, hospitals, and others in Puerto San Julián, Rio Gallego, Puerto Santa Cruz, and Piedra Buena. Correspondence between CVSA and the authorities demonstrated coordination with HAZMAT Argentina, a company that offers consulting services and escort security for cyanide transport.

CVSA has provided refresher training to ensure that employees can respond to cyanide exposures and releases. A training schedule shows annual refresher courses for various types of cyanide training that include response measures. The Training Center database helps track staff retraining. The auditors reviewed training records to verify compliance.

CVSA periodically conducts mock drills that cover both spills and exposures (the simulation in May 2017 in particular included HCN poisoning and a spill). These events are also used to evaluate the adequacy of training. CVSA has developed a procedure to carry out mock drills, including the drill sequence, identification of strengths and weaknesses, improvement actions, simulation observation guide, and photographic record. The auditors reviewed annual simulation plans that showed most recently in 2017 three simulations were carried out.

The Human Resources Department maintains the training files on the Training Center database. Information is detailed in the attendance lists, including date, subject, participants, duration, trainer, evaluation, and the corresponding signatures.

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PRINCIPLE 9 – DIALOGUE

Engage in Public Consultation and Disclosure

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

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 9.1

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

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.

CVSA has provided opportunities for stakeholders to communicate cyanide-related issues to the company. Opportunities include the operation’s intranet and internet website (http://www.cerrovanguardia.com.ar/medio-ambiente-y-seguridad/certificaciones/) with cyanide-related information and contact information. CVSA has also developed an app (WhatsApp) for smart phones that is available to the public at Google Play or the App Store. Information can also be exchanged via Twitter, Facebook, and Google Plus. Radio and print media also provide information and contain contact information for the mine.

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

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 9.2

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

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

CVSA has initiated avenues and activities where the operation can interact with stakeholders and provide them with information regarding cyanide management. CVSA offers tours of the mine and cyanide-related training for public emergency responders in the region. CVSA also offers a participatory monitoring program where the public can become involved in environmental monitoring around the mine. Interested parties can register at telephone number 496045 or via email MONITOREO@VANGUARDIA.COM.AR.

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

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 9.3**

not in compliance with

**Summarize the basis for this finding/deficiencies identified:**

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.

CVSA has developed written and verbal descriptions of how cyanide is managed and made them available to the public and other stakeholders. The written descriptions are contained in a manual, bulletins, brochures, and magazines which are available via intranet and internet websites, as well as CVSA offices in Puerto San Julian and Buenos Aires. The verbal descriptions are contained in a video, television programs, radio announcements, and a video tour available in Spanish on the You Tube and the CVSA website accessed at: <http://www.cerrovanguardia.com.ar/prensa-y-difusion/videos/>.

CVSA has not experienced any cyanide release or exposure incidents during the recertification period under the categories a) through e) as required by the Code. CVSA staff indicated that such incidents under categories a) through e), had they occurred, would be reported to the General Directorate of Provincial Mining as a matter of public record.

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## Report Signature Page

GOLDER ASSOCIATES INC.

Kent R. Johnejack, PE, CEA  
ICMI Lead Auditor/Project Manager

Date: July 18, 2018

KJ/pb

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Established in 1960, Golder Associates is a global, employee-owned organization that helps clients find sustainable solutions to the challenges of finite resources, energy and water supply and management, waste management, urbanization, and climate change. We provide a wide range of independent consulting, design, and construction services in our specialist areas of earth, environment, and energy. By building strong relationships and meeting the needs of clients, our people have created one of the most trusted professional services organizations in the world.

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