

ICMI Cyanide Code Gold Mining Recertification Audit

Corrective Action Plan

**Golden Queen Mining Company,
Soledad Mountain Mine**

Kern County, California, USA

**Submitted to:
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CORRECTIVE ACTION PLAN FOR SOLEDAD MOUNTAIN MINE

1. Introduction

One of the components of the International Cyanide Management Institute (ICMI) is the development of a Corrective Action Plan (CAP) for those parts of the audit findings that have been found to be in substantial compliance and require focused responses to take the site to full compliance.

ICMI requirements indicate that full implementation of the Corrective Action Plan and adequate notification to the ICMI must be completed within one year of the posting on the Cyanide Code website of the Summary Audit Report of an operation found in Substantial Compliance.

The sections below detail the corrective actions, agreed by the Soledad Mountain Mine and the Lead Auditor, necessary to bring Soledad Mountain into full compliance, as indicated in the Detailed Audit Findings Report (DAFR) and the Summary Audit Report (SAR).

2. Corrective Action Plan

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

This Standard of Practice was found to be substantially compliant for Soledad Mountain Mine.

- **4.1(4) Does the operation implement procedures to review proposed changes to production processes, operating practices, or cyanide facilities to determine if they may increase the potential for cyanide releases and worker exposures, and incorporate any measures necessary to protect worker health and safety and the environment?**

Deficiency

GQM does not have a formal change management procedure. This was also identified in the previous certification audit in 2018. At that time, GQM presented a memorandum from the General Manager addressed to all GQM managers and

process supervisors, which served as a policy statement for Change Management Review. The policy stated that upper management must review significant changes to cyanide-related processes and that the General Manager must approve the changes in writing.

During the field visit, the auditors verified that the Change Management Review policy is not being used, nor implemented, as there was no evidence or examples available for the last 3 years to demonstrate that the process is working, and that environmental and safety matters are taken into account to manage changes to process facilities or operating practices.

Corrective Action

During preparation of the DAFR, GQM sent evidence of a formal Management of Change (MoC) process including a procedure, guideline and control form. The MoC process considers sign-off from the Health & Safety and Environmental areas and identifies actions to manage the proposed changes. GQM must provide evidence of 60 days of implementation of this formal MoC process and communicate it to the workforce. The required evidence includes examples of MoCs (not necessarily related to cyanide) to demonstrate that the operation is using the process, and evidence of communication to the workforce (emails, attendance list to training sessions, others). Evidence needs to be provided by July 2022.

- **4.1(5) Does the operation have cyanide management contingency procedures for non-standard operating situations that may present a potential for cyanide exposures and releases, such as:**
 - a) **an upset in the operational water balance that presents a risk of exceeding the design containment capacity;**
 - b) **problems identified by facility monitoring or inspection; and**
 - c) **temporary closure or cessation of operations due to situations such as work stoppages, lack of ore or other essential materials, economics, civil unrest, or legal or regulatory actions?**

Deficiency

As mentioned in 4.1(1) above, GQM has not developed a complete set of procedures for the safe management of all cyanide facilities. GQM has a few procedures that describes contingency scenarios in the plant, and has permit documents such as the Waste Discharge Requirement (WDR) or the Merrill Crowe Operating Manual, dated June 2016, that includes certain aspects on how to respond to releases, but they do not include operational steps to manage contingency scenarios related to cyanide facilities and bring the operation back to normal operational conditions.

Based on the information reviewed and provided during the field visit, it is the auditors' professional opinion that GQM has not developed and implemented documented contingency procedures that meet the requirements of the Code to respond to upsets

in the operational water balance, deviations from design conditions, problems identified by monitoring and inspections, and to address temporary closure or cessation of the facilities.

Corrective Action

GQM needs to define the potential operational contingency scenarios related to the management of cyanide facilities, at both the Merrill Crowe and leach pad area, and develop contingency plans/procedures that define step-by-step measures to bring the facility back to normal operating conditions; and communicate them to the operators. These procedures need to address upsets in the operational water balance, deviations from design conditions, problems identified by monitoring and inspections, and temporary closure or cessation of the facilities. GQM must provide by September 2022 evidence of development of these contingency procedures as well as implementation and communication/training on these procedures to the operators (distribution emails, attendance lists, others).

- **4.1(6) Does the operation inspect the following at unloading, storage, mixing and process areas, as applicable to the site?**
 - a) **Tanks holding cyanide solutions for structural integrity and signs of corrosion and leakage.**

Deficiency

Tanks holding cyanide solutions are inspected every day as part of the daily inspection program, using the daily inspection form. However, GQM does not conduct non-destructive test or wall thickness evaluations in tanks, and there is no preventive maintenance program in place for these type of tests. As such, the auditors were not able to review any records of these tests for the recertification period.

Corrective Action

GQM needs to develop and implement a preventive maintenance program with an established periodic frequency (defined by GQM) for cyanide tanks, including these integrity tests. This maintenance program needs to be included in the Manager Plus system. GQM must provide evidence by December 2022 of the maintenance program in place (i.e. screenshots of the Manager Plus system) and reports of non-destructive tests conducted in 2022 at cyanide tanks according to the maintenance program developed.

- **4.1(9) Are preventive maintenance programs implemented and activities documented to ensure that equipment and devices function as necessary for safe cyanide management?**

Deficiency

GQM has implemented the ManagerPlus software to manage preventive maintenance activities throughout the mine site, that automatically generates preventive maintenance plans for a defined period of time (weekly, monthly, quarterly, others). At the time of the field visit, the auditors verified that the Manager Plus software did not include preventive maintenance programs for all cyanide facilities and that maintenance activities are corrective in nature as a result of work orders generated from inspections. As the preventive maintenance activities currently conducted for cyanide facilities are not documented, the auditors were unable to review representative maintenance records for the cyanide facilities to verify implementation. It is important to note that this Code requirement is outstanding from the previous certification audit.

Corrective Action

GQM needs to develop and implement a formal preventive maintenance program in the ManagerPlus software that addresses and documents routine maintenance of critical equipment for which a failure could result in a cyanide release or exposure. This preventive maintenance program needs to include maintenance schedules and frequencies for all cyanide facilities. The preventive maintenance program is to be used to perform necessary maintenance and inspect the integrity of process equipment, piping and tanks, according to the maintenance program and every time it is needed to keep equipment and installations working properly. During preparation of the DAFR, GQM sent evidence of a preventive maintenance program for cyanide facilities and records of implementation since late January 2022. Considering that this item was outstanding from the previous certification audit, GQM must provide evidence by December 2022 of the development and implementation of the preventive maintenance program in ManagerPlus (i.e. screenshots of the Manager Plus system), showing activities completed in 2022 according to the maintenance program for cyanide facilities to ensure that they have regained control of the situation and that this maintenance program will continue running in the future.

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

This Standard of Practice was found to be substantially compliant for Soledad Mountain Mine.

- **5.1(2) Does the plan include an implementation schedule for decommissioning activities?**

Deficiency

GQM has two documents that complement each other in relation to closure activities: 1) The Financial Assurance Cost Estimate (“FACE”) which includes measures for removal of the Merrill-Crowe Plant and ancillary process equipment and support structures, including neutralization and demolition of the Cyanide Storage Tank and system components exposed to cyanide solution. 2) The Performance Bond for Closure (Performance Bond), which outlines measures for neutralization of the heap leach pads (3 Stages) and decommissioning of the pregnant solution pump box, overflow pond, pipeline solution channel, and process equipment.

Both documents (FACE and Performance Bond) includes closure activities related to cyanide facilities, including decontamination of equipment, demolition of facilities, neutralization of process solutions and rinsing of the leach pad, however, there is no defined implementation schedule for decommissioning activities in any of the documents.

Corrective Action

GQM needs to develop a conceptual implementation schedule for decommissioning activities for each of the closure documents. GQM must provide by July 2022 the proposed decommissioning schedules for closure activities defined in the two closure documents.

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.

This Standard of Practice was found to be substantially compliant for Soledad Mountain Mine.

- **6.2(4) Is hydrogen cyanide monitoring equipment maintained, tested and calibrated as directed by the manufacturer, and are records retained for at least three years?**

Deficiency

The sensor modules were reported to be replaced according to the manufacturer’s recommendation. Maintenance personnel provided examples of purchase orders issued in November and December 2021 for new sensors and factory calibration. However, no purchase orders were provided for 2019 or 2020, and no verification could be provided by maintenance personnel ahead of report submittal to confirm that the sensor modules were replaced according to the schedule. In the absence of evidence to support the replacement and calibration, providing calibration records to show that calibration has occurred and that records are being retained will be added to the CAP.

Records for calibration and bump tests for the portable detectors were also not provided to the auditors and evidence that bump tests are performed according to the manufacturer's recommendations will be required under the CAP.

Corrective Action

GQM must provide documented records of sensor cartridge replacement according to the manufacturer's recommendations. If records for the recertification audit period do not exist, records through March 2023 must be provided to demonstrate that calibration is occurring and the detectors remain accurate.

The calibration records/bump test records were not provided for the portable gas detectors. If records for the recertification audit period do not exist, records through March 2023 must be provided to demonstrate that calibration/bump tests are occurring and the detectors remain accurate.

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

This Standard of Practice was found to be substantially compliant for Soledad Mountain Mine.

- **7.2(3) Has the operation identified external entities having emergency response roles, and involved those entities in the cyanide emergency response planning process?**
- **7.2(4) Does the operation engage in consultation or communication with stakeholders to keep the Emergency Response Plan current?**

Deficiency

GQM is solely reliant on external emergency responders. As such, regular communication with the agencies is paramount to ensure that the latest version of the emergency response plan is available and has been communicated with each party having a role. This also aids as personnel changes may result in changes to an agency's institutional knowledge related to GQM. The plan has not been reviewed and updated or formally issued since 2018.

Corrective Action

GQM must provide documented records of the Emergency Response / Spill Contingency Plan (ERSCP) update and approval. Subsequent to site management review and approval, GQM must provide evidence that the plan has been distributed to all agencies and that their role in emergency response has been communicated. A signed and dated copy of the ERSCP cover, consistent with prior site acknowledgement, is sufficient for verification of distribution. A signed and dated

acknowledgement from the agency indicating that GQM has clearly communicated their role in emergency response is also required. The first distribution should occur no later than April 30, 2022. A second distribution and acknowledgement to ensure that the annual review process is being maintained must also occur within one calendar year from the next issue date, i.e. prior to April 30, 2023.

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

This Standard of Practice was found to be substantially compliant for Soledad Mountain Mine.

- **7.6(1) Has the operation identified external entities having emergency response roles, and involved those entities in the cyanide emergency response planning process?**

Deficiency

GQM is solely reliant on external emergency responders. As such, regular communication with the agencies is paramount to ensure that the latest version of the emergency response plan is available and has been communicated with each party having a role. This also aids as personnel changes may result in changes to an agency's institutional knowledge related to GQM. The plan has not been reviewed and updated or formally issued since 2018. Further to the quarterly reviews by the Safety Coordinator and annual review and approval by the site management team, the ERSCP requires a third-party audit every three years to evaluate the contents and effectiveness of the plan and its implementation. The last audit was conducted prior to the initial certification audit.

Corrective Action

GQM must demonstrate compliance with the review requirements indicated in the plan and required under the CAP for 7.2(3) and 7.2(4). The site must also perform a third-party audit of the plan, as required in the ERSCP. The audit should take place following formal issue required by April 30th, but before the annual review in 2023.

- **7.6(2) Are mock cyanide emergency drills conducted periodically?**
- **7.6(3) Are provisions in place to evaluate and revise the Emergency Response Plan, as necessary, following mock drills and following an actual cyanide-related emergency requiring its implementation? Have such evaluations been conducted?**

Deficiency

The ERSCP requires GQM to conduct mock drills on at least an annual basis, focusing on likely release/exposure scenarios to test the response procedure, and incorporates lessons learned from the drills into its response planning. Records of these drills are to be kept; however, there were no records provided for drills having occurred in 2019 – 2020. In May 2021, the site conducted cyanide related training for external responders.

The ERSCP also requires that that GQM assess the plans to determine adequacy and whether revisions to the plans are required, based on the outcomes of the mock drills. A review is also required following any incident which requires implementation of the plan. No mock drills were performed in 2019 or 2020 and 2021 was a training class.

Corrective Action

Following the field investigation, the site performed a mock drill. The CAP will require site to continue performing mock drills at least annually, documenting the event, and retaining the records of the drill.

As noted above, the formal reviews have not been conducted, nor have mock drills during 2019 and 2020, and as such, no reviews based on the outcomes of the mock drills occurred. No review of the Plan has been done due to a cyanide-related emergency in the recertification period as there were no cyanide-related incidents. Adherence to the requirement for mock drills and updates to the ERSCP following drills or events requiring its implementation is required under the CAP. GQM completed a mock drill in 2022, following the field investigation. A mock drill in 2023, including assessment of the emergency response plan to assess the adequacy is required under this CAP.

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

This Standard of Practice was found to be substantially compliant for Soledad Mountain Mine.

- **8.3(4) Is refresher training for response to cyanide exposures and releases regularly conducted?**

Deficiency

Mock drills involving external responders and regular updates and distribution of the ERSCP to the various agencies had not occurred during the recertification period. While cyanide training is provided to employees during annual MSHA refresher training, participation in mock drills, which also serve as a very important means of

training to test the effectiveness of the training, has not been completed, nor has ongoing training with external responders.

Corrective Action

Following the field investigation, the site performed a mock drill. The CAP will require site to continue performing mock drills at least annually, documenting the event, and retaining the records of the drill.

As noted above, the formal reviews have not been conducted, nor have mock drills during 2019 and 2020, and as such, no reviews and subsequent training based on the outcomes of the mock drills has occurred. Adherence to the requirement for mock drills and updates to the ERSCP following drills or events requiring its implementation is required under the CAP. GQM completed a mock drill in 2022, following the field investigation. A mock drill in 2023, including assessment of the emergency response plan to assess the adequacy is required under this CAP.