

# **INTERNATIONAL CYANIDE MANAGEMENT INSTITUTE Gold Mining Operations Summary Audit Report**



**For The  
International Cyanide Management Code  
Anglo Gold Ashanti – Unit Serra Grande Operation  
– Crixás / GO, Brazil**

**[www.cyanidecode.org](http://www.cyanidecode.org)  
November 2015**

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# INTRODUCTION

## Information on the audited operation

Name of Mine: Serra Grande Operation  
Name of Mine Owner: Anglo Gold Ashanti Ltd.  
Name of Mine Operator: Anglo Gold Ashanti Ltd.  
Name of Responsible Manager: Ricardo de Assis Santos  
Address: Rodovia GO 336, Km 97 Crixás  
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## Aspects of the location and description of the operation:

The Serra Grande Operation mining facility is located on Highway GO 336, Km 97 Crixás - Goiás State, Brazil.

The leaching area of Serra Grande Operation comprises 16 tanks; such tanks are provided with mechanical stirring by means of propeller-type stirrers and stirring by compressed air injection. Leaching is divided into two stages: pre-liming and cyanidation.

The Pre-liming process takes place in tanks 1, 2 and 3 and consists in preparing the slurry for Cyanidation, which is initiated in tank 4.

Lime addition, already initiated during milling is repeated in tank 1 of the leaching area. The pH is control at approximated 10:5 at 2:00 hour interval by analyses made by a pH meter and being correct according to the result of the analysis.

Hydrogen Peroxide is also added in those tanks in order to increase the concentration of dissolved oxygen on the slurry, a very important reagent to the cyanidation reaction. The contact time in the pre-liming is approximately 4 hours.

Cyanidation takes place in tanks - 4 to 21. Sodium cyanide solution is added to tank 4. Free cyanide concentration in this tank is approximately 400 ppm.

In tanks 5 to 21, the slurry is constantly stirrer with the reagents. The free cyanide concentration and the pH values decrease gradually from tank to tank and controlled in the last tank at 100 ppm of free cyanide and pH 10. Oxygen is dissolved in the slurry ranges from 10 to 16 ppm and is essential for a perfect solubilization. It participates actively in the reaction. The contact time in the cyanidation is approximately 24 hours.

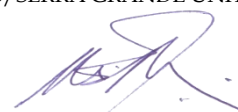
The filtering circuit is dividing into two stages: primary and secondary filtering.

The primary filtering circuit is supply with the cyanided slurry from the leaching area. During the primary filtering process, the cake (solid) deposited along the cylindrical body of the filter is washed using barren solution from the precipitation and discharged, then, the solution is absorbed into the filters. Next, the cake from the primary filtering is sent to a primary re-slurring tank, whereas the filtrate (gold-bearing solution) is pump to a receiving tank.

From the primary re-slurring tank, the slurry is pump to the secondary filters, starting the secondary filtering. As in the primary filtering, the process is repeat and two products are obtain: a gold-bearing solution (filtrated), which is pumped into a second re-slurring tank and the final solid waste from the process, which is fed to a secondary re-slurring tank in which it is re-slurring to a 50% solids concentration and pumped to the Tailing Dam.

The gold precipitation from the gold-bearing solution is the Merrill Crowe process, which consists in clarification and de-aeration of the gold-bearing solution before the gold precipitation with zinc powder and subsequent separation of the precipitate in press filters. The gold-bearing solution from the filtering is supply to two hopper clarifiers, for the first clarification stage. Next, it goes through the second clarification stage, which consists of filtering through sheet filters, minimizing the amount of solid particles still present in the solution. After the clarification, the oxygen contain in the gold bearing solution is removed by two de-aerators.

The zinc powder is added to the solution by means of a dosage screw and a cone interconnected to the de-aerated solution. The obtained precipitate is send to the smelting plant.



# SUMMARY AUDIT REPORT

## FOR CYANIDE GOLD MINNING OPERATIONS

### Auditor's Findings

This Operation is:

**X in full compliance with the ICMI**

in substantial compliance

not in compliance

No significant cyanide incidents or exposures and releases were note as occurring during the 3 years cycle audit period.

Audit Company: JMAQ AUDITORES DA QUALIDADE Ltda.

Auditor Team Leader: Julio César Macedo Monteiro

2nd. Auditor: Marcelo Vieira Monteiro

E-mail: jmaq@ig.com.br

Date(s) of Audit: November 09 to 13, 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 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 conduct in a professional manner in accordance with the International Cyanide Management Code Verification Protocol for Cyanide Transportation Operations and using standard and accepted practices for health, safety and environmental audits.

Name and Signature

*ICMI Lead Auditor - Julio Monteiro*



# Verification Protocol

## 1 PRODUCTION:

Encourage responsible cyanide manufacturing by purchasing from manufacturers that operate in a safe and environmentally protective manner.

### 1.1 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.*

#### **X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 1.1  
 Not in compliance with

#### **Summarize the basis for this Finding/Deficiencies Identified:**

Originally had a contract with CyPlus supplier, Serra Grande Operation terminated the supply agreement with CyPlus GmbH / Wesseling and established contract with Proquigel Química SA signatory national company International Cyanide Code Management (ICMI).  
The contract with CyPlus was close in October 2013.

Serra Grande Operation changed the supply contract from CyPlus GmbH / Wesseling to Proquigel Química S.A. an International Cyanide Management Institute (ICMI) Signatory Company.

Serra Grande Operation purchased cyanide from certified producer CyPlus from its previous certification on November 16, 2012 through October 29, 2013, and from certified producer Proquigel since October 29, 2013.

Proquigel Química S.A. has two facilities located in Brazil, at Camaçari and Candeias cities, both at the State of Bahia. Those facilities produce solid and liquid cyanide, object of the new contract.

After Proquigel Chemical S.A. had, their certification confirmed by ICMI, Serra Grande Operation signed the Agreement. MSG / 050 /13 with Proquigel Química S.A. on 29 October - 2013 and held 2 contract amendments: Contracts Nr. MSG/050/13 dated December 18, 2014 and MSG/050/13 II dated September 22, 2015.

According with contractual clauses is the responsibility of the Proquigel the supply of Sodium Cyanide (solid and solution) as part of the supply chain, from production to transport to the SG Operation (the contract system is CIF - Cost, Insurance and Freight). The contract states that all members of the supply chain



must be certify under the Cyanide Code (Article 11.0). The Agreement in Section 5.0 states that the contracted carrier will be the Proquigel responsibility and, subject to approval of the Serra Grande Operation, and must be certifying according to the ICMI.

<http://cyanidecode.org/>

## 2 TRANSPORTATION:

Protect communities and the environment during cyanide transport.

### 2.1 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 ICMI**

The operation is  in substantial compliance with Standard Practice 2.1  
 Not in compliance with

#### **Summarize the basis for this Finding/Deficiencies Identified:**

It was observe an agreement among the operation, the cyanide producer and transporter clearly defined the applicable responsibilities.

A sampled example was the Contract / Purchase Order nr. 8527-B1 on December 03 - 2013 and a Contract Amendment on December 04 – 2014.

The agreement establishes the responsibility of Proquigel Química S.A. for hiring of transport if previously approve by Serra Grande Operation and duly certified in compliance with to the International Cyanide Code. The contract shows the use of Concordia carrier for Sodium cyanide in solution and for solid cyanide. Freight is the type CIF - Cost, Insurance and Freight, which delivery guarantees in Serra Grande Operation under the responsibility of Proquigel Química S.A. and the contracted carrier (Concórdia Transportes), within the chain of custody.

In the previous contract, which was the provider CyPlus, sodium cyanide carrier (solid) was Niquini Transportes also certified in compliance with the ICMI.

Freight is the type CIF - Cost, Insurance and Freight, which guarantees delivery in Kinross under the responsibility of Proquigel Química S.A. and the contracted carrier, within the chain of custody.

It was evidence that labeling shall be in languages English / Portuguese necessary to identify the material. The labelling is clearly defined all the applicable legal requirements. Sampled example was the agreement mentioned 2.1.1a (Contract / Purchase Order nr. 8527-B1 at item 3.1.5).





Packaging responsibilities are clearly defined in accordance with Brazilian and International legal requirements. Sampled example was the Agreement Mentioned – Contract.

Evaluation and selection of routes, including community involvement are clearly defined as applicable legal requirements. Sampled example was the agreement mentioned at item 2.1.1a (Contract / Purchase Order nr. 8527-B1 at item 3.4.1).

Emergency response responsibilities throughout transport are clearly defined as applicable at specific legal requirements. Sampled examples were the agreements mentioned at item 2.1.1a (Contract / Purchase Order nr. 8527-B1 at item 3.4.3).

During the audit, Serra Grande Operation provided the evidences needed to certify that the shipped cyanide to the gold mining Operation are from a manufacturer (Proquigel Química S.A.) recertified in compliance with The Code.

<http://cyanidecode.org/>

**2.2 STANDARD OF PRACTICE 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 ICMI**

The operation is  in substantial compliance with Standard Practice 2.2  
 Not in compliance with

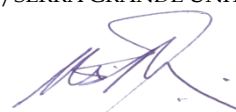
**Summarize the basis for this Finding/Deficiencies Identified:**

The observed agreement establishes the responsibility of Proquigel Química S.A. for hiring of transport provide that previously approved by Serra Grande Operation and duly certified according to the Code.

This contract is support by some procedures to implement incoming inspections, such as RT-000700 – Work Instruction - Control of Cyanide Delivery and Internal Transportation. It was reviewed the Procedure PP-000412 - Sodium cyanide solution unloading of iso tank for storage tanks and solid cyanide for warehouse. It was reviewed the Contract MSG/050/13.

The chain of custody records related to the Contract MSG/050/13. Concórdia Transportes recertified in compliance with the Code.

Freight is the type CIF - Cost, Insurance and Freight, which guarantees delivery in SERRA GRANDE OPERATION under the responsibility of Proquigel Química S.A. and the contracted carrier, within the chain of custody.



Packaging responsibilities are clearly defined in accordance with Brazilian and International legal requirements. Sampled example was the agreement mentioned – Contract.

Labeling shall be in languages English / Portuguese necessary to identify the material. The labelling is clearly defined all the applicable legal requirements. Sampled example was the agreement / Contract mentioned. During the audit it was evidenced that there is no temporary storage of cyanide before shipment to the SERRA GRANDE OPERATION facility. Cyanide is ship directly from Proquigel Química SA for the operation.

Evaluation and selection of routes, including community involvement are clearly defined as applicable legal requirements. Sampled example was the agreement / Contract mentioned.

The Proquigel Química S.A. is a Brazilian company located in the state of Bahia, and transportation is via road and made directly from the producer to the Operation in Crixás, state of Goiás. The responsibilities for the transport to the operation are clearly defined as applicable at specific legal requirements. Sampled example was the agreement / Contract mentioned. The cyanide is transport by Niquini and Concórdia that are certified by ICMI according to the ICMI website.

Unloading at the operation responsibilities are clearly defined as applicable legal requirements.

Sampled example was the agreement / Contract mentioned. The operation has the unloading responsibility, which made according the specific Procedures Work Instruction - Control of Sodium Cyanide Delivery and Internal Transportation and Sodium Cyanide Solution Unloading of Iso tank for storage tanks.

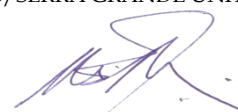
All trucks are inspected for safety and warehouse upon arrival in the operation. Were highlight specific records (Checklists) keep. Safety and maintenance of the means of transportation throughout transport responsibilities are clearly define as applicable legal requirements. Sampled example was the agreement/ Contract mentioned.

Task and safety training for transporters and handlers throughout transport responsibilities are clearly define as applicable legal requirements. The safety responsibilities throughout transport are clearly defined as applicable legal requirements.

Emergency response responsibilities throughout transportation are clearly defined as applicable legal requirements.

The cyanide trucks are fully monitored during the trip. According to the above mentioned, the agreement/ Contract specify that the designated responsibilities extend to any subcontractors used by the Producer, Transporter or the Operation.

In the previous contract, which was the provider CyPlus, sodium cyanide carrier (solid) was Niquini Transportes also recertified in compliance with the Cyanide Code.



### 3 HANDLING AND STORAGE:

Protect workers and the environment during cyanide handling and storage.

#### 3.1 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 ICMI**

The operation is  in substantial compliance with Standard Practice 3.1  
 not in compliance with

##### **Summarize the basis for this Finding/Deficiencies Identified:**

The facilities for unloading, storing and mixing cyanide were design and constructed in accordance with Brazilian engineering practices. Sampled some examples like as built drawings and engineering specifications for the warehouse.

No relevant changes to the original reception and preparation area were observed related to the solid and solution cyanide discharge area.

Field audit showed that these areas are well maintained and provided with concrete floor and a tilt to the truck parking, as well with a natural ventilation system.

During the field audit was also performed discharge monitoring of solid cyanide with due compliance with the established operating procedures, including proper training of those responsible.

Unloading and storage areas for solid and solution cyanide are located away from other people circulating on the plant. The access to this area is limited to qualified operators and all the doors are lock. It was also observe, during the field audit, that the area is far from surface waters, not being a risk for that.

The entire area has a concrete floor and the solid cyanide is stored under roof. The area has a concrete floor constructed in accordance with engineering practices. It is located away from watercourses and has appropriate drainage channels.

If any incident-involving solid or solution cyanide release in this area, the product will be easily recover, using the appropriated available resources (Environmental kits). There were no reported incidents in the process since the last audit (recertification cycle of 3 years).

The tanks are provided with calibrated level indicator and high-level alarm. These alarms are monitor by the supervisory system of the Operation Room in hydrometallurgy plant.

The cyanide-mixing tank is located on a concrete surface. A spill containment pond built under it in case of emergency. Operation has the monitoring gas cyanide dispositive all day in the cyanide mixing in the area.

Secondary containments for cyanide preparation and distribution tanks were construct in accordance to Brazilian Engineering Standards and were construct with HDPE (high-density polyethylene) membrane and concrete, offering an effective barrier to seepage.

Cyanide preparation and distribution tanks are located inside these contained areas, as observed in the field audit. Also observed that these areas were maintained in a good manner and kept dry.

Solid cyanide storage area has adequate ventilation (natural one). HCN detectors and alarm systems are in place and evidenced in the field audit. Solid cyanide warehouse is duly covered by a roof and that concrete and high-density polyethylene was use on the floor. Also was evidence that the NaCN boxes remain under original pallets.

Security procedure, which defines, that only authorized people is allowed to work inside the sodium cyanide warehouse.

The warehouse is inside an area closed by chains at all times and the gates are lock. By field observations was evidence that security (locking systems) and safety (signage) issues were everywhere.

The reception and preparation area were observe relate to the solid cyanide and solution in the area of cyanide discharge.

The solid sodium cyanide is stored in their original packaging (boxes) in the warehouse.

Access to the storage area is restricted to Operators, trained and authorized. Cyanide solution is stored in two tanks constructed of carbon steel, ASTM specification A-36 (TAG 5295TQ01A and 5295TQ01B) installed in Metallurgical Plant.

The tanks have a capacity of 80m<sup>3</sup>, each being limited according to the operating procedure by up to 80% of this capacity and the use of the tanks done alternately.

The entire storage area has containment basins, reinforce concrete floor and were waterproof with specified product "Sikagard 62" characterize as an epoxy coating with excellent chemical resistance.

No material may be incompatible stored in the warehouse or in the area of the tanks. Food, beverages, open flames and smoking are not allowed in these areas. The area has signs as restrictions established. In these areas, there are emergency shower, eyewash and emergency cabinets equipped with intervention to supply kits in case of emergency, for example: oxygen bottles and specific EPPs.

**3.2 STANDARD OF PRACTICE 3.2: OPERATE UNLOADING, STORAGE AND MIXING FACILITIES USING INSPECTIONS, PREVENTIVE MAINTENANCE AND CONTINGENCY PLANS TO PREVENT OR CONTAIN RELEASES AND CONTROL AND RESPOND TO WORKER EXPOSURES.**

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 3.2  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Empty NaCN big bags are neutralize and wash before being discharge to final destination (coprocessing destruction). The washing solution returns to the solution tanks.

During the field audit it was reviewed the Procedure - Solution preparation and sodium cyanide handling. The Serra Grande Operation does not use cyanide drums.

Prior to the coprocessing, the decontaminated big-bags are sent to a qualified supplier – Ecoblend, properly licensed by the Goiás State local EPA.

Empty NaCN big bags are neutralize and wash before being discharge to final destination (thermal destruction).

The wooden boxes are also sent to the thermal destruction. The cyanide boxes do not return to the seller – PROQUIGEL Química SA. Before departing the Operation, the truck is verified to be in conformance, without any kind of residues and completely empty.

Evidences were available specific procedures - Starting and Stopping the Leaching area Solution Preparation and Handling of HCN Delivery Control and Internal Cyanide Transport, HCN Download at Iso tank Solution for Storage Tanks.

Corrective Actions to Cyanide Spill and Emergency Action Plan for Cyanide show that the Operation prevents exposures and releases during cyanide unloading and mixing activities.

Operation has all critical valves inside this area clearly identified, tagged and locked. Operators are train and qualified in those procedures. The procedures clearly address all steps to be follow and the activities are full monitor.

Serra Grande Operation implemented specific Procedure Solution Preparation and Handling of HCN, Receiving, Storage and Delivery of Sodium Cyanide and, Delivery Control and Internal Cyanide Transport Related to NaCN Boxes Handling and Lifting.



Adequate device to enable handling without rupturing or puncturing was evidenced (fork-lifters and cranes).

Evidences were available showing that the pile limit is three boxes. Serra Grande Operation prevents exposures and releases during cyanide mixing activities. The Operation has operational procedures for Mixing that states the care and controls to avoid spills and the procedure for neutralization of recipients that establish the controls for avoiding spill from residual cyanide in the bags.

The Workers have to proceed cleaning three times each bag. All containment basins have pumps for reclaimed any contained spill back to the tanks. The residual cyanide that is not pump is neutralize and pumped for the lime tank and them for CIL circuit.

Washing systems (low-pressure eye-washers and showers) are available at preparation area for the Workers protection. It was not evidenced any kind of spills during the audit.

Although the cyanide solution preparation is not manual (is automated), adequate PPEs are available for personnel authorized to prepare NaCN solution (it is mandatory to use them). The two Operators are in permanent radio contact with Control Room. They have portable calibrated HCN detectors and the control room Operators monitors HCN through others HCN permanent detectors.

The NaCN solution preparation activity is 100% monitored at all stages.



## 4 OPERATIONS:

Manage cyanide process solutions and waste streams to protect human health and the environment.

### 4.1 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.*

#### **X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 4.1  
 not in compliance with

#### **Summarize the basis for this Finding/Deficiencies Identified:**

Serra Grande Operation did document and implement operational procedures and maintains an EHS management system in order to manage its EHS risks, including those related to the use of cyanide. Were evidenced several operational procedures clearly defining the process criteria, PPEs and pre-activity inspections.

Some of these reviewed procedures were: Starting and stopping the leaching area, Solution preparation and handling of HCN, Delivery control and internal cyanide transport, HCN download at iso tank solution for storage tanks, Corrective actions to cyanide spill, Emergency action plan for cyanide and Emergency action plan of the tailing dam among others.

Serra Grande Operation has manuals, procedures and work instructions in place that identify the assumptions and parameters on which the facility design was based and any applicable regulatory requirements. Some documents were identified and review as well as, EHS Monitoring and Environmental Assessment, Health Care, Safety and the Environment, Waste Management and Critical Valves, Buildings and Floors, Solution Preparation and Sodium Cyanide Handling. The Processing Circuit and Effluents, Emergency Action Plan for the Tailing Dam, Emergency Action Plan of Sodium Cyanide, Water Balance and Maintenance, Inspection and, Safety Manual of the Tailing Dam among others.

Any changes that are made to the plant projects meet the requirements of Procedure Change Management and New Projects. Change Management and new projects were revised. The change management procedure is adequate implemented. Evidenced the Change Evaluation form RT GGO 020 and the case related to the Test with hydrogen peroxide in the leaching process.



Serra Grande Operation have documented operational procedures that describe the standard practices necessary for the safe and environmentally sound operation of the facility such as inspections and preventive maintenance activities. It was review during the audit some documented procedures such as Waste Management and critical valves, Buildings and Floors, Solution Preparation and Sodium Cyanide Handling, Operation of the processing circuit and effluents, water balance and maintenance, inspection and safety manuals of the tailings dam and others related.

Maintenance plans (predictive and preventive) and inspection routines were established and implemented; as well, the records are kept at the SAP/R3 system. In general terms, was evidence in the field audit, that the operation installations are well maintained.

Serra Grande Operation has many cyanide related Emergency Plan covering any potential incident involving cyanide. The Emergency Plan resulted from risk evaluation and considering all potential cyanide related emergency scenarios, including upset in the water balance (considering even the cessation of the operation), any deviation from design and operational criteria (e.g.: pH, freeboard, leaching solution concentration and flow, among others).

Was reviewed the PAEBM - Emergency Action Plan of the Mining Dam.

Serra Grande Operation defined and implemented a structured inspection plan, focusing the conditions of the installations and equipments. The hydrometallurgy process plant is inspected on a regular basis.

The effluent storage facility is also inspected according to the plan that establishes different frequencies depending on the items to be inspect. Reviewed the effluent storage facility inspections Internal and external) performed during 2013, 2014 and 2015.

Serra Grande Operation has operational procedures (Inspection Routes), where all aspects that shall be inspected are address, including the appropriated frequencies. All inspection results are record in a system that saves the results. Required actions are record in the same system.

The Audit Team considers that the inspections are carrying out in sufficient frequency to ensure and document its operation within the designed parameters. It was evidenced that the operation maintenance process developed and implemented specific checklists to perform routine inspections (inspection routes) and measurements at tanks (thickness, corrosion and leakage) and process plant installations such as secondary containments, drainage system and locks.



It was evidenced that maintenance process developed and implemented specific checklists to perform routine inspections at process plant installations such as secondary containments, drainage system and locks. Were also reviewed secondary containments during field audit, all dry.

There are no leach pads or ponds at the Serra Grande Operation. Inspection routes, covering the cyanide circuit at the operation. Field observations showed that all the pipelines and pumps are well maintained. Pipe thickness measurement was verified according to the inspection and maintenance plans.

Was also evidenced that the operation installed height indicators (green, yellow and red freeboard marks) indicating the designed freeboard for the effluent storage facility in order to facilitate the freeboard visual inspection.

Inspectors were train on the fulfillment of inspections records. All records were date and signed by the Inspectors.

In the event of non-conformity, a corrective maintenance order is issue to fix the problem. Records examples: Area Inspection Report September/ 2015, Area Inspection Form and statistics of inspections carried out for the year 2015.

Serra Grande Operation implemented a preventive maintenance program, and documents activities to ensure that equipment, installations and devices function as necessary for safe cyanide management.

Reviewed preventive and predictive maintenance plans and associated records for the following equipments: generators #5202G01, #5202G02, #5202G04 and 5202G05; fixed cyanide detectors #5575HC01 and #5236HC01; tanks #02, 07 and 09; valves #05, 06 and 07; agitators #09 and 18.

The maintenance reports are included at the SAP/R3 System. Standby generators systems are in place and included at the Preventive maintenance plan. Tests (system function and operation) are performed every 15 days.

Were evidenced the following generators (all with 450KVA capacity) and the maintenance records: grinding#5202G01, filtering#5202G02 and #5202G04 and, dam#5202G05.

**4.2 STANDARD OF PRACTICE 4.2: *INTRODUCE MANAGEMENT AND OPERATING SYSTEMS TO MINIMIZE CYANIDE USE, THEREBY LIMITING CONCENTRATIONS OF CYANIDE IN MILL TAILINGS.***

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 4.2  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Cyanidation tests are usually performed in order to identify opportunities to reduce the cyanide consumption. The Laboratory is responsible for the tests to determine the adequate cyanide addition rate in the leaching process.

Operation monitors the cyanide consumption on a daily basis. A cyanide automatic dispenser (5236TAC01) device is in place. This automatic device has a set point control. Serra Grande Operation has an operational system for efficient controls of cyanide addition based on the gold concentrations. It was evidence the Reagent Consumption sheet – GME with the following results related to cyanide: 2012: 0,511; 2013: 0,481; 2014: 0,446 and 2015: 0,418.

The cyanide consolidate consumption is monitored on a regular basis. Annually, the Serra Grande Operation establishes a cyanide consumption plan where, in accordance with the mineral quality and prior tests results, the maximum cyanide consumption is define for each month.

**4.3 STANDARD OF PRACTICE 4.3: *IMPLEMENT A COMPREHENSIVE WATER MANAGEMENT PROGRAM TO PROTECT AGAINST UNINTENTIONAL RELEASES.***

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 4.3  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The Serra Grande Operation did develop a comprehensive and probabilistic water balance Management System considering storm and rain history, incoming water, effluent discharge rate in the tailings dam and evaporation rates.

There were not any major changes in water management system since the last recertification audit in 2012.



Reviewed the Water balance of the industrial and mining areas – AA-01-PJ-0060-401-MD-001-R2 and the Waters General Flowchart Drawing – AA-20-PJ-0060-401-DS-014 and all previously assumed parameters like storm rain, evaporation rates, rain history, incoming water, outcome water, seepage and tailings deposition rate were confirmed as being correct.

It was also verified that the water balance system is annually verified and audited by the Corporate Senior Manager / Geotechnical engineering – Tailings and heap leach Management, as well by the Americas Technical Group (ATG) on a quarterly basis. During the audit was reviewed the ATG Audit Reports RT-CTOP-Civil-02/2014-R00 (September 03/2014), RT-CTOP-Civil-01/2015-R00 (March 18/2015) and the Corporate Senior Manager – Tailings Facility Audit Reports for November 2014 and 2015.

Reports confirm that the water balance system of the operation is adequate and the operation is well water balanced. It was observed that the Operation has installed 8 flow meters in order to control the incoming water at the operation.

The tailing dam area is inspected on a daily basis in order to monitor the available freeboard and if there is some fauna mortality. There were no cases of fauna mortality since 2012.

Rainfall data collection system with consolidation of daily and monthly results was review. It was find the result of the dam history since 2013. Established one rainfall station and the data obtained are review during the audit.

The water balance study considered the solution addition in the system and the effluent rate at the tailing dam.

There are no leach pads at Serra Grande Operation. In addition, the study considered the storm duration history and storm interval in the place. Were reviewed the Water Balance of the industrial and mining areas – AA-01-PJ-0060-401-MD-001-R2 and the Waters General Flowchart Drawing – AA-20-PJ-0060-401-DS-014 and all previously assumed parameters like storm rain, evaporation rates, rain history, incoming water, outcome water, seepage and tailings deposition rate were confirmed as being correct.

It was verified that the Water Balance System is annually verified and audited by the Corporate Senior Manager / Geotechnical Engineering – Tailings and heap leach Management, as well by the Americas Technical Group (ATG) on a quarterly basis. It was show during the evaluation the dam Maintenance, Operation and Monitoring Manual, effective until 07/20/2018.

Was evidenced the installation license No. 2276/2015, 5407/2015 process for dam heightening works in quotas EL 460 and 470 as well as the Executive Project BUC-S1-E-RE-001-2 and Technical Specification BUC-E- S1-ET-001-01, May / 2014 made by the contractor DAM Engineering.

The tailings dam is design to contain a volume of three decamilenar rainfall events, each event with rainfall of 325 mm in a 24-hour period. The area used to absorb the volume of this rain in the dam reservoir is 1 meter between the normal level of water and the level of the spillway sill, so the dam fact have freeboard of 3 meters, supports the calculated volume.

The method used is upstream heightening with the use of underflow and three successive heightening with 5 meters each. The waiting volume in the reservoir to absorb full decamilenar 24 hours is 1 meter between the normal NA and the spillway sill. The freeboard dam project is 3 meters.

It was find the Dam Breaking Study February / 2009 and the Basic Design for Dam closure held by the specialized company CMEC. Verified Calendar 2015 for regular dam safety inspection held two times a month. Also are highlighted the 2015 year inspection fortnightly reports on the results of tailings and water quotas and freeboard found.

Serra Grande Operation has procedures to monitoring data from the Serra Grande Operation Meteorological Station and from the Tailing Dam.

The rainfall data collection system with consolidation of daily and monthly results was review. It was find the result of the dam history since 2013.

During the field audit stated the reports of the said project companies, as well as the specific procedure dealing with situations of monitoring, inspection, maintenance, water intake, interventions in water courses, preservation systems, disposal and effluent discharge and, also all the needs of revisions and updates of the water balance, according to the results obtained.

Reports have a hydrological chapter that includes the necessary details to comply with this requirement. During the audit stated the reports of the said project companies, as well as the specific procedure dealing with situations of monitoring, inspection, maintenance, water intake, interventions in water courses, preservation systems, disposal and effluent discharge and, also all the needs of revisions and updates of the water balance, according to the results obtained.

Potential freezing and thawing conditions are not applicable on this Operation. No freezing occurs in the Brazil´s region, which Serra Grande Operation is located. Were review all implemented measures to avoid seepages such as adequate soil



compaction and geomembrane at the effluent storage facility and all confirmed piezometers lectures. Anyway, the operation has a backup generator in order to keep the operation under control in the event of potential power outages.

Serra Grande Operation recycles over 80% of its wastewater reuse with the operation process.

The qualitative and quantitative monitoring of surface water, groundwater, wastewater and drinking water are carried out periodically by the Department of Environment. The water data used in the processing plants and data abstraction in the dam reservoirs are monitor by flowmeters installed on water mains and managed by the supervisory system of the plants, which allows processing and subsequent consolidation of the water balance of the project. The release of effluents from the production process is carry out only through controlled flow and in accordance with Brazilian regulatory requirements.

All aspects of the design have been taking into consideration. The phreatic surface was consider in the initial study and is monitored and calculated with defined frequencies. Inspection and monitoring programs is carried out. Inspection records and monitoring data were observed. The Serra Grande Operation meets the legal requirement Portaria DNPM (National Department of Mineral Production) 416/2012 - Dam Safety.

The Serra Grande Operation holds an annual schedule of geotechnical inspections of dam. During the field audit were checked the checklists dam safety and the monitoring records (topics: erosion, drainage, pruning vegetation on slopes and berms, treatment and others).

The frequencies adopted for the inspections have been considered appropriate. All results (from 2012 to 2015) were below the freeboard for the Tailing dam, demonstrating the effectiveness of the water balance management system. Hydrological report considers appropriate mass balance and the design of safety structures for the tailing dam. The minimum freeboard is 3.0 meters, according to the dam project. The Serra Grande Operation compares the results to design assumption and revise operating practices, when necessary.

There was not any incident related to water balance in the last 3 years.

**4.4 STANDARD OF PRACTICE 4.4: IMPLEMENT MEASURES TO PROTECT BIRDS, OTHER WILDLIFE AND LIVESTOCK FROM ADVERSE EFFECTS OF CYANIDE PROCESS SOLUTIONS.**

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 4.4  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Serra Grande Operation adopts some practices to the protection of life. Evidenced access controls such as gates, fences, use of padlocks and warning signs on the perimeter avoiding the presence of livestock.

The Serra Grande Operation assures CNw below 50ppm in all open waters. Monitoring results showed that these improvements resulted in CNw below 50ppm. Serra Grande Operation implemented a monitoring system in the tailings dams. The monitoring results indicate that the WAD cyanide concentration has not exceeded 50 ppm.

Reviewed free cyanide results from Jan. 2012 until Nov. 2015 observed that the highest free cyanide value in this period was 1.239 ppm.

Serra Grande Operation developed, documented and implemented a specific procedure to investigate any cyanide related incident linked with the local fauna and flora. In the event of any dead animal found in tailing ponds or tailing dams, the dead animal shall be send to a veterinary in order to determine the causes that lead the death.

No evidences of mortality were observed during the audit of birds, other wildlife and livestock from adverse effects of cyanide process solutions.

**4.5 STANDARD OF PRACTICE 4.5: IMPLEMENT MEASURES TO PROTECT FISH AND WILDLIFE FROM DIRECT AND INDIRECT DISCHARGES OF CYANIDE PROCESS SOLUTIONS TO SURFACE WATER.**

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 4.5  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Serra Grande Operation has a direct discharge into surface waters but is done only after treatment for correction of cyanide concentration levels, and should not exceed 0.5 mg/l WAD. The process effluent, after neutralization is only released to surface waters (das Almas Creek and after Vermelho River).

Serra Grande Operation establishes a monitoring point, downgradient of the mixing zone, where the concentration of cyanide is monitored on a daily basis in its effluents in order to check if the cyanide concentration. The monitoring point is included in the Monitoring and Environmental Assessment Procedure PD 000 137, which was reviewed and approved by the local EPA – Secima Goiás and according to establish in the Serra Grande Operating Permission number 1463/2013 issued by Secima (local EPA). When CNw is higher than 0,022ppm the operation determines the CN contents in the sample using standard methods like SMEWW 22<sup>nd</sup> Edition – Methods 4500 – CN, A, B, C, D, E and I. It was reviewed monitoring results between January/2012 and November/2015. All results showing CNw under 0,005ppm.

No cases of indirect discharge were evidenced. The monitoring results of surface waters downgradient to the operations clearly demonstrate that there is not any cyanide related contamination.

Review: Toxicity Report - Number 305/2013, dated May 28, 2013 by Alysia - Environmental Solutions.

**4.6 STANDARD OF PRACTICE 4.6: IMPLEMENT MEASURES DESIGNED TO MANAGE SEEPAGE FROM CYANIDE FACILITIES TO PROTECT THE BENEFICIAL USES OF GROUND WATER.**

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 4.6  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Serra Grande Operation installed several piezometers down gradient of the operation in order to monitor if this control is effective (HDPE membrane). Serra Grande Operation has monitoring piezometers down gradient of the operation where cyanide analyses are being performed with results below the quantification limit.

Monitoring piezometers are located in the area of the downstream of the tailing dam and in the hydrometallurgy area that are monitored and which present results in compliance with the Brazilian standard for underground (drinkable) water (not detected) – Portaria MS 518/2004.

In Brazil, there is no standard for groundwater. There is a standard just for drinkable water. The Brazilian Standard (Portaria MS 518/04) for drinkable water is equal to 0.07 mg/L total cyanide.

Serra Grande Operation no longer uses the backfill technology since the year 2013.

All monitoring results for the piezometers located downstream the tailing dam presented results for total cyanide below the quantification limit. The beneficial use of the ground water is maintained.

The following procedure was evident on the monitoring activities carried out: Monitoring and Environmental Assessment Procedure. It evidenced the Data Sheet 13-09-30\_004\_139-41C-6003\_IF Rev 4 Golder Associates - Advanced Conceptual Study - Paste Backfill - settlements filling the Underground Mine.

The laboratory tests were also check, which samples at the LP2013-D16 report indicated HCN equal to 0,0ppm. It was evidenced the underground water monitoring results that show typical values in quantization limit. There is no seepage from the Serra Grande Operation that has cause cyanide concentrations of ground water to rise above levels protective of beneficial use.

**4.7 STANDARD OF PRACTICE 4.7: PROVIDE SPILL PREVENTION OR CONTAINMENT MEASURES FOR PROCESS TANKS AND PIPELINES.**

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 4.7  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Serra Grande Operation trained all the personnel to understand the color-coding of process solution pipelines. Serra Grande Operation use the International Code of Colors. In areas, they are also posted signs containing the color code.

The areas of cyanide tanks are surrounded by retaining walls, built according to the specifications of engineering and according to Brazilian environmental laws. These areas were observed, in the documentation confirmed that are concreted, with secondary containments (preparation, distribution, leaching, filtering and precipitation areas), providing a good barrier.

Pipes containing cyanide are seamless walls and inner lining. The tank containment basins are waterproof and with a storage capacity above the volume contained in the tank (minimum of 110%).

The process solution piping has secondary containment to protect against splashes and are constructed of stainless steel. These contentions are positioned in order to protect Employees transiting these locals.

Cyanide piping system is fully identified through international color codes. Secondary containment areas are at least 110% greater than the biggest tank volume.





Serra Grande Operation implemented a pumping system that is used to pump any effluent or after a rain that is contained in the secondary containments. All the effluent is pump back to the process. The plant also has a drainage system.

All pipelines that contain cyanide solution have a secondary protection, mainly to avoid the contamination of the workers as observed in the field audit.

The process plant pipelines (carbon steel and HDPE) that contain cyanide solutions were identify and have a secondary protection. The operation floor is of concrete. All process tanks are made of carbon steel (API 650 / API 653). All process pipelines are made of carbon steel or HDPE, according to engineering specifications (ASME code and Metals Handbook).

**4.8 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.**

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 4.8  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

It was evidence that the Serra Grande Operation did implement a Change Management procedure in order to ensure that all modifications to the existing facilities will be performed on a structured way.

During the Audit were reviewed the documents of the new structure of sodium cyanide unloading solution, in those documents all details for QC/QA, presenting requirements as project design, as built and reviews.

All new installations (pipelines and process tanks) were design and construct in accordance with Brazilian Engineering Standards. Were verified all performed projects (design) of the facilities built (retention basins, tanks, pipes, pumps and others).

The compatibility of the materials with cyanide was check and the adequacy of soil compaction was review.

Records related to incoming inspection of materials (welding, steel plates, HDPE membrane, carbon steel pipes and elbows), in process inspection (welding and soil compaction) and final inspection/commissioning records (hydrostatic tests, leak tests, NDT tests) were evidence and are kept by the operation.

Based in the Brazilian requirement all professionals have to present notes for technical responsibility. All tests and conforming to the design and the operation acceptance were reviewed as appropriate.

Quality Control, Quality Assurance or as built drawings was available for all parts of the facility using cyanide.

**4.9 STANDARD OF PRACTICE 4.9: IMPLEMENT MONITORING PROGRAMS TO EVALUATE THE EFFECTS OF CYANIDE USE ON WILDLIFE, SURFACE AND GROUND WATER QUALITY.**

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 4.9  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Evidences were available at the procedure Monitoring and Environmental Assessment, which list the monitoring stations, parameters, sampling frequency, sampling and preservation procedures, legal requirements such as conditions and contain means to implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and ground water quality.

Sampling and analytical protocols were developed by qualified chemical laboratory technicians and are in accordance with "Standard Methods for the Examination of Water and Wastewater, 22<sup>nd</sup> edition."

The procedure describes the monitoring station, parameters, sampling frequency, sampling and preservation procedures, shipping instructions, legal requirements such as conditions, and contains means to implement monitoring program.

Environmental monitoring analyses are carried out by the internal laboratory and qualified third parties laboratories. The frequency of monitoring was defined according with the conditions of environmental permits and risk assessment. Determination of Cyanides specifies the sampling conditions that are register in analyze report available in Environment Department.

Evidences of procedures documented in the last revisions: Monitoring and Environmental Assessment, Operating Manual of the Tailing Dam and others. No cases of indirect discharge were evidenced. The monitoring results of process water to surface water and in surface and ground water down gradient of the site, clearly demonstrate that is not any cyanide related contamination.



An inspection program for wildlife mortalities exists. There is a vigilance program with daily inspections in the area of the dam to check the occurrence of wildlife mortality. There were no mortalities recorded. The established frequency is in accordance with the Brazilian legislation and the SECIMA, State EPA (Environmental Protection Agency) permits.

The Audit Team considers that the inspections are carrying out in sufficient frequency and according the Brazilian Legislation and the Goiás State EPA (Environmental Protection Agency) permits to ensure and document its operation within the designed parameters.

## 5 DECOMMISSIONING:

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

### 5.1 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 ICMI**

The operation is  in substantial compliance with Standard Practice 5.1  
 not in compliance with

#### **Summarize the basis for this Finding/Deficiencies Identified:**

Serra Grande Operation developed documented and implemented a management procedure (RT-0354) focused on the management of the closure activities (decommissioning and restoration activities).

It was evidence that the operation updated the Serra Grande Operation decommissioning and closure plan that was developed by Golder Associates (Report RT-003-149-525-214800-B, Aug. 2015) this updated decommissioning and Mining Plan Closing Conceptual SG - Crixás - GO was review during this audit.

Decommissioning and Closure Plan clearly describe the schedule to be follow during the decommissioning and closure activities.

Including activities (environmental monitoring), that shall be performed after the operation closure.

The Serra Grande Operation is planning to be closeout on 2022 Year. During the audit was also reviewed a specific closure schedule produced by the Corporate Environmental Coordination Process base on the Decommissioning and Closure Plan in accordance with internal management procedures.

Decommissioning and Closure Plan shall be review and updated every three years. Reviewed plan was update in May 2015.

**5.2 STANDARD OF PRACTICE 5.2: ESTABLISH AN ASSURANCE MECHANISM CAPABLE OF FULLY FUNDING CYANIDE RELATED DECOMMISSIONING ACTIVITIES.**

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 5.2  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The Golder Associates (Report RT-003-149-525-214800-B. Date Aug. 2014) and updated Decommissioning and Mining Plan Closing Conceptual SG - Crixás - GO identify the required costs related to the implementation of the plan by a third party The total amount was included in the reclamation cost report which is annually updated reviewed values since 2009.

Estimates of third-party costs for decommissioning are review and updated (last up dated Aug. 2014).

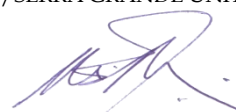
In Brazil, there is no legal requirement for approval by jurisdiction of the closure costs, excluding insurance and bond. Serra Grande Operation implemented a self-guarantee mechanism. Annually Serra Grande Operation has its financial guarantee audited by independent third party auditors.

The last financial state audit was performed by Ernst & Young Independent Auditors a legally established financial auditing company in Brazil CRC 2SP011199/0-F-MG).

Last financial audit was related to the financial year ended 31/Dec/2014 and was carried out by Mr. Rogério Xavier Magalhães and Mr. Tomas L.A. Menezes, a qualified financial auditors.

The financial audit was carried out in accordance with International Financial Report Standards, which are acceptable either in Brazil and internationally.

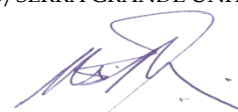
The financial audit report clearly states that the operation has financial guarantee to fund the implementation of the closure plan. The financial audit report was publish at the DOU/GO DOU (Union Official Diary/Goiás State) that



is a Brazilian Government daily newspaper, specific for the Goiás State where the plant is located.

The DOU (Union Official Diary) is available for public consultation and also at the local newspaper "O Popular" (The Popular) it was also distributed to external stakeholders such as Banks and the Brazilian Public Financial Authorities It is also available at for public consultation.

The Serra Grande Operation has established a self-insurance mechanism based on the requirements set forth in Chapter 40, Section 264 of the U.S. Code of Federal Regulations (40 CFR 264).



## 6 WORKER SAFETY:

Protect workers' health and safety from exposure to cyanide.

### 6.1 STANDARD OF PRACTICE 6.1: *IDENTIFY POTENTIAL CYANIDE EXPOSURE SCENARIOS AND TAKE MEASURES AS NECESSARY TO ELIMINATE, REDUCE AND CONTROL THEM.*

#### **X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 6.1  
 not in compliance with

#### **Summarize the basis for this Finding/Deficiencies Identified:**

Serra Grande Operation identified and evaluated all the SHE risks associated with the cyanide and in order to has the risks under control and mitigated.

The Serra Grande Operation defined documented and implemented specific management and operational procedures for related activities. During the audit was verify the Plan for Disasters and Crises of Serra Grande Operation in the last revision, that determines the guidelines, actions and basic guidelines to follow in the various possible emergency scenarios, disasters and crises present in operation.

The Serra Grande Operation retains documents and records in accordance with the control document matrix, using the requirements of the certified Integrated Management System in Safety, Health and Environment (OHSAS 18001 and ISO 14001).

Procedures require, when necessary, the use of personal protective equipment and address pre-work inspections as standard procedure format. It was observe that risk maps cover all activities. Besides, it noted that the Management of Changes procedure, in the last revision, is duly established, implemented and maintained.

Serra Grande Operation Employees participate effectively in the risk identification and evaluation and in the development of operational procedures.

Attendance lists, in the procedures revisions were observe as well as personal interviews with the Operators and Supervisors, confirming that the operation workforce is full involved in the risk analysis and in the operational procedures developments and improvements.



**6.2 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.**

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 6.2  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Serra Grande Operation determined that the minimum pH value should be equal or greater than 12. This value is address at the operational procedures for cyanide solution preparation. It also observed during field audit and interview with Operators.

The Operators use portable HCN sensors, which are previously calibrate against Brazilian or International Standards. The PAC – Calibration Plan have been check.

Serra Grande Operation does not have areas where concentration levels are above 10 ppm. The RT-000684 Response Action Plan Emergency, the latest version refers to the First Aid Manual (attached to the Emergency Plan for Sodium Cyanide. This document sets out standard procedures and practices in case of victims by contact with cyanide sodium (Item 1.5.) - Effects of Exposure hydrocyanic gas by concentration in ppm.

The areas for the development of the activities are properly identified and marked. Areas are observed risk maps. Personal Protective Equipment (PPE's), necessary for the development of the activities is clearly defined. Featured in during the audit field, the operators use the EPP's as indicated.

It was observed that areas and activities are duly identified as required. Sampled examples were Risk Maps, according Brazilian Legislation. The necessary PPE are clearly defined. It was evidence, during the field audit, that Operators use PPE as stated.

Serra Grande Operation establish, documented, maintained and implemented methodology for preventive maintenance as well as calibration plan, which ensure that cyanide-monitoring equipment is use as defined by the manufacturer.

Serra Grande Operation has an Integrated Management System certificate establishing procedures for retention and disposal of documents and records system and establishes the temporality for each document and records.

The signage is effective, covering the presence of cyanide, that eating, drinking and smoking is not allow and open flames are prohibit. Auxiliary installations are in place and operational.



Sampled examples were – eyewash stations, showers, fire extinguishers, fume detectors, including at the specific tanks areas. It was evidenced the fire extinguishers master list, which is used to support the maintenance frequency. Inspections and tests showers and eyewash stations are carry out monthly Technical Work Safety.

Facilities of unload, storage, mixing and process tanks and piping are clearly with (International Paint Code), identified and the flow direction clearly showed.

Serra Grande Operation trains its personnel to understand the color-coding of process solution pipelines. Serra Grande Operation uses the International Code of Colors. Areas are posted signs containing the code colors.

As provided in the training procedure in the integration process are dealt with prevention tools, Instructors learn on the color code, with an emphasis on cyanide solution pipes on the premises. In addition to the integration of training, there is a module targeted to Employees who deal directly with cyanide which reinforces the issue of specific colors facilities and cyanide pipes. Even as continuous improvement, the contents to the International Code of Colors, especially cyanide facilities is treated in training "on the job training" for Workers who will develop its activities in Metallurgical Plant.

Serra Grande Operation has Health Safety procedures and Environment - HSE and of these Procedures for Accident Investigation, which is valid for three years to review and if necessary may have the early review, either by audit demand, legal requirements, other decisions or strategies. In case of incidents may be a need for revision of operational procedures applicable standard, in less time than the review defined by Procedure Document Control Management System.

Serra Grande Operation has defined, documented and implemented the Procedure – PD 000120 – Incidents Investigation, to investigate and evaluate any kind of incidents or accidents.

It was not evidenced the occurrence of any cyanide related incident involving plant Operators in the last three years.

MSDS is in Portuguese language duly established documented, maintained and implemented at the required areas. Serra Grande Operation has defined, documented and implemented the Procedure Incidents Investigation, to investigate and evaluate any kind of incidents.



**6.3 STANDARD OF PRACTICE 6.3: DEVELOP AND IMPLEMENT EMERGENCY RESPONSE PLANS AND PROCEDURES TO RESPOND TO WORKER EXPOSURE TO CYANIDE.**

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 6.3  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Serra Grande Operation has an emergency room and a health center fully equipped with decontamination showers and low-pressure washes, emergency kits, resuscitators (pulmonary manual resuscitator - Type Ambu), defibrillators (heart resuscitator), oxygen cylinders, one ambulance, communication radio and direct emergency telephone lines (hot line). These equipments and devices were evidenced in the field audit.

Emergency kits are also available in the cyanide discharge and unloading areas, big bag's storage and preparation areas. The kits are also available in Hydrometallurgy Plant. Emergency kits are also available cyanide in the discharge area, big bag's storage and preparation areas. The kits are also available in Hydrometallurgy Plant.

The Clinic Team consists of a Doctor with expertise and training in Occupational Medicine (Sh / day 5) four Nursing Technicians (24 hours / day 7).

Serra Grande medical staff has been trained and authorized by the Paramedic Instructor to administer the intravenous antidote (cyanokit) to the victims of accidents with sodium cyanide. The document "First Aid Manual" establish at items 3.1 and 3.2 the procedures for medical interventions with Cyanokit.

Verified through the Training attendance lists the course "S.B.I.V. "Basic Support and Intermediate Lives and Emergency", which includes applying the intravenous Cyanokit in its programmatic content.

Serra Grande Operation introduced the antidote "Cyanokit" to replace the Nitrite Amile.

The first aid equipment is effectively inspected as required by the Medical Team. Inspection records provide evidenced the duly implementation. The emergency products are stored under control conditions and their validity is daily checked.

Serra Grande Operation developed specific emergency response procedures for cyanide exposures; include intoxication and first aid response. Specifically for cyanide, relate Emergency Plan for Sodium Cyanide in its latest version.

Serra Grande Operation implemented an emergency office inside the plant, fully equipped with oxygen, first aid procedures, emergency phones, radios, filters, masks, among others.



Serra Grande Operation has also a health care center (one doctor and four technicians nurses divided into work shifts), also equipped with oxygen center, antidotes, one ambulance and two resuscitators / defibrillators. Serra Grande Operation has one ambulance and qualified Drivers according Brazilian National legal requirements called "Resolução CONTRAN 168/2004" and "Resolução 484/2014".

Serra Grande Operation also qualifies Local Hospital of Crixás. Training in the use of "CYANOKIT" were make available and extended to all medical areas of the City of Crixás.

Cyanide related emergency drills are effectively performed by the operation, including involving the local Hospitals Teams in the exercises. It was evidenced 2013, 2014 and 2015 annual emergency mock plan.

**7.1 STANDARD OF PRACTICE 7.1: *PREPARE DETAILED EMERGENCY RESPONSE PLANS FOR POTENTIAL CYANIDE RELEASES.***

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 7.1  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

It was evidenced that Serra Grande Operation defined, documented and implemented some Emergency Plans in order to respond to cyanide related emergencies.

Action Emergency Plan for Cyanide references the First Aid Manual attached to the Emergency Plan Sodium Cyanide make reference this document sets out standard procedures and practices to the victims by contact with cyanide.

Plan for Disasters and Crises determines the guidelines, actions and basic guidelines to follow in the various possible emergency scenarios, disasters and crises present in operation.

It was verified the document "Management System Manual for Health, Safety and Environment" - SHE. All documents are in the latest version.

Documents referred above consider the potential cyanide failure scenarios appropriate for its site-specific environmental and operating circumstances.

During the audit it was observed the agreement establishes the responsibility of Proquigel Química S.A. for hiring of transport provide that previously approved by Serra Grande Operation and duly certified according to the International Cyanide Management Institute.

During the period of validity of the contract was evidenced the use of Concordia carrier for Sodium cyanide in solution and for solid cyanide.

Freight is the type CIF - Cost, Insurance and Freight, which guarantees delivery in Serra Grande Operation under the responsibility of Proquigel Química S.A. and the contracted carrier, within the chain of custody.

Transports to the Serra Grande Operation responsibilities are clearly define as applicable legal requirements. Sampled example was the Contract nr. MSG/050/13 with Proquigel Química S.A. on October 29 - 2013 and two Contract Amendments: Nr MSG/050/13 on December 18 – 2014 and nr. MSG/050/13 II on September 22 - 2015.

Evaluation and selection of routes, including community involvement are clearly defined as applicable legal requirements. Safety responsibilities throughout transport are clearly defined as applicable legal requirements. Emergency response responsibilities throughout transport are clearly defined as applicable legal requirements.

The documents evidenced during the audit consider and determine the guidelines, actions and basic guidelines to follow in the various possible emergency scenarios, disasters and crises present in Serra Grande Operation and the Management System Manual for Health, Safety and Environment (SHE).

**7.2 STANDARD OF PRACTICE 7.2: INVOLVE SITE PERSONNEL AND STAKEHOLDERS IN THE PLANNING PROCESS.**

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 7.2  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

It was evidence that Emergency Response Plan define responsibilities of several stakeholders (internal and external), including Security and Health Authorities, Public Authorities, Federal Road Police, local Hospitals, response Suppliers and Community Representatives.

Were reviewed the documents: Action Plan Emergency for Cyanide, references the First Aid Manual attached to the Emergency Plan Sodium Cyanide.

Plan for Disasters and Crises of Serra Grande Operation that determines the guidelines, actions and basic guidelines to follow in the various possible emergency scenarios, disasters and crises present in operation and the Management System Manual for Health, Safety and Environment - SHE, covers all the above mention circumstances, as required.

The emergency response plans, including the general emergency plan called PAE – Emergency Response Plan - was reviewed, approved and communicated to several stakeholders (internal and external), including security and health authorities, public authorities and community representatives.

The communications with potentially affected communities and other outside responders occurs directly under the “Open Company” specific program for Stakeholders, and with the participation of Representatives of Communities, for example: Religious Leaders, Residents Associations Representatives, Communities Representatives, Government and the Regional Directorate of Environment of the City of Crixás.

Cite some themes: “What is sodium cyanide, its use and application, its controls”, “Emergency scenarios”, “Understanding of the International Code of Sodium Cyanide” and “Tailings dam management”

Serra Grande Operation available to the stakeholders and the program "Open Company" communication channels, such as "0800", placement in newspapers, magazines, space in the local community radio station, program meetings "Good Neighbor".

**7.3 STANDARD OF PRACTICE 7.3: DESIGNATE APPROPRIATE PERSONNEL AND COMMIT NECESSARY EQUIPMENT AND RESOURCES FOR EMERGENCY RESPONSE.**

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 7.3  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The Emergency Response Plan (PAE) was reviewed, approved and communicated to several stakeholders (internal and external), including security and health authorities, public authorities and community representatives. Responsibilities and authorities are clearly defined and communicated to all involved stakeholders (internal and external).

Serra Grande Operation sets in the Emergency Action Plan - # RT 000685 the General Coordinator for the conduct of emergency actions, and the Operations General Manager and as a substitute for the Metallurgy Manager with authority for decisions and actions, including the release of funds and use of structures operation.

The Emergency Response Brigade Members are voluntary and passed through a selection process (medical, theoretical and practical), to be assigned as a Brigade Member.



It was observed, through training records and personal interviews, that Brigade Members were trained as required. Training and qualification records were reviewed in this opportunity and maintained in the HR – Human Resources area.

During the audit, the Emergency Brigade training records held on 02.10.2015 and the training of review of Hydrometallurgy operational and emergency procedures held on 02.24.2015. It was evidenced an available list which defines the emergency response equipment protection gear available.

The Emergency Response Plan identifies the required resources that are necessary to each situation. The basic emergency response equipment consists of one ambulance, one complete equipped emergency truck and auxiliary equipment (PPEs) for the Brigade Members, such as chemical/flame resistant overall, chemical gloves, oxygen masks and cylinders, chemical masks.

It was evidenced that Serra Grande Operation has a toll free phone number (0800 727 1500) as well as emergency phones which are available all day long. The emergency master list addresses all the necessary information about the Brigade Members, including contact details of internal and external stakeholders. Also, review the emergency communication loop.

The Emergency Brigade Organizational Flowchart clearly defines the role of each member. A list, which defines the emergency response equipment of protection, is available.

Observed, through inspection records, that the emergency response equipments are inspected by the Safety and Operation Areas.

Records of inspections were evidence and found in place.

Responsibilities are clearly defined, for example: Health Care Area for releasing the ambulance and decide if it is necessary or not to use the qualified local hospital services (Hospital Municipal de Crixás).

**7.4 STANDARD OF PRACTICE 7.4: DEVELOP PROCEDURES FOR INTERNAL AND EXTERNAL EMERGENCY NOTIFICATION AND REPORTING.**

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 7.4  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Action Plan Emergency for Cyanide, clearly defines the communication procedures to be used during a cyanide related emergency, that including a list of emergency phones (24 hours available) of all emergency Brigade Members, Leaders, Managers and General Manager, Public Authorities, Hospitals, Cyanide



Supplier, Cyanide Transporter Concórdia (In this cases according the Agreement between Serra Grande Operation and Proquigel Química.

The communication procedures, involve the security process of the operation.

Necessary resource is clearly define and provided. Communication procedures with external media were finding in place. All information related to emergencies at the Serra Grande Operation is under the responsibility of the Corporate Communication Process.

**7.5 STANDARD OF PRACTICE 7.5: INCORPORATE INTO RESPONSE PLANS AND REMEDIATION MEASURES MONITORING ELEMENTS THAT ACCOUNT FOR THE ADDITIONAL HAZARDS OF USING CYANIDE TREATMENT CHEMICALS.**

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 7.5  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Action Plan Emergency for Cyanide, references the First Aid Manual (attached to the Emergency Plan Sodium Cyanide) considers and describes specific, remediation measures as appropriate for the likely cyanide release scenarios.

The Emergency Plan explicitly prohibits the use of chemicals such as sodium hypochlorite, ferrous sulfate and hydrogen peroxide to treat cyanide that has been release into surface water. Also, clearly defines the required monitoring procedures to be implemented in the event of soil and water potential contamination.

An environmental monitoring plan is mention in the Emergency Plan, which includes sampling methodologies, parameters, and, where practical, possible sampling locations emergency response plan as required

**7.6 STANDARD OF PRACTICE 7.6: PERIODICALLY EVALUATE RESPONSE PROCEDURES AND CAPABILITIES AND REVISE THEM AS NEEDED.**

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 7.6  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Emergency Plan is review and revised when necessary (after real incidents or after simulation tests). Sampled examples were Emergency Simulation Records

such as 2013, 2014 and 2015 according to annual emergency mock plan. Both cyanide and others related emergency plans are being update regularly.

Mock cyanide emergency drills conducted periodically as part of the Emergency Response Plan evaluation process. After emergency drill, the results are reviewed and discussed among the participants. The opportunities for improvement raised-up during the drill are consider as corrective / preventive actions and managed adequately.

Reports related to the drills and their reviews were found in place. Sampled the following specific simulation scenarios:

- Sep. 2013 - Cyanide Spill with Victim - Preparation Area;
- July 2014 - Cyanide Spill with HCN generation - Preparation Area;
- Oct. 2015 - Cyanide leak in ISO TANK – Highway;
- Aug. 2014 - Overtop - Dam Area;
- Forecast - 2016 - Training in the new Emergency Action Plan tailings Dam # RT 000665 - Dam Area.

Were verified the reports prepared by the SHE area of Serra Grande Operation.

## 8 TRAINING:

Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner.

### 8.1 STANDARD OF PRACTICE 8.1: *TRAIN WORKERS TO UNDERSTAND THE HAZARDS ASSOCIATED WITH CYANIDE USE.*

#### **X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 8.1  
 not in compliance with

#### **Summarize the basis for this Finding/Deficiencies Identified:**

The Serra Grande Operation trains all personnel who may encounter cyanide hazard recognition according the procedure to control of Training and Development.

In the area of Human Resources was highlight: integration-training schedule, specific training cyanide to own and hired staff, cyanide management training - theoretical and practical module, among others, these training including contractors. The cyanide recognition hazard refresher training is in place.

Checked update training records in recognition of the hazards of cyanide and operational procedures.

Recycling training "Safety in Handling and First Aid Cyanide" is done periodically every two years.

Serra Grande Operation retained cyanide-training records according the procedure. Evidence was available that the training effectiveness, through simulation tests, is verified by operation. Planned job observations are also use to verify the effectiveness of the provided training. Records of planned job observations were review at Human Resources Area.

**8.2 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 ICMI**

The operation is  in substantial compliance with Standard Practice 8.2  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Evidences were available (introductory training program, on the job training program, training records and personal interviews) that the company trains appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment through systematic training procedures.

Plant Operators are qualified based on education, training, experience and personal skills.

Sampled examples were integration training schedule, specific training cyanide to own and hired staff, cyanide management training - theoretical and practical module.

Training material deals with the integration - Cyanide Management Training. Specific training material was established for specific functions, such as Operators, Laboratory Technicians, Warehouse Keepers, and Emergency Brigade Members.

A general introductory training, related to risks associated to cyanide is also provided to the own personnel and subcontractors. It was found the introductory Training Schedule that occurs according the Training Plan. Highlighted the latest list dated March 2015 – Training of Process Operator.

Training sessions are led by qualified personnel. Internal Instructors are Senior Operators and/or Process Specialists and /or Safety Staff. External training was provided by cyanide experts.





Employees are train prior to working with cyanide; records were check to 2015. It was verified specific training cyanide to own personnel and contractors according training procedure.

Were reviewed records of refresher training on cyanide management to ensure that Employees continue to perform their jobs in a safe and environmentally protective manner.

Annually refreshing training is also provided to all Workers working with cyanide.

Simulation and written tests and planned job observations are used to verify the effectiveness of the training sessions.

The cyanide related training record clearly addresses the date, the subject, the Instructor name, the personnel being trained and the Instructor perception about the trainee performance.

Training records are kept while the Employee is working and plus five years after the Employee lefts the Company, according Brazilian Labor Laws.

**8.3 STANDARD OF PRACTICE 8.3: TRAIN APPROPRIATE WORKERS AND PERSONNEL TO RESPOND TO WORKER EXPOSURES AND ENVIRONMENTAL RELEASES OF CYANIDE.**

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 8.3  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

During the review of the job-training program, emergency training program, training records and personal interviews it was verified that the plant Operators and maintenance Employees have been trained in the procedures to be follow if cyanide is released. In addition, during the review of the emergency training program, training records and personal interviews it was checked that cyanide response personnel, including unloading, mixing, production and maintenance workers, have been trained in decontamination and first aid procedures.

The Brigade Members were trained and qualified before being assigned as Emergency Brigade Members. Decontamination and first aid procedures are included in the emergency drills training scope. Coordinators and Members of the Emergency Response Team were trained in the procedures including in the Emergency Response Plan regarding to cyanide, including the use of necessary response equipment.

Through meeting records, that communication with Community Members, Medical providers, Hospitals and Police Officer, about the elements of the Emergency Response Plan related to cyanide are performed regularly, mainly before emergency training drills.



Sampled examples were checked related to Safety and Health Authorities, Public Authorities and Community Representatives.

During the audit stated the training records cyanide poisoning, held at the Hospital Municipal de Crixás about the kits inspection training and first aid cyanide poisoning performed by at Serra Grande Medical Team.

Emergency training program and associated records, that refresher training for response to cyanide exposures and release have been conduct as stated.

The training "Safety in Handling and First Aid Sodium Cyanide" held regularly every two years. Emergency Brigade training frequency is 12 months.

Emergency training program and reports that simulated cyanide emergency drills are periodically conduct for training purposes. These mock drills cover the work exposures and environmental releases. Reports made after drills that include strong performances and opportunity for improvement.

The Action Plan Emergency for Cyanide # RT-000684 defines that with some deficiency is identified the procedure must to be changed. In addition, records documenting the cyanide training, including the names of the Employee and the Instructor, the date of training, the topics covered and how the Employee demonstrated an understanding of the training materials.

## 9 DIALOGUE:

Engage in public consultation and disclosure.

### 9.1 STANDARD OF PRACTICE 9.1: *PROVIDE STAKEHOLDERS THE OPPORTUNITY TO COMMUNICATE ISSUES OF CONCERN.*

#### **X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 9.1  
 not in compliance with

#### **Summarize the basis for this Finding/Deficiencies Identified:**

The Serra Grande Operation has several forms of media to provide stakeholders the opportunity to communicate issues of concern. The means showing an effective contact with stakeholders (Internal and External) are "Entre Nós" (Between Us), "Boa Vizinhança" (Good Neighbourhood), "Em Foco" (In Foccus), and phone Nr. (0800) 7271 500.

The program call "Boa Vizinhança" (Good Neighbourhood), where the Serra Grande Operation and Communities Representatives, discuss several matters,

such as environmental monitoring results, cyanide management, among others subjects.

Records of such meetings are maintained by the Communication Area and reviewed during the audit.

Stakeholders also communicate with the operation through specific email address (ARPublicas@anglogoldashanti.com.br) which communicated to the public (internal and external)

The Serra Grande Operation has also implemented a monthly Radio program at the local FM Radio where the Serra Grande Operation representative talks about one specific subject linked with the Serra Grande Operation and answer questions formulate by the listeners, a live.

Serra Grande Operation also published in local newspaper (The Cerrado Press) articles related operations and mineral projects in the Municipality of Crixás.

**9.2 STANDARD OF PRACTICE 9.2: *INITIATE DIALOGUE DESCRIBING CYANIDE MANAGEMENT PROCEDURES AND RESPONSIVELY ADDRESS IDENTIFIED CONCERNS.***

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 9.2

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The Serra Grande Operation has implement and maintained the procedure "Communication SG – Serra Grande" that establish the medias for communication.

Another opportunity to dialogue with stakeholders (local EPA - SECIMA), is through programmed meetings.

Unplanned meetings with Public Authorities are also used by the Serra Grande Operation to dialogue with external stakeholders.

Serra Grande Operation training programs focused on cyanide management are also used to dialogue with internal stakeholders (Employees and Contractors). Serra Grande Operation training programs focused on cyanide management are also used to dialogue with internal stakeholders (Employees and Contractors).

"Em Foco" is distributed for internal stakeholders (Employees and fixed contractors by email and hardcopy). For the eventual contractors only by hardcopies is available at the Serra Grande Operation.



The Visit Program allows the Communities to visit the Plant and be aware of the risks of cyanide.

**9.3 STANDARD OF PRACTICE 9.3: MAKE APPROPRIATE OPERATIONAL AND ENVIRONMENTAL INFORMATION REGARDING CYANIDE AVAILABLE TO STAKEHOLDERS.**

**X in full compliance with the ICMI**

The operation is  in substantial compliance with Standard Practice 9.3  
 not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Serra Grande Operation designed, documented and distributed specific booklets describing how the cyanide is management and relevant information related to cyanide emergencies, this booklet is available for everybody.

The newspaper “Entre Nós” and “Boa Vizinhança” to also addresses on regular basis, relevant information related to cyanide management, since the production until the destruction of the cyanide.

All environmental monitoring results (surface waters and air). Serra Grande Operation permit that the Communities visit the Plant and be aware about the risks of cyanide.

Although the local population, in many cases is illiterate the Serra Grande Operation disseminated in verbal or visual form information related to cyanide management at the operation (meetings with Community Representatives).

Serra Grande Operation did not have any of the above mention incidents. In the event of such kind incidents, the Serra Grande Operation will make information available through the Toll Free phone number (0800-7271 500), which is available 24 hours per day.

Stakeholders may also access:

- Environmental protection agency [www.secima.com.br](http://www.secima.com.br)
- Specific email address [ARPublicas@anglogoldashanti.com.br](mailto:ARPublicas@anglogoldashanti.com.br)

Serra Grande Operation shall communicate this kind of incident to ORT/ MG (local labor agency) and SECIMA/GO (local EPA).

There is no record of accidents of this kind of operations of Serra Grande. If occur, there are procedures implemented and maintained to officially report such incident to ORT / GO (Regional Employment Agency / State Goiás) and to the general public, through the Communications Department and Community Relations, contemplated situation in Emergency Response Plan.

