ICMI GOLD MINE RECERTIFICATION AUDIT - SUMMARY AUDIT REPORT

AngloGold Ashanti Siguiri Gold Mine

Submitted to:
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Siguiri Gold Plant
Guinea

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1.0 SUMMARY AUDIT REPORT FOR GOLD MINING OPERATIONS

Name of Cyanide User Facility: Siguiri Gold Mine
Name of Cyanide User Facility Owner: AngloGold Ashanti 85%
Guinea Government 15%
Name of Cyanide User Facility Operator: AngloGold Ashanti
Name of Responsible Manager: Mohamed Dansoko, Unit Manager, Processing

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2.0 LOCATION DETAIL AND DESCRIPTION OF OPERATION

The Siguiri mine has been in operation since 1997, it is an open-pit located in the Siguiri district in the north-east of the Republic of Guinea, West Africa, about 850km northeast from the capital city of Conakry. The nearest major town is Siguiri with approximately 50,000 inhabitants located on the banks of the Niger River. AngloGold Ashanti has an 85% interest in the operation, with the balance 15% held by the government of Guinea. AngloGold Ashanti operates the site under the Société Ashanti Goldfields de Guinea. The site was originally owned by Ashanti, which merged with AngloGold in 2004. Operations are undertaken 365 days a year.

Processing began in 1997 via heap leaching and was continued for eight years, after which the long term potential of the site as a heap leach became limited a CIP plant was built.

On the CIP plant, ROM ore is reduced by a toothed roll crusher and then transported overland to a mill feed stockpile. The crushed ore is withdrawn at a controlled rate, via apron feeders, and conveyed for treatment through a scrubber and conventional ball milling circuit. Mill product is pumped from a common sump through a cluster of 660mm cyclones with the underflow reporting to a 6MW Ball Mill. A bleed of the cyclone underflow is treated in a gravity circuit incorporating a Knelson concentrator and an Intensive Leach circuit which contributes about 25% of the final gold produced.

Overflow from the cyclone cluster gravitates to a leach train consisting of ten tanks where lime, cyanide and hydrogen peroxide are added to effect gold dissolution. Slurry from the leach circuit is then fed into a carbon adsorption train, via a tramp screening step, in between the two tank farms. Carbon is recovered upstream of the adsorption train and eluted through a 12 tonne AARL elution circuit. Pregnant liquors from both the ILR and elution circuits are electrowon in separate cells at the gold room, with the resultant cathode sludge being dried, calcined and smelted. Eluted carbon is regenerated in a diesel fired kiln and returned to the adsorption circuit. Tailings slurry discharges from the last adsorption tank and gravitates to tailings screens for fugitive
carbon recovery. Screens underflow then drop into a tank from where the slurry is pumped into a one-sided embankment tailings dam situated 8km south of the plant.
SUMMARY AUDIT REPORT

Auditors Findings

☒ in full compliance with The International Cyanide Management Code
☐ in substantial compliance with
☐ not in compliance with

Siguiri Gold Plant is:

Audit Company: Golder Associates Africa (PTY) Ltd
Audit Team Leader: Ed Perry, Lead Auditor
Email: eperry@golder.com

Siguiri Gold Plant has not experienced any significant cyanide incidents or compliance problems during the previous three year audit cycle.

Name of Other Auditors
Marie Schlechter, ICMI pre-certified Mine Technical Specialist

Dates of Audit
The Re-certification Audit was undertaken between 7 December 2015 and 11 December 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 conducted in a professional manner in accordance with the International Cyanide Management Code Verification Protocol for Gold Mine Operations and using standard and accepted practices for health, safety and environmental audits.

Siguiri Gold Plant
Name of Facility
Signature of Lead Auditor
30 June 2016

Golder Associates

30 June 2016
Golder Associates

June 2016
Report No. 1648332-305724-1
PRINCIPLE 1 – PRODUCTION

Encourage Responsible Cyanide Manufacturing by Purchasing from Manufacturers that Operate in a Safe and Environmentally Protective Manner

Standard of Practice 1.1: Purchase cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide, and to prevent releases of cyanide to the environment.

☑ in full compliance with

☐ in substantial compliance with ☐ not in compliance with

Standard of Practice 1.1

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with 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.

The operation’s contract between AngloGold Ashanti Limited and Samsung CT Deutschland GmbH, Contract No. AFR31320 Amendment 8 states the following:

Section 19.0 International Cyanide Management Code - states that the contractor and its appointed sub-contractor's shall at all times abide by the principles and standards of the International Cyanide Management Code for the manufacture, transport, storage and use of cyanide in the production of gold.

Section 19.3 Obligation of the contractor - The contractor warrants and agrees that it shall comply with all laws, rules, regulations and codes of conduct relevant to the performance of its obligations under the contract to manufacture and deliver the goods, including with respect to safety, health and the environment. Without limiting the scope of this paragraph, the contractor complies with the provisions of the ICMC and the employee guidelines for the manufacture transport, storage and use of Cyanide in the production of gold.

19.3.3 - The contractor agrees to provide the employer on request with a copy of an independent third party auditor report confirming the contractor’s compliance to the ICMC.

Siguiri Gold Plant receives their Cyanide from Samsung CT via the Africa Supply Chain that includes Guinea. The Sodium Cyanide manufacturer for the Africa Supply Chain is TaeKwang Industrial Co. Ltd. Ulan Plants in Korea.

The Transport Management Plan for Cyanide Transport to AngloGold Ashanti Mines. Document Number: SCTC-CN-DOC20110915 states that Samsung CT Corporation is the supplier (independent distributor) and the Africa Supply Chain which includes Guinea was originally certified in 2011 and recertified on 4 November 2014. The transport management plan states that the Sodium Cyanide Manufacturer for the Africa Supply Chain is TaeKwang Industrial Co. Ltd Ulsan Plants in Korea which was certified on 22 May 2014.
PRINCIPLE 2 – TRANSPORTATION
Protect Communities and the Environment during Cyanide Transport

Standard of Practice 2.1: Establish clear lines of responsibility for safety, security release prevention, training and emergency response in written agreements with producers, distributors and transporters.

☑ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

The operation is

Standard of Practice 2.1

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with 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.

The auditors observed the contract between AngloGold Ashanti Limited and Samsung CT Deutschland GmbH, Contract No. AFR31320 dated 15 April 2011.

The scope of the contract is for Samsung CT to supply Solid Sodium Cyanide to the site (Siguiri Gold Mine).

The contract states that the Contractor (Samsung) will be responsible for the transportation of the goods to the mine site (Section 14. Transportation and Delivery). Section 14.2 states that the Contractor will comply with the objectives and principles of the ICMC for the manufacture, transport and use of cyanide and the Employers guidelines in the production of gold.

The contract states that the nominated transporter (sub-contractors) for Guinea is Transport Terrasement Minier.

The contract between Samsung and AngloGold Ashanti and the Samsung CT - Transport Management Plan for Cyanide Transport to AngloGold Ashanti Mines designates the following responsibility:

a) Packaging as required by the United Nations for international shipments and by the political jurisdiction(s) the shipment will pass through;
b) Labelling in languages necessary to identify the material in the political jurisdiction(s) the shipment will pass through, and as required by these jurisdiction(s) and by the United Nations (for international shipments);
c) Storage prior to shipment;
d) Evaluation and selection of routes, including community involvement;
e) Storage and security at ports of entry;
f) Interim loading, storage and unloading during shipment;
g) Transport to the operation;
h) Unloading at the operation;
i) Safety and maintenance of the means of transportation (e.g. aircraft, vessels, trains, etc.) throughout transport;
j) Task and safety training for transporters and handlers throughout transport;
k) Security throughout transport; and
l) Emergency response throughout transport.
Standard of Practice 2.2: Require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.

☒ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

**Standard of Practice 2.2**

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

The operation is in full compliance with Standard of Practice 2.2; require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.

The operation’s contract with the cyanide transporter (via the distributor) requires that the transporter be certified under the Code.

The contract between AngloGold Ashanti Limited and Samsung CT Deutschland GmbH, Contract No. AFR31320 dated 15 April 2011. The scope of the contract is for Samsung CT to supply Solid Sodium Cyanide to the site (Siguiri Gold Mine) includes the following:

Section 19 International Cyanide Management Code (The Contract) - Section 19.1 states that the Contractor (Samsung) and its appointed sub-contractor’s shall at all times abide by the principles and standards of the ICMC for the manufacture, transport (TTM), storage and use of cyanide in the production of gold.

Section 19.2 of the contract states that the Contractor and its appointed Sub-contractors shall at all times abide by the principles and standards of the ICMC as amended from time to time.

The cyanide transporter is certified under the Code. Samsung CT’s Africa Supply Chain was re-certified on 04 November 2014. Transport Terrasegment Minier (the road transporter) was re-certified on 09 August 2013.

The operation has chain of custody records identifying all elements of the supply chain (producer, transporter(s), interim storage facilities) that handle the cyanide brought to its site.
PRINCIPLE 3 – HANDLING AND STORAGE
Protect Workers and the Environment during Handling and Storage

Standard of Practice 3.1: Design and construct unloading, storage and mixing facilities consistent with sound, accepted engineering practices, quality control/quality assurance procedures, spill prevention and spill containment measures.

☑ in full compliance with
☐ in substantial compliance with Standard of Practice 3.1
☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with 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.

Only solid cyanide is used, liquid cyanide is not used.

The facilities for unloading, storing and mixing of solid cyanide been designed and constructed in accordance with cyanide producers’ guidelines, applicable jurisdictional rules and/or other sound and accepted engineering practices for these facilities.

The previous re-certification audit found the following:

“The facilities used up to September 2012 were designed by SENET and constructed in 2005. Designs and drawings were reviewed and found Code Compliant during the certification audit in March 2010. Upgrading of the cyanide facilities commenced following a change management and risk assessment process (MOC of 9/9/08). The cyanide dosing tank was repaired and inspected. The new facility was commissioned, completely replacing the old facility, in September 2012. The new facility consists of a solid cyanide store, a mixing tank, two storage / dosing tanks and the required infrastructure, secondary containment, pumps, pipes and spillage sumps and pumps. A decontamination bay is also included in the section. The facilities were designed according to AngloGold Ashanti specific cyanide design specifications: AGA "Africa Region Cyanide Code Volume 1 – Gold Extraction Plants, Tank Leach Circuit Rev 05, February 2008". This guideline serves to provide the basis for ensuring that cyanide off-loading, storage and dosing facilities are designed in accordance with AngloGold Ashanti specifications and incorporate the cyanide specific requirements for plant and equipment as specified in these guidelines and are constructed of materials that provide a competent barrier to leakage. Civil specifications are according to SABS 1200 and AngloGold Civil Engineering Specifications."

The unloading and storage areas are in a secure access controlled area within the larger mine area that is also secured and access controlled.

Mixing tanks and storage tanks are equipped with electronic level indicators linked to the SCADA system. Pumps are interlocked with the level indicators stopping the pumps at 90%, which is managed from the control room.

Tanks are located within a steel framework above a concrete bunded area that is also sealed with a membrane, which will prevent seepage to subsurface.

All secondary containments are constructed of concrete and sealed with a suitable material resistant to caustic cyanide solutions. The tanks are located in the open air with ventilation pipes. The dry solid store is designed with two open access / ingress sections at the opposite ends of the store, creating a through flow of ventilation.
The dry solid cyanide is stored in a purpose built store, which is roofed. The concrete floor is equipped with a longitudinal drain down the length of the store to direct any rain water coming in through the access openings away from the boxes to a sump where an automatic pump pumps it to the cyanide tank bund. Any water in the cyanide tank bund is pumped to the barren solution tank. Verified during site inspection.

The unloading and storage areas are in a secure access controlled area within the larger mine area that is also secured and access controlled.

The solid cyanide is stored separately from incompatible materials such as acids, strong oxidizers and explosives and apart from foods, animal feeds and tobacco products with no other material being stored with the solid cyanide except for the caustic soda that is added during the mixing event to control the pH.

**Standard of Practice 3.2: Operate unloading storage and mixing facilities using inspections, preventative maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.**

天津市 in full compliance with

The operation is 🗼 in substantial compliance with Standard of Practice 3.2

not in compliance with

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

The operation is in full compliance with Standard of Practice 3.2; operate unloading storage and mixing facilities using inspections, preventative maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

Unloading storage and mixing facilities are operated using inspections, preventative maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

All cyanide packaging is incinerated in a secure locked and fenced area on top of the nearby disused heap leach facility, which is within the wider mine site. This is done on the same day that the mixing event takes place with the boxes and plastic packaging taken directly from the solid cyanide storage area to the secure box burning area. This is detailed in the following procedure MET-SOP: 11-019 DISPOSAL OF EMPTY CYANIDE BOXES AND PACKAGING dated 12 February 2015, rev 8.

Drums are not used. No cyanide containers are returned to the vendors, all empty cyanide boxes and liners are burnt. Sea containers are returned to the shipping company.

The operation has developed and implemented plans or procedures to prevent exposures and releases during cyanide unloading and mixing activities including the following:

Procedure MET-SOP: 018 Cyanide Make-Up Procedure 09 Feb 2015 rev 08;

Procedure MET-SOP: 12 Unloading Boxes from Container dated 06 February 2015 rev 09;

Procedure MET_SOP: 24 Detoxification Procedure for all Cyanide Spillage Incidents dated 19 February 2015 rev 08; and

Procedure MET-SOP : 44 Buddy System, dated 03 March 2015 rev. 05.

Fork-lift truck drivers are recertified every 2 years by Northwest Pro-Lift and Rigging, South Africa.
ICMI CYANIDE RE-CERTIFICATION AUDIT - SUMMARY REPORT

PRINCIPLE 4 – OPERATIONS
Manage Cyanide Process Solutions and Waste Streams to Protect Human Health and the Environment

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

☐ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

The operation is

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 4.1; to implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventative maintenance procedures.

The site does not have heap leach facilities or processing ponds.

The operation has developed written management and operating plans or procedures for cyanide facilities including unloading, mixing and storage facilities, leach plants, and tailings impoundments, Procedure MET-SOP: 018 Cyanide Make-Up Procedure 09 Feb 2015 rev 08.

The operation has plans or procedures that identify the assumptions and parameters on which the facility design was based and any applicable regulatory requirements (e.g., freeboard required for safe pond and impoundment operation; the cyanide concentrations in tailings on which the facility's wildlife protection measures were based) as necessary to prevent or control cyanide releases and exposures consistent with applicable requirements. This includes the following: Procedure MET-SOP: 018 Cyanide Make-Up Procedure 09 Feb 2015 rev 08It states that the pH must be at a minimum of 10.5; the TSF embankment has been designed to provide a factor of safety in static conditions of 1.5, the pool must be at the minimum safe horizontal distance of 200m, the TSF can accommodate a 1:100 year rainfall event (the pond), the pool wall is to be maintained at a minimum width of 15m and it should always have a freeboard of at least 2m above the surrounding beach level.

MET-SOP:11-045 Procedure for Pollution Control Dam Operation 3 March 2015 Rev 05, this states that the PCD must always be empty. MET-SOP: 12-060 Storm B Water Dam Control Procedure 19 June 2015 Rev 02 states that the dam must be operated at 90%. The current cyanide setpoint is recorded and stated in the TAC1000 logbook kept in the control room. MET-SOP: 11-060 Procedure for Abnormal Conditions at the Leach, CIP or Residue Tanks 04 March 2015 Rev 04 - requires the shift Supervisor must be notified when the cyanide concentration in residue is in excess of 200ppm. Siguiri Plant WAD Cyanide at TSF Discharge 2013 (taken daily at the cyclone). All WAD readings for the year were below 50.

The operation has plans or procedures that describe the standard practices necessary for the safe and environmentally sound operation of the facility including the specific measures needed for compliance with the Code, such as inspections and preventative maintenance activities including the following: Siguiri Tailings Storage Facility Operating Manual, Oct 2014, Rev 01 Revised by PL Steenkamp Pr. Eng. The operating manual stipulates the deposition methodology, management of the dam and return water dam, water control, tailings spillage management, maintenance, monitoring, emergency procedures, rehab and closure, etc. MET-SOP: 11-060 Procedure for abnormal conditions at the leach, CIP or Residue Tanks 04 March 2015 rev 04 MET-SOP: 11-047 Procedure to follow when high cyanide levels are measured in the Residue slurry 04 March
2015 rev.04. MET-SOP: 11-055 Procedure for issue of clearance certificates for cyanide areas 04 March 2015 rev 04. AngloGold Ashanti Guinea Siguiri Gold Plant Cyanide Installation Daily Inspection Report 31 July 2013. The inspection is conducted by the Cyanide Champion and completes actual comments for each area inspected. The inspection includes a detailed inspection of the facilities (bunds, tanks, safety equipment, etc.) The areas inspected are the Cyanide Storage and Make up, Package Discarding and Burning area.

The operation has a procedure to identify when changes in a site’s processes or operating practices may increase the potential for the release of cyanide and to incorporate the necessary release prevention measures Procedure MET-SOP: 11-061 Procedure for Change Management on Cyanide Installations 04 March 2015 rev 05.

The operation has cyanide management contingency procedures for situations where there is an upset in a facility’s water balance, when inspections and monitoring identify a deviation from design or standard operating procedures, and/or when a temporary closure or cessation of the operation may be necessary including the following: MET-SOP: 11-050 Procedure for Total Power Failure on the Plant 04 March 2015 Rev 04; SER-SOP:913 Standby Mobile Generator Inspection and Testing, rev 0, dated 02 June 2016 this procedure includes mobile and stationary generators; MET-SOP: 11-065 Procedure for Responding on Low pH Alarm 04 March 2015 Rev 05; MET-SOP: 11-047 Procedure to follow when high cyanide levels are measured in the residue slurry 04 March 2015 Rev 05; MET-SOP: 11-060 Procedure for abnormal conditions at the leach, CIP or Residue tanks 04 March 2015 Rev 04.

The operation inspects cyanide facilities on an established frequency sufficient to assure and document that they are functioning within design parameters including daily, weekly, monthly, quarterly and annual inspections.

The operation undertakes inspections at the unloading, storage, mixing and process areas. Cyanide Installation Daily Inspection Report includes the inspection of the cyanide mixing tank and cyanide storage/ dosing tanks (x2) for structural integrity and signs of corrosion and leakage; the secondary containment for the cyanide mixing and storage/dosing tanks. Inspecting the bund for its integrity, the presence of fluids and its available capacity. There are no drains in the bund as any liquid is drained to a sump and pumped from the bund to the Barren Solution Tank; the inspection of cyanide dosing pumps and pipelines for deterioration and leakage.

Daily inspections of the tailings pipeline to the TSF are undertaken including the observation of any deterioration and leakage. Tailings Dam Monthly Reports detail the freeboard for the beach and the total for the TSF at 10 points around the TSF.

Inspections are documented, including the date of the inspection, the name of the inspector, and any observed deficiencies. Corrective actions are documented either directly or in the form of a work request number. The work request details the nature and date of the corrective action. Records are retained.

Preventative maintenance programs are implemented and activities documented to ensure that equipment and devices function as necessary for safe cyanide management. The FC System includes inspections, scheduled maintenance work and preventative maintenance. The Work Order System includes breakdowns and inspections. An external company checks the thickness on the cyanide, Leach, CIP, Residue tanks annually. Visual inspections are undertaken by external company every 3 years on bunds. Internally inspections are done on the bunds when work is conducted in the area. Annual civil inspections are done by the Engineering dept. Three monthly structural inspections are done by the Engineering dept.

The operation will prevent unintentional releases and exposures in the event its primary source of power is interrupted. The site has the following procedure MET-SOP: 11-050 Procedure for Total Power Failure on the Plant 04 March 2015 Rev 04. The Procedure to follow in the event of a total power failure on the plant. Procedure states that in the event of a power failure, the shift supervisor must manually close the gate in
between Leach Tank 09 and 10 to minimise tanks overflow. In the event of a power failure, the cyanide pumps will stop and reagent strength cyanide will remain the pipes and flow back to the tanks.

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

☑️ in full compliance with

☐ in substantial compliance with  ☐ not in compliance with

**The operation is**

**Standard of Practice 4.2**

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 4.2; introduced management and operating systems to minimise cyanide use, thereby limiting concentrations of cyanide in mill tailings.

The operation conducts a program to determine appropriate cyanide addition rates in the mill and evaluate and adjust addition rates as necessary when ore types or processing practices change cyanide requirements this includes the following:


The operation has evaluated various control strategies for cyanide additions including the following: CEMS Engineering Consultants - Re: Control Optimization Work - Siguiri Gold Plant (November 2015). This document outlines the first level findings regarding the control circuits investigated during the site visit at Siguiri Gold Plant. A number of recommendations were made on control principles. Based on the impact that the Density Control will have on the feed to the Leach Tanks, the CN control was updated to use a Density Compensator. The pH control used .to be done using the pH reading from the TAC1000 analyser. During the previous site visit in March 2014, it was recommended to use a dedicated pH probe due to the lag time for the TAC 1000 to update the pH reading. The dedicated pH probe was installed and the controls updated. This improved the lime dosing to be more responsive reducing excessive overshoot and undershoot of the pH relative to the set point.

A TAC 1000 is used for automatic addition of the cyanide at the dosing point. Cyanide feed dosing settings are based on daily operational results and monthly test work.

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

☑️ in full compliance with

☐ in substantial compliance with  ☐ not in compliance with

**The operation is**

**Standard of Practice 4.3**

Summarise the basis for this Finding/Deficiencies Identified:
The operation is in full compliance with Standard of Practice 4.3; implement a comprehensive water management programme to protect against unintentional releases.

The operation has developed a comprehensive, probabilistic water balance.

The water balance is an Excel spreadsheet that uses 100 sequences of rainfall data. This was first developed in GoldSim and then imported into the spreadsheet. Rainfall sequence has been calibrated with on-site recorded rainfall. Includes extreme wet to extreme dry conditions and normal conditions in between.

The Excel Spreadsheet has a front sheet where design and current parameters are changed on a monthly basis to reflect the current situation such as current pond and TSF Levels, average extractions (PCD, Stormwater Pond B, TSF Pool), TSF Deposition, Catchment areas, pond capacities, TSF Beach profile, Evaporation averages for each month. At the back of the spreadsheet the following information is used: Rainfall, catchment runoff, plant runoff, water balance TSF, Water Balance Plant, Water Balance, etc. All of this information is used to calculate risk.

The 7 day risk, 30 day risk and 45 risk in terms of PCD overtopping risk, TSF Pool Freeboard risk (Freeboard 2 m), Stormwater Pond B overtopping risk. The simulation is run at least once a month but during the high rainfall months it would be run more to constantly assess the risk. TSF Deposition Rate (max figure is used to get worst case), Slurry density (average), and Specific Gravity, are added every month. The spreadsheet uses 100 sequences of rainfall data and it includes a 50 year 24 hr storm event as well as extreme high fall rainfall. The 100 sequences of rainfall was last updated in 2013 and is updated every 3 years to include recent rainfall data. Effects of freezing and thawing is not applicable in West Africa. Seepage (TSF Pool seepage rate) and evaporation is considered in the model. The model has the capability to adjust the figures such as return water pumping to indicate the effects of a power failure and the subsequent risk to overflow. The pool levels are inserted directly into the model.

There is no discharge to surface water.

Tailings Dam Monthly Reports detail the freeboard for the beach and the total for the TSF at 10 points around the TSF. The supervisor inspects the water level of the RWD during each shift and then implements changes as needed to prevent overtopping (either decrease barge pumping or requests the plant to pump more water).

The ponds and impoundments are designed and operated with adequate freeboard above the maximum design storage capacity determined to be necessary from water balance calculations.

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

- ☑ in full compliance with
- □ in substantial compliance with
- □ not in compliance with

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

The operation is in full compliance with Standard of Practice 4.4; implement measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions

The operation has implemented measures to restrict access by wildlife and livestock to all open waters where WAD cyanide exceeds 50 mg/L WAD cyanide.
An on line Cynoprobe WAD analyser is installed in the plant on the last CIP tank as special control measure to prevent WAD CN from exceeding 50 ppm in the tailings pumped to the TSF tipping points.

WAD CN data shows that the TSF is operated at less than 50 ppm WAD CN and no special measures are needed to protect Wildlife. The TSF is fenced with locked gates to control entry of people and livestock to the area.

The WAD CN compliance point is the spigot discharging into the TSF. These samples are taken manually on a daily basis. The results for 2013, 2014 and 2015 were observed and were all below 50 mg/l.

Maintaining a WAD cyanide concentration of 50 mg/l or less in open water is effective in preventing significant wildlife mortality as no wildlife mortalities have been recorded in the last 3 years.

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

☑ in full compliance with

☐ in substantial compliance with ☐ not in compliance with

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

The operation is in full compliance with Standard of Practice 4.5; implement a comprehensive water management programme to protect against unintentional releases.

There are no direct or indirect discharges to surface water. Monitoring boreholes are sampled up and down stream of TSF to check for seepage. The Tinkiso river is 11 km downstream of the TSF and this is monitored on a monthly basis for free cyanide. The free cyanide results are all below detection limit of 0.03 ppm indicating that there is no indirect discharge to the river.

Monthly monitoring of groundwater and surface water for free cyanide is undertaken by the mine. The results for groundwater and surface water monitoring for 2013, 2014, 2015 were all less than the 0.03 mg/l detection limit.

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

☑ in full compliance with

☐ in substantial compliance with ☐ not in compliance with

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

The operation is in full compliance with Standard of Practice 4.6; implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of groundwater.

The operation implements specific water management or other measures to manage seepage to protect the beneficial uses(s) of groundwater beneath and/or immediately down-gradient of the operation.

The plant pollution control dam is lined with concrete to prevent seepage. The plant is designed with secondary containment to contain cyanide containing leaks and spillage in order to protect groundwater.
The TSF is equipped with finger drains that drain into a seepage sump. The water is pumped from the sump to the top of the TSF via an automatic pump. The automatic pump is connected to a standby genset in case of power failure.

Monitoring boreholes are sampled up and down stream of TSF to check for seepage. The Tinkiso river is 11 km down stream of the TSF and this is monitored on a monthly basis for free cyanide.

The surface water monitoring records for July 2013 and January 2014 to December 2014 were all below the detection limit of 0.03 mg/l free cyanide. These results indicate that there is no indirect discharge to the river.

Community drinking water sampling boreholes at 9 villages upstream and downstream of the villages for March 2015, and September 2015 were all below the detection limit of 0.005 mg/l indicating that the beneficial use of groundwater is protected. There is no numerical standard established by the applicable jurisdiction for cyanide in groundwater.

Mill tailings are not used as underground backfill.

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

- ☑ in full compliance with
- □ in substantial compliance with
- □ not in compliance with

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

The operation is in full compliance with Standard of Practice 4.7; Provide spill prevention or containment measures for process tanks and pipelines.

Make-Up Tank and Cyanide Storage/Dosing Tanks are located on steel supports within one concreted bund. The Leach Tanks are located within a concrete bund. This bund is connected to the concrete bund in which the CIP tanks are located, which is in turn is connected to the concrete lined pollution control dam via concrete lined trenches.

The Leach and CIP tanks are installed on ring beams. The ring beams are covered with a bitumen/sand layer (40 - 70 mm thick) over the whole surface of the ring beam. The tanks form part of an inspection program. A groundwater monitoring program is in place and no elevated cyanide levels have been detected as shown by the groundwater results observed for 2013, 2014, and 2015, indicating that there have been no leaks from the tank bases.

The containers for the storage of solid cyanide are located within a dedicated storage facility on concrete with a leak collection drain that drains to a sump from which any solution is automatically pumped to the bund for the Make-up and Storage tanks.

The Pollution Control Dam is kept empty to be used as additional bund capacity in the event of an overflow in the Leach bund and CIP bund. Spilled material from the Leach flows to the CIP which is connected to the PCD via a concrete lined trench. Secondary containments for cyanide unloading, storage, mixing and process tanks are therefore sized to hold a volume greater than that of the largest tank within the containment and any piping draining back to the tank, and with additional capacity for the design storm event.

Procedures are in place and being implemented to prevent discharge to the environment or any cyanide solution of cyanide-contaminated water that is collected in the secondary containment area including MET-
SOP: 11-045 Procedure for Pollution Control Dam Operation 03 March 2015 Rev 05, and MET-SOP: 11-043 Procedure to Empty Cyanide Spillage bund 03 March 2015 Rev 05.

There are no cyanide process tanks without secondary containment.

The cyanide solution pipelines from the cyanide solution/dosing tanks are placed inside a launder that drains back to the cyanide mixing and storage bund prior to entering the area above the leach bund. TSF pipeline is trenched and unlined paddocks are placed strategically at lowest points to collect any leaks.

The Tailings pipeline crosses one intermittent stream. The pipeline has been designed not to have any flanges on the section crossing the stream. The pipeline is placed on a concrete bridge for the crossing and there is a paddock either side of the bridge for any spills to drain into.

TSF Pipelines are constructed of steel. Reagent cyanide mixing and storage/dosing tanks are constructed of mild steel. Cyanide solution pipelines from the cyanide storage facility are made of HDPE. Valves used are stainless steel ball valves. Process tanks (Leach and CIP tanks) are constructed of mild steel and process pipes are made of mild steel and HDPE.

**Standard of Practice 4.8:** Implement quality control/quality assurance procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

- [ ] in full compliance with
- [ ] in substantial compliance with
- [ ] not in compliance with

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

The operation is in full compliance with Standard of Practice 4.8; to implement quality control/quality assurance procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

The previous re-certification audit found the following:

"The facilities used up to September 2012 were designed by SENET and constructed in 2005. Designs and drawings were reviewed and found Code Compliant during the certification audit in March 2010. Upgrading of the cyanide facilities commenced following a change management and risk assessment process (MOC of 9/9/08). The cyanide dosing tank was repaired and inspected. The new facility was commissioned, completely replacing the old facility, in September 2012. The new facility consists of a solid cyanide store, a mixing tank, two storage/dosing tanks and the required infrastructure, secondary containment, pumps, pipes and spillage sumps and pumps. A decontamination bay is also included in the section. The facilities were designed according to AngloGold Ashanti specific cyanide design specifications."

"Cyanide tank QA/QC dossier including design drawings was observed. The review of the dossier confirms the existence of QA/QC programs and included design drawings signed by Professional Engineer W Reeve ECSA number 9170083, QC fabrication, Material Certificates, correspond control report, Forrester Quality Consultant - surveillance reports, Almec manufacturer’s welders qualification records, welding procedure specification, welding procedure qualification record, certificate of conformance."

Tailings Upgrade increasing the capacity of the TSF commenced at the end of 2012 and was completed at the end of 2014.
PL Steenkamp. (Pr. Eng 20010255) undertook the QA/QC reporting for the Project as detailed in the Siguiiri TSF Expansion Project QA/QC Construction Reports dated; 27 November 2013, 8 December 2013, 27 January 2014, 28 April 2014, 14 July 2014, and the Final Construction Quality Plan dated September 2015. The Final Construction Quality Plan included the following: QA/QC Management Organisation, Construction Sequence, Construction Verification, Site Clearance, Earthworks (design compliance, monitoring, in-situ compaction testing, laboratory testing, repair and re-testing, survey and measurement, deficiencies), Secondary Containment Sumps, and Steel Delivery Pipe Line

The TSF expansion project has included a new 800 mm TSF pipeline from the Plant. The QA/QC documentation was observed for the construction of the new pipeline including NDT, welding and ultrasonic inspections.

The quality control and quality assurance programs address the suitability of materials, adequacy of soil compaction for earthworks and construction of cyanide storage tanks. The quality control and quality assurance records have been retained for the cyanide facilities. Appropriately qualified personnel have reviewed facility construction and provided documentation that the facility has been built as proposed and approved.

For those parts of the facility not included in the QA/QC documents provided i.e. CIP and Leach tanks, an appropriately qualified person has inspected the facility and concluded that it can continue to be operated within established parameters consistent with the Code's Principles and Standards of Practice.

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

- ☑ in full compliance with
- □ in substantial compliance with
- □ not in compliance with

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

The operation is in full compliance with Standard of Practice 4.9; to implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and groundwater quality.

ENV. Lab_12 Procedure for TSF/CIP Cyanide Water Sampling 30.12.2014 Rev 03 describes general and specific procedures, methods and considerations to be used and observed when taking water samples for cyanide analysis.

The Procedure stipulates how and where the samples must be taken. It describes the sample preservation and transportation requirements. Samples are analysed for are WAD, Free and Total Cyanide. The forms state the number of samples and location of each sample. Each sample point has 3 bottles that gets analysed for different pre-stipulated parameters.

The Environmental Sampling Sheet indicates the following: Samples Category, Sampling Station, Sample taken, Analysis required, Weather Condition, Livestock, Wildlife Activities, Human Activities, Sample Preservation.

The procedure was compiled by the Environmental Superintendent who is appropriately qualified.

The sampling maps indicate the groundwater monitoring points around the TSF (20 boreholes, 2 not operating), Plant (14 boreholes), leach pad (9), landfill site (7), surface water monitoring points (9), seasonal surface water (run-off) points around the leach pad (7).
Samples of groundwater and surface water are taken monthly. The samples are analysed at the mine for free cyanide on a monthly basis. The groundwater samples are analysed on a quarterly basis for WAD and Total cyanide.

The operation inspects for and records wildlife mortalities related to contact with and ingestion of cyanide solutions. This is done on the daily inspection records for the TSF and the daily inspection records for the Plant.

The monitoring is conducted at frequencies adequate to characterize the medium being monitored and to identify changes in a timely manner.
PRINCIPLE 5 – DECOMMISSIONING
Manage Cyanide Process Solutions and Waste Streams to Protect Human Health and the Environment

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

☑ in full compliance with
☐ in substantial compliance with ☐ not in compliance with

Emergency Response Practice 5.1

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 5.1; to plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.

The Siguiri Gold Mine Closure Plan dated August 2009 fulfils the Guinean legal requirements. This included ‘Current State of Operations’, ‘Planning for Mine Closure’ and ‘Mine Closure Management per Section’.

This document is now being updated and replaced with a document that complies with local legal requirements and AngloGold Ashanti corporate requirements. In order to update the Closure Plan a draft Closure Planning Roadmap dated January 2014 has been produced detailing the studies and actions required to obtain the data necessary for the production of an updated Closure Plan. It is anticipated that a revised Closure Plan will not be completed until the end of 2016.

The Closure Liability spreadsheet contains a time line for all items with a start and finish date.

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

☑ in full compliance with
☐ in substantial compliance with ☐ not in compliance with

Standard of Practice 5.2

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 5.2; to establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.

The operation has developed an estimate of the cost to fully fund third party implementation of the cyanide-related decommissioning measures as identified in its site decommissioning or closure plan. The mine has developed a detailed liability spreadsheet based on a number of studies conducted by the mine as well as external consultants. An annual report is produced summarising the spreadsheet and is signed off by the Heads of Departments.

The mine liability spreadsheet has been reviewed quarterly since 2014, prior to this the review was annually.

The applicable jurisdiction does not require financial guarantees and the operation has not established a mechanism other than self-insurance or self-guarantee to cover estimated costs for the cyanide-related decommissioning activities.
The auditors observed the following: Report of Factual Findings - Agreed upon Procedures on Financial Information of AngloGold Ashanti Limited, Ernst & Young Inc., dated 18 January 2013. This was undertaken to "evaluate the accuracy of financial information". This included item 7. "Check that the financial test requirements set by AGA with reference to the ICMI Code have been met".

The findings of this assessment include the statement "With respect to item 7, the financial test requirements set by AGA with reference to ICMI Code have been met".
PRINCIPLE 6 – WORKER SAFETY

Protect Workers’ Health and Safety from Exposure to Cyanide

Standard of Practice 6.1: Identify potential cyanide exposure scenarios and take measure as necessary to eliminate, reduce and control them.

☒ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

Standard of Practice 6.1

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 6.1; identify potential cyanide exposure scenarios and take measure as necessary to eliminate, reduce and control them.

The operation has developed procedures describing how cyanide-related tasks such as unloading, mixing plant, operations, entry into confined spaces, and equipment decontamination prior to maintenance should be conducted to minimise worker exposure including the following:


The procedures require, where necessary, the use of personal protective equipment and address pre-work inspections through the requirement that a mini risk assessment is done before each job commences.

MET-SOP: 11-061 Procedure for change management on cyanide installations 04 March 2015 Rev 05 stipulates the requirements to follow for any project initiated that entails the installation of new equipment, alters the current process flow or may have an impact on the environment. The information provided on the project must include the reason for the project, detailed description, cost, etc.. A full Risk Assessment and/or Hazop must be completed for the project.

During compilation or revision of a procedure, the workers are consulted for their input. This is an informal process - confirmed through interview.

Monthly H&S Meeting are held to discuss safety related issues. Everybody working on the plant attends this meeting (Engineering and Processing).
Standard of Practice 6.2: Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.

☑ in full compliance with

☐ in substantial compliance with

☐ not in compliance with

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

The operation is in full compliance with Standard of Practice 6.2; to operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.

The operation has determined the appropriate pH for limiting the evolution of HCN gas during mixing and production activities including the following:

MET-SOP:11-018 Cyanide Make-up Procedure 09 February 2015 Rev 08 - states that the pH in the mixing tank (prior to adding the first bag of solid cyanide) must be minimum 10.5;

MET-SOP: 11-065 Procedure for Responding on Low pH Alarm 04 March 2015 Rev 05 - if the pH of the slime drops below 10.5, the alarm will sound and display on the SCADA system. The cyanide delivery pumps should be stopped until the pH at the addition point has been adjusted to above 10.5; and

MET-SOP: 11-043 Procedure to Empty Cyanide Spillage Bund 03 March 2015 Rev 05 - Spillage due to running water during off-loading can be pumped to the pre-leach via barren solution tank after establishing that the pH exceeds 10.5.

Hotspot surveys are conducted weekly at the following places: ILR Gekko, CIP Tanks, Leach Tanks, Reagents Mixing Area, Met Lab, Preg Tanks area, Trash Screen Area, Eluate tank area, Tailing Screens, Tailing Tank, Mill Platform close to ILR, Batch tank area, 06-pmp-08, 06-pmp-09, area between CIP and Leach, and the elution area.

Hydrogen cyanide monitoring equipment is maintained, tested and calibrated as directed by the manufacturer, and records are retained for at least one year. There are currently 81 PAC 7000 personal monitors used on the plant and tailings area. 8 X-am 7000 multi gas personal monitoring are used on the plant. 9 Polytron fixed gas monitors are installed on the plant.

Warning signs has been placed at areas where cyanide is used advising workers that cyanide is present, and that no smoking, open flames and eating and drinking are not allowed. This was observed during the site visit. PPE requirements are stipulated at all these areas.

Showers, low pressure eye wash stations and dry powder or non-acidic sodium bicarbonate fire extinguishers are located at strategic locations throughout the operation and are maintained, inspected and tested on a regular basis.

It was observed during the site visit that pipes containing reagent strength cyanide are purple, the cyanide reagent tanks are red with a purple band. The MSDS for cyanide was placed at the CIP, and Leach tanks to notify plant employees of the presence of cyanide in these tanks as well as the presence of "Cyanide Hotspot" signs in these areas. The pipeline conveying the tailings to the TSF is colour coded (grey) in order to alert plant employees of the presence of cyanide in the tailings material. The tailings pipeline has been marked with warning signs to alert the local community of the presence of cyanide in the tailings material.
MSDSs in English are provided in areas where cyanide is managed. However French is more widely spoken therefore an abbreviated version of the MSDS has been translated into French and posted in these areas together with the Emergency Call Out Procedures.

Procedures are in place and being implemented to investigate and evaluate cyanide exposure incidents to determine if the operation's programs and procedures to protect worker health and safety, and to respond to cyanide exposures, are adequate or need of revising. This is detailed in SIG_OHS_Non-Conformity Corrective Action & Preventative Action Procedure_014, 08 Nov 2013, Rev 05.

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

- in full compliance with
- in substantial compliance with
- not in compliance with

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

The operation is in full compliance with Standard of Practice 6.3; develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

The operation has water, oxygen, a resuscitator, antidote kits, radios, cell phone, and alarmed safety showers readily available for use at unloading, storage and mixing locations and elsewhere in the plant. There are first aid cabinets at strategic locations in the Plant and the TSF containing appropriate PPE, oxygen and antidote for use in a cyanide emergency.

The operation inspects its first aid equipment regularly to ensure that it is available when needed, and materials such as cyanide antidotes are stored as directed by their manufacturer and replaced on a schedule to ensure that they will be effective when needed.

The operation has developed specific written emergency response plans and procedures to respond to cyanide exposures including the following:

N-Emergency SOP_01_First Aid Cyanide First Aid and Medical Treatment for Cyanide Reagent Exposure dated 08 December 2015 Rev 01;

AGTE.10.4.1.CAR Chapter 42: First Aid and Medical Treatment for Cyanide Reagent Exposures Rev 6 date; and

MET-SOP:11-001 Cyanide First Aid 02 Feb 2015 Rev 08 - to ensure consistency in treating suspected cyanide poisoned persons.

MET-SOP:11-003 Emergency Response Team Procedure 02 February 2015.

Exposed workers are transported to the Heap Leach Clinic in the first instance and subsequently to the mine hospital at the mine village. The emergency procedure for access of an ambulance in the event of a medical emergency is 053 Emergency Procedure for Access of an Ambulance in the Event of a Medical Emergency dated March 2015 rev 04. Emergencies are announced on the open radio channel so that the whole plant is aware of an emergency occurring including security ensure that the ambulance has free access to the Plant.

First aid to workers exposed to cyanide is provided by the Emergency Response Team who are trained in Cyanide First Aid. The Heap Leach Clinic is 5 minutes from the Plant and the Front Line Manager for Emergency Medical Care (Paramedic) will respond with the ambulance. The Patient will have been...
decontaminated by the ERT. The Paramedic will then treat the patient and take them back to the Clinic to be stabilised. The patient may be transferred to the mine hospital next to the mine village 25 minutes from the Plant for longer term care.

The fully equipped, mine hospital is manned 24 hrs per day. The staff includes 8 doctors trained in cyanide emergencies, with a medical doctor is on standby in the village after hours. The clinic is staffed by a Paramedic for response to emergencies.

If there are any chronic conditions that the hospital is unable to treat the patient may be transferred to a hospital in Conakry, Bamako or Dakar depending on the care required.

All staff at the clinic and the hospital undertake cyanide induction training in addition to specific medical training. Staff at the clinic and hospital take part in mock drills.

Mock emergency drills are conducted periodically to test response procedures for various cyanide exposure scenarios, and lessons learnt from the drills are incorporated into response planning.
PRINCIPLE 7 – EMERGENCY RESPONSE

Protect Communities and the Environment through the Development of Emergency Response Strategies and Capabilities

Standard of Practice 7.1: Prepare detailed emergency response plans for potential cyanide releases.

- [x] in full compliance with
- [ ] in substantial compliance with
- [ ] not in compliance with

The operation is in full compliance with Standard of Practice 7.1; prepare detailed emergency response plans for potential cyanide releases.

The operation has developed an Emergency Response Plan to address potential releases of cyanide that may occur on site or may otherwise require response, which includes the following; Siguiri Gold Mine Emergency Response Plan, Ref No. SAG/ERP/SE 07, dated 20 May 2015 is reviewed annually; MET-SOP: 11-048 Emergency Preparedness and Response Plan 04 March 2015 Rev 06; and Crisis Management Plan Doc No. SAG/CMP/001 07/05/2015 Rev 03.

The following are included in MET-SOP: 11-048 Emergency Preparedness and Response Plan 04 March 2015 Rev 06, Section 11. Emergency Scenario Response Plan Table 11

- Catastrophic release of hydrogen cyanide from storage or process facilities;
- Transportation accidents;
- Releases during unloading and mixing;
- Releases during fires and explosions;
- Pipe, valve and tank ruptures;
- Overtopping of ponds and impoundments;
- Power outages and pump failures;
- Uncontrolled seepage;
- Failure of cyanide treatment, destruction or recovery systems; and
- Failure of tailings impoundments, heap leach facilities and other cyanide facilities.

Planning for response to transportation-related emergencies has considered transportation route(s), physical and chemical form of the cyanide, method of transport, the condition of the road/railway, and the design of the transport vehicle. Included in the following:

MET-SOP: 11-048 Emergency Preparedness and Response Plan 04 March 2015 Rev 06, Section 11;
MET-SOP:11-007 Transport of Cyanide From Conakry to Siguiri 02 Feb 2015 Rev 08;
MET-SOP: 11-008 Action if Cyanide Container Slips off Truck 02 Feb 2015 Rev 09; and
Samsung C&T Transport Management Plan for Cyanide Transport to AngloGold Ashanti Mines, Doc No. SCTC-CN-DOC20110915 Version: Original, Section 8.9 Road Transport Incident, Part E Section 14 Assess the route followed from the Port of Conakry, Guinea to Siguiri Gold Mine

The Plan describes specific response actions, as appropriate for the anticipated emergency situations, such as clearing site personnel and potentially affected communities from the area of exposure which is described in the following:

Siguiri Gold Mine Emergency Response Plan, Ref No. SAG/ERP/SE 07, dated 20/05/2015.

AGTE.10.4.1.CAR Chapter 42: First Aid and Medical Treatment for Cyanide Reagent Exposures Rev 6 date

MET-SOP:11-001 Cyanide First Aid 02 Feb. 2015 Rev 08 - to ensure consistency in treating suspected cyanide poisoned persons.

MET-SOP:11-003 Emergency Response Team Procedure 02 February 2015

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

- in full compliance with
- in substantial compliance with
- not in compliance with

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

The operation is in full compliance with Standard of Practice 7.2; involve site personnel and stakeholders in the planning process.

The operation involved its workforce and stakeholders, including potentially affected communities, in the cyanide emergency response planning.

The workforce was initially involved in the initial compilation (baseline) of the Emergency Response Plan in 2007. Each department was involved in separate meetings to get their input. Subsequent revisions only involved the HODs comments and inputs. Once updated, the employees are trained on the content of the response plan.

The operation has made potentially affected communities aware of the nature of the risks associated with cyanide, and consulted with them directly through the community liaison meetings and the outreach centres detailed.

Exposed workers are transported to the Heap Leach Clinic in the first instance and subsequently to the mine hospital at the mine village. The fully equipped, mine hospital is manned 24 hrs per day. The staff includes 8 doctors trained in cyanide emergencies, with a medical doctor is on standby in the village after hours. The clinic is staffed by a Paramedic and Doctor for response to emergencies. No external medical services are involved. The mine fire brigade will respond to any fire with no external responders being involved.
Standard of Practice 7.3: Designate appropriate personnel and commit necessary equipment and resources for emergency response.

☐ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 7.3; to designate appropriate personnel and commit necessary equipment and resources for emergency response.

The cyanide related elements of the Emergency Response Plan designate appropriate personnel and commit necessary equipment and resources including the following.

Siguiri Gold Mine Emergency Response Plan, Ref No. SAG/ERP/SE 07, dated 20/05/2015 - Emergency Response and Control: Stipulates for each potential scenario the potential controls as well as their responsibilities.

MET-SOP: 11-048 Emergency Preparedness and Response Plan 04 March 2015 Rev 06 - Figure 11.0 General Emergencies Decision Tree, Fig 11.1 Emergency Communication Structure (Level 3 goes all the way up to the General Manager AGA AURM and Crisis Management Committee Corporate).

Section 6 (Plant ERP) stipulates the Management Roles and Responsibilities of the emergency response team, on scene control team and incident management team.

The General Manager by nature of his position has the authority to commit the necessary resources to implement the plan.

The supervisor will communicate to the control room in the event of an emergency. The control room will commence with the communication as stipulated in the emergency plan.

The Managing Director will take charge of the emergency, the Security Manager will be the coordinator.

Siguiri Gold Plant Chemical Response Team Processing Plant 30 Nov 2015 Rev 08. The team consist of 14 employees of different departments with their contact details (office, home and radio). The minimum number of people on the response team per shift will be 3 employees.


Siguiri Gold Plant Chemical Response Team Processing Plant 30 Nov 2015 Rev 08. The team consist of 14 employees of different departments with their contact details (office, home and radio).

MET-SOP:11-002 Call Out for Cyanide Poisoning 02 Feb 2015 Rev 08 - to ensure rapid call out system for personnel required to attend to a cyanide poisoning incident.

Cyanide Emergency Call Out Procedure dated 7 Oct 2015 Rev 7 - observed that call out procedure available at all the areas where cyanide is used as well as the control room.

Siguiri Gold Plant Chemical Response Team Processing Plant 30 Nov 2015 Rev 08. The team consist of 14 employees of different departments with their contact details (office, home and radio).
MET-SOP:11-002 Call Out for Cyanide Poisoning 02 Feb 2015 Rev 08 - to ensure rapid call out system for personnel required to attend to a cyanide poisoning incident.

Cyanide Emergency Call Out Procedure dated 7 Oct 2015 Rev 7 - observed that call out procedure available at all the areas where cyanide is used as well as the control room.

MET-SOP:11-003 Emergency Response Team Procedure 02 February 2015 Rev 08 - lists PPE needed and emergency equipment available in the emergency vehicle, Cyanide Emergency boxes.

MET-SOP:11-030 Examination of PPE 24 February 2015 Rev 08 - to ensure that all PPE is checked to be according to standard, safe and in good working order when used whilst handling cyanide products.

There are no outside entities included in the Emergency Response Plan. Exposed workers are transported to the Heap Leach Clinic in the first instance and subsequently to the mine hospital at the mine village. The fully equipped mine hospital is manned 24 hrs per day. The staff includes 8 doctors trained in cyanide emergencies, with a medical doctor on standby in the village after hours. The clinic is staffed by a Paramedic and Doctor for response to emergencies. All staff at the clinic and the hospital undertake cyanide induction training in addition to specific medical training. Staff at the clinic and hospital take part in mock drills.

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

☑ in full compliance with

☐ in substantial compliance with Standard of Practice 7.4

☐ not in compliance with

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

The operation is in full compliance with Standard of Practice 7.4; develop procedures for internal and external emergency notification and reporting.

The Plan includes procedures and contact information for notifying management, regulatory agencies, outside response providers and medical facilities of the cyanide emergency including the following:

MET-SOP: 11-048 Emergency Preparedness and Response Plan 04 March 2015 Rev 06 - Section 12 Response Section: Stipulates the Emergency Response Levels and who needs to be notified in the event of that level of emergency. The responsible persons are indicated in Figure 11.1 Emergency Communication Structure.

Crisis Management Plan Doc No. SAG/CMP/001 30 May 2011 Rev 03 - Section 4.4 Relevant Contact Details: contains the contact details for the Internal Managers (AGA), External Agencies, Community Leaders, Media.

Cyanide Emergency Call Out Procedure 7 Oct 2015 Rev 7 - contains the contact details for Plant management, Heap Leach Clinic, Koron Hospital, etc.

The Plan includes procedures and contact information for notifying potentially affected communities of the cyanide-related incident and any necessary response measures and for communications with the media.

The Siguiri Mine has a Community Affairs Department. The designated person - Community Liaison person will communicate with the community with regards to necessary actions etc.

Crisis Management Plan Doc No. SAG/CMP/001 30 May 2011 Rev 03 - Section 4 Crisis Communication Plan states that the MD, in conjunction with regional communication spokesperson(s) / specialists, will be
responsible for all media and stakeholder communication. Where necessary, Corporate Communications will be requested to assist in this regard.

**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

- [ ] in substantial compliance with

- [ ] not in compliance with

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

The operation is in full compliance with Standard of Practice 7.5; incorporate in response plans and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals.

The Plan describes specific remediation measures as appropriate for the likely cyanide release scenarios. This includes the following:

MET-SOP:11-024 Detox for all Cyanide Spillage Incidents 19 Feb 2015 Rev 08 - section 7.1 Solid Cyanide Spillage, 7.2 Liquid Cyanide Spillage, 7.3 Pulp Spill with Cyanide, 7.4 Small and Large contained cyanide spillage, 8 containment of spillage.

Section 8 Containment of Spillages - describes the recovery and safe disposal of spilled cyanide solutions and solids.

Section 8 Containment of Spillages - states that the contaminated area must be neutralised with detoxification reagents.

Section 8 Containment of Spillages - states that the the spilled cyanide material can either be disposed at the CIP Plant, Heap Leach pads or TSF (dependent on the nature and quantity of the spill).

Section 8 Containment of Spillages - Provide water for villages where drinking water is effected in the Clean empty peroxide drum which is tested and confirm clean by the Environmental officer.

Section 7.4 Small and Large contained cyanide spillages - The use of chemicals such as Sodium Hypochlorite, Ferrous Sulphate and Hydrogen Peroxide to neutralise cyanide spillage into the surface water is prohibited.

Siguiri Gold Plan Environmental Monitoring Plan, October 2014, Section 6.3.8 Sampling for Cyanide, (a) Sampling for Cyanide during Emergencies. In case of cyanide solution spillage - methodology. The parameters of focus during sample assay will be the pH and WAD. Sampling of the flow path of the solution starting from point of spillage and every ten meters for up to 1 km if this is in flowing stream. in case of TSF spillage (failure of facility) the potential flow path as indicated by the survey plan will be used to collect samples. Monitoring around the facility will also be sampled.

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

- [x] in full compliance with

- [ ] in substantial compliance with

- [ ] not in compliance with
Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 7.6; to periodically evaluate response procedures and capabilities and revise them as needed.

The Emergency Response plan (Mine Wide and Plant) and the Crisis Management Plan is revised on an annual basis or if there are significant changes.

Mock emergency drills are conducted periodically to test response procedures for various cyanide exposure scenarios, and lessons learnt from the drills are incorporated into response planning.

The Emergency Response Plan and associated documentation will be revised if recommendations from a drill require it. Such changes have not been necessary to date.
PRINCIPLE 8 – TRAINING
Train Workers and Emergency Response Personnel to Manage Cyanide in a Safe and Environmentally Protective Manner

Standard of Practice 8.1: Train workers to understand the hazards associated with cyanide use.

☑ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

Standard of Practice 8.1

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 8.1; train workers to understand the hazards associated with cyanide use.

All new employees receive cyanide induction training when first starting on the mine and thereafter refresher training once a year after annual leave. This requires a pass of over 75% with the test being re-written until passed.

The training modules at Siguiri Gold Plant includes: Basic Cyanide First Aid, CN First Aid Training Level 1 Mechanism of Breathing, CN First Aid Training Level 2 Gag Reflex & Aspiration (Recovery Position), CN Emergency First Aid Training, Introduction to Hazardous Chemicals & Cyanide First Aid (on hold), Medical for SCBA Training (On hold), SCBA, Oxy-Viva, Micro Pack Gas Monitoring (on hold), Buddy Training, Clearance Certificate, Make-up Reagents. All this training is given annually.

All employees names appeared on the Full Employee Matrix. Training specific to employees is identified in yellow and if the training has been completed then the date is filled in.

All training records are kept for 40 years.

Standard of Practice 8.2: Train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.

☑ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

Standard of Practice 8.2

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with 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.

The operation trains workers to perform their normal production tasks, including unloading, mixing, production and maintenance, with minimum risk to worker health and safety in a manner that prevents unplanned cyanide releases.

The training elements necessary for each job involving cyanide management are identified in training materials. The Cyanide Make-Up Training Material - includes the steps that are required during the make-up process as well as the required PPE.
The training modules at Siguiri Gold Plant include: Basic Cyanide First Aid, CN First Aid Training Level 1 Mechanism of Breathing, CN First Aid Training Level 2 Gag Reflex & Aspiration (Recovery Position), CN Emergency First Aid Training, Introduction to Hazardous Chemicals & Cyanide First Aid (on hold), Medical for SCBA Training (On hold), SCBA, Oxy-Viva, Micro Pack Gas Monitoring (on hold), Buddy Training, Clearance Certificate, Make-up Reagents. All this training is given annually.

Full Employee Matrix for 2015. All employees’ names appear on the matrix. Training specific to employees is identified in yellow and if the training has been completed then the date is filled in.

The Metallurgical Department Safety Training and Induction Presentation includes general cyanide awareness and safety.

Appropriately qualified personnel provide task training related to cyanide management activities.

All new employees receive cyanide induction training when first starting on the mine and thereafter refresher training once a year after annual leave.

The operation evaluates the effectiveness of cyanide training by undertaking Planned Task Observations.

Records are retained throughout an individual's employment documenting the training they receive. The records include the names of the employee and the trainer, the date of training, the topics covered, and if the employee demonstrated and understanding of the training materials.

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

- in full compliance with
- in substantial compliance with
- not in compliance with

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

The operation is in full compliance with Standard of Practice 8.3; train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.

All cyanide unloading, mixing, production and maintenance personnel are trained in the procedures to be followed if cyanide is to be released. This is undertaken as part of the induction. All new employees receive cyanide induction training when first starting on the mine and thereafter refresher training once a year after annual leave.

The training modules at Siguiri Gold Plant include: Basic Cyanide First Aid, CN First Aid Training Level 1 Mechanism of Breathing, CN First Aid Training Level 2 Gag Reflex & Aspiration (Recovery Position), CN Emergency First Aid Training, Introduction to Hazardous Chemicals & Cyanide First Aid (on hold), Medical for SCBA Training (On hold), SCBA, Oxy-Viva, Micro Pack Gas Monitoring (on hold), Buddy Training, Clearance Certificate, Make-up Reagents. All this training is given annually.

Site cyanide response personnel, including unloading, mixing, production and maintenance workers, are trained in decontamination and first aid procedures. They also take part in routine drills to test and improve their response skills.

The training modules at Siguiri Gold Plant include: Basic Cyanide First Aid, CN First Aid Training Level 1 Mechanism of Breathing, CN First Aid Training Level 2 Gag Reflex & Aspiration (Recovery Position), CN Emergency First Aid Training, Introduction to Hazardous Chemicals & Cyanide First Aid (on hold), Medical for...
SCBA Training (On hold), SCBA, Oxy-Viva, Micro Pack Gas Monitoring (on hold), Buddy Training, Clearance Certificate, Make-up Reagents. All this training is given annually.

Emergency Response Co-ordinators and members of the Emergency Response Team are trained in the procedures included in the Emergency Response Plan regarding cyanide, including the use of necessary response equipment.

Exposed workers are transported to the Heap Leach Clinic in the first instance and subsequently to the mine hospital at the mine village. The fully equipped, mine hospital is manned 24 hrs per day. The staff includes 8 doctors trained in cyanide emergencies, with a medical doctor on standby in the village after hours. The clinic is staffed by a Paramedic for response to emergencies. No external medical services are involved. The mine fire brigade will respond to any fire with no external responders being involved. The communities are trained on the Emergency Response Plan through the community liaison meetings and the outreach centres.

Simulated cyanide emergency drills are periodically conducted for training purposes covering both worker exposures and environmental releases including the following:

Siguiri Gold Plant Process Plant Man Down Emergency Drill 16 November 2015. A man down emergency drill was conducted 16 Nov 2015 at 13:30 at the elution area near the tailings pipeline. The drill involved the Heap Leach Clinic Personnel and the patient was transported to the Mine Hospital;

Man Down Emergency Drill 30 December 2014, 30 December 2014 at 13:48 man down at the new cyanide plant; and

Man Down Emergency & Environmental Drill 13 November 2013 at the CIP Plant - Hydrochloric Acid Spill at the CIP Plant.

Mock drill documentation includes a write up of the scenario, photos of steps taken during the drill, drill time line, a summary of strengths, weaknesses, recommendations, and an action plan.

The Plant Training Manager is the organiser of the mock emergency drills, allowing any training feedback to take place. Mock drill documentation includes a write up of the scenario, photos of steps taken during the drill, drill time line, a summary of strengths, weaknesses, recommendations, and an action plan.

Records are retained documenting the cyanide training, including the names of the employee and the trainer, the date of training, the topics covered, and how the employee demonstrated an understanding of the training materials.
PRINCIPLE 9 – DIALOGUE
Engage in Public Consultation and Disclosure

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

☑ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

The operation is

Standard of Practice 9.1

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 9.1; provide stakeholders with the opportunity to communicate issues of concern.

The Mine has established a network of outreach centres, currently in 5 villages (Kintinian, Fatoya, Setiguia, Balato, Boukaria). It is planned to have 9 outreach centres by the end of 2016. The outreach centres are manned by AGA community agents who are fluent in the local language. At least one of the agents in the outreach centres is literate in French. The local language is verbal only therefore any writing is in French as the written language for the country.

A mine newsletter has been produced and is used to assist in communication information to the local communities by the outreach centres. The information in the newsletters includes details of the mining operation and the use of cyanide. The newsletters are distributed to mine workers, who live in the surrounding communities and to the local authorities, regulators, etc.

The villagers are able to lodge complaints at the outreach centres. The AGA community agents are trained to manage complaints and complete the necessary records.

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

☑ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

The operation is

Standard of Practice 9.2

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 9.2; initiate dialogue describing cyanide management procedures and responsively address identified concerns.

The Mine has established a network of outreach centres, currently in 5 villages (Kintinian, Fatoya, Setiguia, Balato, Boukaria). It is planned to have 9 outreach centres by the end of 2016. The outreach centres are manned by AGA community agents who are fluent in the local language. At least one of the agents in the outreach centres is literate in French. The local language is verbal only therefore any writing is in French as the written language for the country.

A mine newsletter has been produced and is used to assist in communication information to the local communities by the outreach centres. The information in the newsletters includes details of the mining operation and the use of cyanide. The newsletters are distributed to mine workers, who live in the surrounding communities and to the local authorities, regulators, etc.
There have been a number of Cyanide Sensitisation Campaigns including the following:

Siguiri Gold Mine Community Cyanide Sensitisation Campaign, 18 February 2014, which visited each of the 4 villages (Fensorekolen, Samani, Boukaria, Lenkenkoro), presented information via pictures and discussed all information in local language (not written language). The presentation had the following content: Introduction, Information of Cyanide, Questions and Responses from interaction, Issues of Concern, Closing Remarks. Photographs showing the interaction at each of the villages was observed.

Siguiri Gold Mine Community Students Cyanide Sensitisation Campaign 20 November 2015 (presentation): Visited Koron School, children were selected to attend (55) and then they will communicate back to the rest.


Siguiri Gold Mine Bolore Cyanide Sensitisation Campaign 10 - 22 February 2014, conducted Cyanide Awareness Training for the workers at Conakry Harbour.

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

☑ in full compliance with
☐ in substantial compliance with Standard of Practice 9.3
☐ not in compliance with

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

The operation is in full compliance with Standard of Practice 9.3; to make appropriate operational and environmental information regarding cyanide available to stakeholders.

A mine newsletter has been produced and is used to assist in communication information to the local communities by the outreach centres. The newsletters for March, June and November 2015 were observed. The information in the newsletters includes details of the mining operation and the use of cyanide. The newsletters are distributed to mine workers, who live in the surrounding communities and to the local authorities, regulators, etc.

The Mine has established a network of outreach centres, currently in 5 villages (Kintinian, Fatoya, Setiguia, Balato, Boukaria). It is planned to have 9 outreach centres by the end of 2016. The outreach centres are manned by AGA community agents who are fluent in the local language. At least one of the agents in the outreach centres is literate in French. The local language is verbal only therefore any writing is in French as the written language for the country.

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Crisis Management Plan Doc No. SAG/CMP/001 30 May 2011 Rev 03 - Section 4 Crisis Communication Plan states that the MD, in conjunction with regional communication spokesperson(s) / specialists, will be responsible for all media and stakeholder communication. Where necessary, Corporate Communications will be requested to assist in this regard. The Community Relations Department will communicate with the local communities when instructed to do so by the MD. This may be by radio, a press release regarding the ICMI recertification in 2013 was observed.

The appropriate incidents are reported in the AGA annual report which is publically available contains information on environmental and safety incidents, including any cyanide related incidents. 2013 Annual Report on-line includes a section on cyanide as well cyanide-related incidents that have occurred in the group. http://www.agareports.com/13/os/performance/resources-infrastructure/land-management#significant-incidents.

There have not been any cyanide incidents in the last 3 years.
GOLDER ASSOCIATES AFRICA (PTY) LTD.

Ed Perry  
Lead Auditor

Marie Schlechter  
Project Manager

Date: 30 June 2016

MS/EP/ag

Reg. No. 2002/007104/07  
Directors: SA Eckstein, RGM Heath, SC Naidoo, GYW Ngoma

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