

***INTERNATIONAL CYANIDE  
MANAGEMENT INSTITUTE***

***Cyanide Code Compliance Audit  
Gold Mining Operations***

***Summary Audit Report***

***AngloGold Ashanti  
Yatela Gold Mine  
Mali***

***25<sup>th</sup> October – 1<sup>st</sup> November 2008***



Name of Operation: Yatela Gold Mine

Name of Operation Owner: AngloGold Ashanti – 40%  
IAMGOLD Corporation – 40%  
Mali Government – 20%

Name of Operation Operator: AngloGold Ashanti

Name of Responsible Manager: Mr Gerrie Barnard, Plant Manager

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**Location detail and description of operation:**

The Yatela Gold Mine is located in the Sadiola County, 65 kilometres from the Regional Capital, Kayes, in Mali. The mine's gold processing facilities consist of a Dry Plant and a Wet Plant.

**Dry Plant**

Run of mine (ROM) ore is fed into the primary bin (150m<sup>3</sup> capacity), which has a static grizzly preventing ore greater than 0.65 metre in cubic lump size from passing through. The ROM ore is drawn from the ROM bin by means of a hydraulically powered 2.0 metre wide apron feeder at the design tonnage of 600 tons per hour (t.p.h.) (wet). This material is fed over vibrating grizzly feeder with 200mm aperture. Screened oversize material is directly fed into a C125 Nordberg Jaw Crusher with a 150mm gap. Jaw crusher product is screened again at 100mm. Oversize size is crushed in a 5½ ft Symons cone crusher with gap set on 50mm. This product is conveyed to a 1200mm conveyor (CV4 101). A belt weightometer and auxiliary equipment for tonnage control and accounting is fitted to this belt. The bulk cement facility is designed to pneumatically transport the cement to two 150t silos. The cement addition occurs prior to the secondary crusher at a measured rate from the cement silos.

Cement is added to the product at a rate of 20kg/t when stacking the first lift of the heap and 8kg/t when stacking the second lift of the heap. The crushed ore together with the cement is deposited onto the 1200mm wide agglomeration drum feed conveyor and

transported to the agglomeration drum. A go-belt sampling station is mounted on the inclined section of the agglomeration drum feed conveyor. A hammer sampler takes a primary sample of 7.5kg which is conveyed to a secondary rotation plate divider to produce a 37kg final sample in one 8 hour shift.

The agglomeration drum accepts feed at 600 t.p.h. (wet) through the 3.6 metre diameter x 10.0 metre long drum rotating at 6.95 R.P.M. Solution is distributed within the drum utilizing a pipe main and spray nozzles. The agglomeration drum agglomerates the feed material using cement as a binding agent into appropriately sized pellets, possessing the required mechanical properties to facilitate optimal heap stability and solution percolation through the heap.

The heap leach pad will ultimately consist of 18 leach cells. The pad has been designed to have an impermeable clay underliner on which a 1.5 mm HDPE liner will be placed. The HDPE liner is covered by a 600 mm cushion layer to protect the liner from damage as a result of the movement of conveying equipment on the pad. Allowance has been made for a gravel roadway on each cell to facilitate drainage and prevent HDPE liner damage as a result of conveying equipment becoming bogged in cushion layer during the wet season. Each cell is also equipped with geo-technical drain pipes to facilitate cell drainage.

The pad has been constructed using the expanding pad methodology. The compressive strength associated with the agglomerates necessitates the use of a stacking system to construct the heap. The agglomerates are conveyed via an overland conveyor followed by a set of portable conveyors to a radial stacker that is used to construct the heap.

### **Wet Plant**

The Yatela Heap Leach circuit is a two-stage leach process. Barren solution from the CIS recovery circuit is pumped to previously leached areas of the heap to leach residual gold remaining in the ore (Secondary leach cycle). The enriched solution percolates through the heap and reports to the intermediate pond. Intermediate solution is then pumped to freshly stacked ore (Primary leach cycle) and the resultant solution reports to the pregnant solution pond for gold recovery.

In order to facilitate solution management five ponds have been constructed namely pregnant, intermediate, barren, excess and detoxification solution ponds. Three main pumping systems are employed to facilitate solution management. The irrigation system consists of main headers running from the ponds down the entire down slope edge of the heap. Sub-headers run across the top of the heap in order to distribute lixiviant to the cells. Finally, drip irrigation piping is used to irrigate the heap.

The cyanide storage, make up and dosing system have been designed to ensure the safe dosage to cyanide to the heap leach operation. Evidence of calcium carbonate scaling was encountered during the test work program and consequently an anti-scalent dosing facility has been incorporated into the design

A carbon in solution (CIS) circuit is installed for gold adsorption. The CIS circuit consists of seven sealed carbon vessels that operate in a carousel mode. Two of the CIS columns can be used for scavenging in the event of having to discharge excess solution



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to the environment via the hydrogen peroxide detoxification circuit. Elution, regeneration, electro winning and smelting do not occur on site at Yatela, the carbon is rather transported and toll treated at the Sadiola Hill Gold Plant. The loaded and regenerated carbon is transported between the Yatela heap leach operation and the Sadiola Hill Gold Plant respectively by means of a carbon tanker.

The elution and regeneration of the Yatela carbon along with the subsequent electro-winning and smelting of the cathode sludge take place at the Sadiola Hill Gold Plant. The initial Sadiola Hill Gold Plant carbon treatment facilities were not sufficient to treat both Sadiola Hill Gold Plant and Yatela loaded carbon, consequently allowance was made for a certain amount of upgrading of the initial circuit.



*Auditor's Finding*

**This operation is**

in full compliance

**X in substantial compliance \*(see below)**

not in compliance

with the International Cyanide Management Code.

\* The Corrective Action Plan to bring an operation in substantial compliance into full compliance must be enclosed with this Summary Audit Report. The plan must be fully implemented within one year of the date of this audit.

Audit Company: Eagle Environmental

Audit Team Leader: Arend Hoogervorst

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Names and Signatures of Other Auditors:

Name : Dawid M. L Viljoen

Signature



Date: 15/6/2009

Dates of Audit: 25<sup>th</sup> October – 1<sup>st</sup> November 2008

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.

Yatela Gold Mine

Facility

**MARYKE VAN WALSEM**

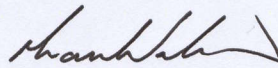
Signature of Lead Auditor

Date

19/6/09

Certified/notarized:-

COMMISSIONER OF OATHS  
PRACTISING ATTORNEY AND  
CONVEYANCER, RSA  
28 OLD MAIN ROAD  
HILLCREST, KWAZULU - NATAL



Yatela Gold Mine

Signature of Lead Auditor

11<sup>th</sup> June 2009

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*Auditor's Findings*

**1. PRODUCTION: Encourage responsible cyanide manufacturing by purchasing from manufacturers who 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.*

**X in full compliance with**

**The operation is**       in substantial compliance with **Standard of Practice 1.1**  
  
 not in compliance with

*Basis for this Finding/Deficiencies Identified:*

The plant's cyanide manufacturer and supplier, Australian Gold Reagents (AGR), is an ICMI Code Signatory and has achieved full compliance in a verification audit against the ICMI Cyanide Code.

The combined supply and transport contract stipulates that the supplier must be signatory to the ICMI and must be ICMI Code compliant.

**2. TRANSPORTATION: Protect communities and the environment during cyanide transport.**

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

**X in full compliance with**

**The operation is**       in substantial compliance with **Standard of Practice 2.1**  
  
 not in compliance with



*Basis for this Finding/Deficiencies Identified:*

AGR is responsible for the transport of the cyanide briquettes from their production facility in Kwinana, Western Australia, to the Yatela Gold Plant in Mali. Responsibilities and accountabilities are clearly defined in the AngloGold Ashanti (AGA) Contract and AGR Transport Management Plan. Both the AGA contract and the AGR Transport Management Plan stipulate in detail, the responsibilities and requirements for packaging and labeling, safety, security, escort, emergency response (spills prevention and clean-up), route planning and risk assessments, community liaison, emergency response resource access and availability, training, and communication.

*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

**The operation is      X in substantial compliance with Standard of Practice 2.2**

not in compliance with

*Basis for this Finding/Deficiencies Identified:*

The supply and transport contract for AGR stipulates that the transport sub-contractor must be a signatory to the ICMI and must be ICMI Code compliant. Whilst the road transport contractor from the port of Dakar to the mine, SDV, is not a signatory or certified, there are plans to undertake a third party ICMI non-certification audit in February 2009. Furthermore, although a due diligence exercise has been undertaken for the sea transport leg and the ports of Freemantle and Dakar, these were undertaken internally by AGR and not by a ICMI transportation auditor. AGR is in the process of having all its internally conducted due diligence review exercises reviewed by an ICMI accredited transportation auditor. Additionally, AGR is facilitating the certification of its contracted cyanide transporters. Logistics in Africa appear to have caused delays but AGR have assured AngloGold Ashanti that the due diligence reviews (and the certification of its contracted cyanide transporters) will be undertaken by June 2009. It is for this reason, the auditors made a finding of substantial compliance as there is clear good faith from both the site and the producer/transporter.

**3. HANDLING AND STORAGE: Protect workers and the environment during cyanide handling and storage.**

*Standard of Practice 3.1: Design and construct unloading, storage and mixing facilities consistent with sound, accepted engineering practices, quality*

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*control/quality assurance procedures, spill prevention and spill containment measures.*

**X in full compliance with**

- The operation is**
- in substantial compliance with **Standard of Practice 3.1**
  - not in compliance with

*Basis for this Finding/Deficiencies Identified:*

The operation procures solid cyanide and mixing of solid cyanide is done on site. Detailed, professionally designed, drawings for the cyanide mixing and storage area were sighted and quality control documentation was sighted indicating the appropriate engineering checks were undertaken. Cyanide facilities are located on concrete and away from people and surface waters. Secondary containments are built from concrete, provide a competent barrier to leakages and provide adequate and appropriate containment. The solid cyanide is stored in the original packaging in closed, locked sea containers, stored under a roof. Cyanide tanks are equipped with level indicators and audible alarms, and the water valves are interlocked with the mixing tank level indicator and linked to audible alarms. Procedures covering cyanide unloading, destuffing, mixing, transfer and handling of full and empty cyanide boxes were reviewed and found to be effective. Cyanide areas are fenced and security controlled with adequate controls and separation to prevent mixing with incompatible materials.

*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 operation is**
- in substantial compliance with **Standard of Practice 3.2**
  - not in compliance with

*Basis for this Finding/Deficiencies Identified:*

The site utilizes solid cyanide which is delivered in sea containers which are “destuffed” of their cyanide into secure storage areas. The off-loading and “destuffing” procedures are thorough and detailed and PPE requirements are included. Mixing operations are covered by sequenced instructions and an observed cyanide makeup process highlighted the competency of the operators. Use is made of the Buddy system to optimise safety and safe handling. Empty cyanide briquette packaging is stored in locked containers and taken and burned in an isolated, fenced, locked, dedicated burning area. Procedures are in place to cover solid and liquid spill responses. All reagent cyanide facilities are covered



in the preventative maintenance system, with defined maintenance frequencies. Inspection checklists were sighted and interviews conducted which confirmed cyanide awareness and competency.

**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 utilizing contingency planning and inspection and preventive maintenance procedures.*

**X in full compliance with**

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

*Basis for this Finding/Deficiencies Identified:*

The site has 166 procedures in place covering the whole of the processing plant from crushing to the heap leach operations. These procedures link to the requirements of the standards, ISO 14001 and OHSAS 18001, the site being certified for both standards. The procedures were extensively sampled, reviewed and found to be effective. There are also documented operating parameters for the plant and the heap leach. Routine daily and monthly inspection reports, legal inspections, and checklists were sampled and employees interviewed to check the effectiveness of systems and ensure that ensure proactive and reactive management. Heap leach operating procedures were verified and associated annual reviews and stability surveillance documentation was reviewed. The site change management procedure, was reviewed and examples of its used sighted. Preventative maintenance and inspection type and frequency is controlled by an electronic system called PRAGMA in the dry plant and a manual based planned maintenance schedule is used in the wet plant. Key pumps, tanks, pipelines, banded areas and equipment were checked on the PRAGMA system and found to be systematically maintained through visual and mechanical checks, thickness tests and historical reviews. Leak detection inspections and checks on the heap leach and solution ponds are carried out daily and weekly. Although water balance scenarios have not identified power outage needs for emergency power, the plant has installed power (4 Gensets) in excess of requirements with one spare available on a continuous basis.

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

in full compliance with

**The operation is**

in substantial compliance with **Standard of Practice 4.2**

not in compliance with

**X not subject to**

*Basis for this Finding/Deficiencies Identified:*

This Standard of Practice does not apply as the mine does not have a mill or a TSF. However, cyanide consumption requirement tests are conducted monthly using column leach tests. Original cyanide consumption predictions based upon Mineralogy column and cyanide optimisation test work for the heap leach operations were 140 – 220 grams per ton, dry to wet season. Current column tests indicate sulphide blends require higher cyanide concentrations. Automatic control for cyanide additions has been considered but the simplicity of the operations on site did not warrant the cost.

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

**X in full compliance with**

**The operation is**

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

not in compliance with

*Basis for this Finding/Deficiencies Identified:*

A comprehensive, probabilistic, fully Code compliant, water balance was prepared using the GoldSim water balance model. The model incorporates reliable, localized rainfall data for the last 20 years and considers both 1:50 and 1:100 year storm events. Operating parameters for the heap leach pond levels and the water usage strategy are updated, based on monthly evaluations and from recommendations from consultants using the GoldSim water balance model outputs. Water levels in the ponds are recorded on a daily basis and operational decisions are made using this and the monthly water model reports. A detoxification plant is available to treat solutions for release to the environment under abnormal or emergency conditions but this has not been required since becoming Code signatories. Procedures and plans are in place to manage normal and emergency conditions. All relevant procedures, plans and initiatives were reviewed and found to be appropriate in managing to prevent overtopping and unintentional releases.

*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 operation is**
- in substantial compliance with **Standard of Practice 4.4**
  - not in compliance with

*Basis for this Finding/Deficiencies Identified:*

The leach pads are operated above 50ppm WAD cyanide and a variety of special measures have been put into place including ponding control procedures, shadow netting covering the deposition areas, periodic ripping, as required, to maintain percolation and a crew of 16 bird controllers. The bird controllers are guided by a bird control plan and a bird patrol procedure. Leach solutions are applied using a dripper system and the operation uses grasshopper conveyor belts to stack ore conically on top of the heaps to minimise pond formation. The barren, intermediate and pregnant solution ponds operate at above 50ppm WAD and are equipped with bird balls to prevent bird access. No cyanide-related bird, or wildlife mortalities have been experienced since the signing of the ICMI Code.

Daily analyses are done on the excess pond, the monitoring pond and the settling pond to ensure that WAD cyanide levels remain below 50ppm WAD cyanide. Current levels vary between 0.2 and 39 ppm WAD cyanide.

*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 operation is**
- in substantial compliance with **Standard of Practice 4.5**
  - not in compliance with

*Basis for this Finding/Deficiencies Identified:*

The site has no direct or indirect discharges to surface water. Discharge of excess water from the excess pond is routed via the detoxification pond to a redundant satellite pit. The WAD cyanide concentrations in solution in the pit are less than 0.3 ppm WAD cyanide. No discharges to surface water take place but samples are taken during the wet season when the river flows and these are at the limits of detection for WAD cyanide. No indirect discharges take place as all leach pads and ponds are lined with leak detection inspections and systems in place.



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*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 operation is**                     in substantial compliance with **Standard of Practice 4.6**  
  
 not in compliance with

*Basis for this Finding/Deficiencies Identified*

All leach ponds, solution ponds and solution corridors are plastic lined, as is the agglomeration conveyor system carrying cyanided ore to the heap leach pads. All leach pads are equipped with leak detection systems and are formally inspected for level and leaks daily. Monitoring boreholes are established and monitored and results indicate cyanide at below the limits of detection. The beneficial use of water is domestic use and World Bank standards of 1 mg/l free cyanide and 1mg/l total cyanide as CN are used. No seepage has been reported or recorded.

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

**X in full compliance with**

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

*Basis for this Finding/Deficiencies Identified:*

The cyanide makeup and storage area is located within a bunded area and all pipelines are contained inside lined areas or lined trenches. The plant is designed with sumps and pumps to return all spillages back to the process. The cyanide dosing pipes are installed above a lined area with spillages draining into the production ponds. All other cyanide solution pipes are installed above lined surfaces draining into the solution corridor. The heap leach pads are all constructed on an impervious geomembranes to collect all solutions emanating from the leach operation. All pipelines from the leach pads to the solution ponds are placed onto liners or inside lined solution trenches, draining into the lined solution ponds. The agglomeration cyanide feed pipe crossing the surface water trench is contained in a double pipe system. Cyanide tanks and pipelines are manufactured from mild steel and irrigation solutions are fed via polypropylene pipes.

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*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 operation is**                     in substantial compliance with **Standard of Practice 4.8**  
  
 not in compliance with

*Basis for this Finding/Deficiencies Identified:*

New leach pad construction is an on-going activity controlled by specifications and quality control and assurance (QA/QC) records were sighted, including inspections on the lining welding. Annual audits of the heap leach facility are conducted by the AngloGold Ashanti Geotechnical Engineer. Annual heap stability surveillance reviews, as well as monthly surveillance reporting is undertaken. Quality control and assurance documentation and sign offs were sighted for the structural steelwork, beams, columns and tanks in the wet plant. Inspection and QA/QC documentation was signed off by appropriately qualified persons, including Professional Certified Engineers, Civil Engineers and Geotechnical Engineers.

*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 operation is**                     in substantial compliance with **Standard of Practice 4.9**  
  
 not in compliance with

*Basis for this Finding/Deficiencies Identified:*

Sampling of both surface and groundwater for cyanide forms a part of the site's Monitoring Plan. The Plan, sample preservation and custody and chain of custody procedures were developed by an environmental scientist with Masters degree and doctoral degree qualifications. Monitoring and inspections (including checks for bird mortalities and bird species on the TSFs) are guided by appropriate procedures and guidelines. The site's water quality sampling regime was sighted which indicated sample sites, samples types to be taken, and frequency. Frequencies range from monthly to quarterly. Detail on sample points was reviewed and found adequate for sample point circumstances. Operational bird mortality inspections are undertaken.



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

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

**X in full compliance with**

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

*Basis for this Finding/Deficiencies Identified:*

A Rehabilitation and Closure Plan was sighted. The Closure Plan includes plans and costs for rising and reagents, decontamination of concentrated cyanide, agglomeration drums, pipes and ponds. An implementation schedule forms a part of the decommissioning and reclamation plan. The decommissioning and reclamation plan is reviewed annually.

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

**X in full compliance with**

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

*Basis for this Finding/Deficiencies Identified:*

The Closure Plan includes costs and line items for rising and reagents, decontamination of concentrated cyanide, agglomeration drums, pipes and ponds. The cost of mobilization of external contactors is included in the Plan. There is currently no jurisdictional financial assurance mechanism required other than an “in principle” requirement. The site has established its own cash based insurance mechanism. The current scenario is that of self insurance and thus funding is maintained within the operation’s banking system. A certificate signed by the General Manager was sighted which confirmed the availability of funding to meet cyanide decommissioning costs.

**6. WORKER SAFETY: *Protect workers' health and safety from exposure to cyanide.***

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

**X in full compliance with**

- The operation is**
- in substantial compliance with **Standard of Practice 6.1**
  - not in compliance with

*Basis for this Finding/Deficiencies Identified:*

The site has 166 procedures in place covering the whole of the processing plant from crushing to the heap leach operations. These procedures link to the requirements of the standards, ISO 14001 and OHSAS 18001, the site being certified for both standards. The procedures were extensively sampled, reviewed and found to be effective. Routine daily and monthly inspection reports, legal inspections, and checklists were sampled and employees interviewed to check the effectiveness of systems and ensure that ensure proactive and reactive management. Heap leach operating procedures were verified and associated annual reviews and stability surveillance documentation was reviewed. The site change management procedure, was reviewed and examples of its used sighted. Appropriate PPE and pre-work inspections are specified in procedures for all cyanide-related tasks. Site procedures were extensively checked through examination and interview and records relating to risk assessments checked for worker input and involvement. Checks and balances are in place through worker involvement in risk assessments, through consultations in Health & Safety Committee meetings, Safety Representatives meetings, tool box talks, weekly crew meetings, and during shift meetings.

*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 operation is**
- in substantial compliance with **Standard of Practice 6.2**
  - not in compliance with

*Basis for this Finding/Deficiencies Identified:*

The measurement of pH occurs during mixing operations. Cement is added to the agglomeration feed to assist with agglomeration as well as to aid in pH control. The pH is normally high at 11.5 and the pH of make up water is above 10.5, adjusted with Sodium

Hydroxide before makeup commences. Hot Spots have been identified and surveys are carried out monthly. On-going inspections and checks are also used to monitor and check facilities and emergency response equipment functioning. Safety equipment such as safety showers, low pressure eye wash stations, and dry powder fire extinguishers are numerous and adequately signposted. A site wide pipe colour coding system is in operation which includes cyanide pipe colour coding and directional flow signage. Cyanide tanks are marked or colour coded. Only mobile HCN gas monitors are used on site and are calibrated and maintained according to procedures using manufacturers recommendations. MSDSs were sighted in both English and French. Formal employee interviews were used to check awareness and sensitivity to health and safety measures and the response from employees was found to be appropriate and acceptable. No cyanide incidents have occurred on site but an accident and incident reporting and investigation procedure was found to be in place and effective.

*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 operation is**  in substantial compliance with **Standard of Practice 6.3**  
 not in compliance with

*Basis for this Finding/Deficiencies Identified:*

Emergency cyanide equipment (such as oxygen, ambu-bag (resuscitator) cyanide PPE) is located in a container opposite the cyanide mixing and makeup area. Other cyanide emergency equipment is located in cupboards strategically around the site. On site, there are two local doctors and a trained professional nurse, competent to handle cyanide emergencies. Cyanide emergency procedures form part of the site-wide emergency preparedness plan which covers the whole site and includes the cyanide facilities. The scope of the plan includes site-based responses, the use of an emergency response team and includes provision for evacuation of patients by ambulance to the local Sadiola clinic which is adequately staffed by three trained doctors. Patients, on arrival at the clinic, can also be transferred to the Sadiola hospital, also equipped to handle cyanide emergencies. Emergency first aid equipment, antidotes (stored in fridges according to manufacturer's specifications), medical oxygen and BA sets are accessible and this is supported by a formal cyanide first aid procedure. Equipment is regularly checked and tested and mock drills are held on site and in conjunction with the hospital. Interviews confirmed employee knowledge of cyanide hazards, and emergency response.





**7. EMERGENCY RESPONSE** *Protect communities and the environment through the development of emergency response strategies and capabilities.*

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

**X in full compliance with**

**The operation is**

- in substantial compliance with **Standard of Practice 7.1**  
 not in compliance with

*Basis for this Finding/Deficiencies Identified:*

A procedural HAZOP study was used to develop the various site specific emergency cyanide scenarios. The emergency preparedness plan combines existing procedural responses and emergency provisions to deal with the various site specific scenarios and includes and identifies the emergency response team and coordinators who are on all shifts. The site has a copy of the Transport Management Plan which includes transport cyanide emergency responses. An on site fully equipped emergency cyanide trailer is available for on and off site cyanide emergencies. The Plan includes provision for clearing site personnel, potentially affected communities, use of cyanide antidotes and first aid measures, control of releases at their source and containment and mitigation of releases. These preparations are regularly reviewed in the light of changes, mock drill learning points and employee feedback.

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

**X in full compliance with**

**The operation is**

- in substantial compliance with **Standard of Practice 7.2**  
 not in compliance with

*Basis for this Finding/Deficiencies Identified:*

Representatives of the workforce were involved in the risk assessment to develop the emergency scenarios and response in the emergency response plan and procedures. Health and Safety Committee and Shift meetings are used to communicate developments and changes in all cyanide activities, including emergency response. Community representatives form a cyanide committee which is trained in cyanide awareness and cyanide emergencies three monthly, although they do not take part in emergencies. Presentation materials and documentation on the communications was sighted. Full cycle drills are used to involve clinic and hospital staff in planning processes. Local response

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agencies will not be used in cyanide emergencies as they are not equipped or trained to deal with cyanide emergencies.

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

**X in full compliance with**

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

*Basis for this Finding/Deficiencies Identified:*

The Emergency Preparedness Plan details clear duties, roles and responsibilities for the emergency response team. The on site commander is the Plant Manager and the Plant Engineer and their operational function is the authority to commit the necessary resources. Emergency equipment lists were checked and site inspections confirmed availability and readiness. The Plan includes contact information (telephone, cell phone, etc) of resources for the various scenarios and callout procedures. Emergency Team members were checked and training records and assessments showed the individuals to be well prepared and well equipped for cyanide emergencies. Periodic full scale drills, and spill drills involving stakeholders are undertaken to ensure that roles and responsibilities are understood and clearly implemented. No outside responders are used during cyanide emergencies and communities do not take part in cyanide emergencies, although they are given information on cyanide emergencies.

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

**X in full compliance with**

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

*Basis for this Finding/Deficiencies Identified:*

The Emergency Preparedness Plan includes a procedure which describes three levels of incidents with guidelines on actions, responsibilities and relevant authority and communication duties for each level of incident. Full details for appropriate emergency notification and reporting and the call-out procedure and contact information lists for medical personnel and communities are available and which are updated regularly. Media communication is done via a formal procedure.

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*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 operation is**  in substantial compliance with **Standard of Practice 7.5**  
 not in compliance with

*Basis for this Finding/Deficiencies Identified:*

The Emergency Preparedness Plan cross-references to detailed and specialised procedures which cover clean-up and remediation relating to releases, pipeline failures and spills, as appropriate to the site-specific identified scenarios. Use of neutralization processes and materials is clearly covered, as is disposal of contaminated materials. There is no existing natural water in which treatment chemicals would be released and water releases are controlled and sent to the satellite pit for reuse in the mine circuit. In the event of a spill, locations of boreholes are marked on a map to indicate where sampling is possible in cases of emergencies. based upon the existing framework and modified according to site and event specific requirements.

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

**X in full compliance with**

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

*Basis for this Finding/Deficiencies Identified:*

The Emergency Preparedness Plan is reviewed regularly on a scheduled basis, incorporated in the Plan. The Plan is required to be reviewed annually following incidents and emergency drills or when new information regarding cyanide becomes available. The Plan requires regular mock drills to be undertaken as a part of the testing and review of the Plan's content and mock drill reports include recommendations for improvements.

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

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

**X in full compliance with**

- The operation is**  in substantial compliance with **Standard of Practice 8.1**
- not in compliance with

*Basis for this Finding/Deficiencies Identified:*

All plant employees receive basic cyanide awareness training. The site training matrix specifies the level of cyanide training required for different levels of employees in different areas. Site cyanide training programs were reviewed. Nine randomly selected employees were checked in interviews on their understanding of cyanide hazards, first aid and emergency response and this was verified through checking of their training records. Levels of understanding of cyanide and cyanide hazards was good. Refresher training is conducted six monthly.

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

**X in full compliance with**

- The operation is**  in substantial compliance with **Standard of Practice 8.2**
- not in compliance with

*Basis for this Finding/Deficiencies Identified:*

The site's electronic training matrix details all training requirements for all cyanide workers in the plant. New employees are trained and passed out before being allowed to work in the Plant. Employees are trained and given a written test followed by an on site questioning session. Illiterate staff are given an oral examination using Bambara (local language) to confirm their understanding. Standard Operating Procedures are used as the training source material. Training is conducted by a qualified trainer. Foremen conduct Planned Task Observations (PTOs) on Standard Operating Procedures to test training effectiveness and application. Full records are kept of training and induction training for 40 years.

*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 operation is**  in substantial compliance with Standard of Practice 8.3

not in compliance with

*Basis for this Finding/Deficiencies Identified:*

All employees receive cyanide training which includes cyanide first aid and cyanide releases. A separate emergency response team will deal with cyanide incidents. Advanced and external cyanide training is given to the emergency response teams. Periodic mock drills are undertaken and training personnel attend these drills and formally evaluate response and performance. Training records were checked to confirm attendance and successful completion. General cyanide worker refresher training scheduled 6 monthly. Specialised Emergency Team refresher training is done annually as per schedule.

**9. DIALOGUE: Engage in public consultation and disclosure.**

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

**X in full compliance with**

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

*Basis for this Finding/Deficiencies Identified:*

The site has contact with six villages: Niamboulama, Alamoutala, Djinguilou, Sangafara, Yatela, Kourouketo. A Village Committee consisting of 2 men and 2 women from each of the 6 villages is in place. Village representatives change periodically. The function of this committee is as a general liaison with the Mine. There is a fixed Cyanide Committee for the 6 villages in place (2 reps per village). The minutes of the May, September training and communication meetings were reviewed. 3 Monthly cyanide awareness and emergency training is in place for the cyanide committee, which has included a plant visit. The representatives are the main contacts for communicating any cyanide emergencies or cyanide information to the village, and vice versa.

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

**X in full compliance with**

**The operation is**  in substantial compliance with **Standard of Practice 9.2**

not in compliance with

*Basis for this Finding/Deficiencies Identified:*

Community communications are two way and thus this section is the same as 9.1. The site has contact with six villages: Niamboulama, Alamoutala, Djinguilou, Sangafara, Yatela, Kourouketo. A Village Committee consisting of 2 men and 2 women from each of the 6 villages is in place. Village representatives change periodically. The function of this committee is as a general liaison with the Mine. There is a fixed Cyanide Committee for the 6 villages in place (2 reps per village). The minutes of the May, September training and communication meetings were reviewed. 3 Monthly cyanide awareness and emergency training is in place for the cyanide committee, which has included a plant visit. The representatives are the main contacts for communicating any cyanide emergencies or cyanide information to the village, and vice versa.

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

**X in full compliance with**

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

*Basis for this Finding/Deficiencies Identified:*

An information pamphlet entitled “Yatela Gold Mine – A New Chapter” has been printed in both English and French, which includes a flow sheet on the plant and information on gold recovery and treatment. A significantly high percentage of the local population is illiterate and most information is communicated orally in French, Bambara and Malinke (the latter being local languages).

The communication protocol in place varies from level 1 to 3. Level 1: is contained or controlled within a specific area (plant TSF or bund). The incident is dealt with within the locality. Level 2: the capacity to spread or may have influence on neighbouring activities or enlarge and may require internal / external emergency resources. The incident or emergency is dealt with by the emergency preparedness plan. Level 3: is significant in size and requires external support. Its characteristics are dealt with by the Sadiola Crisis Management Team. The General Manager initiates all reporting to external bodies and interested parties in conjunction with the Social Development Manager. All Level 2 and Level 3 incidents are identified to the public in AngloGold Ashanti’s Annual Report.

