

***INTERNATIONAL CYANIDE
MANAGEMENT INSTITUTE***

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

Summary Audit Report

***AngloGold Ashanti
Sadiola Gold Mine
Mali***

3rd – 7th November 2008



Name of Operation: Sadiola Gold Mine

Name of Operation Owner: AngloGold Ashanti – 38%
IAMGOLD Corporation – 38%
Mali Government – 18%
IFC – 6%

Name of Operation Operator: AngloGold Ashanti

Name of Responsible Manager: Mr Adama Coulibaly, Plant Manager

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Location detail and description of operation

The Sadiola Gold Mine is located in the Kayes region, 80 kms from Kayes town in Mali (West Africa). Gold processing uses the conventional plant consisting of crushing, milling, leach adsorption and elution. The elution uses AARL process. The plant consists of two twin streams capable to process soft oxide and soft sulphide with a limited amount of hard component.

1. Ore reception section

The ore is loaded into the surge bins below which are apron feeders feeding mineral sizers at a variable speed that allow controlling the feed rate. The ore fractions prior the milling are reduced to 100% passing 300 mm size from a maximum feed fraction size of 900 mm from grizzly bars on top of the bins. Each stream is capable to deliver a maximum of 400 tons per hour (tph) of ore.

2. Milling section operation

There are two primary mills receiving fresh ore from the ore reception by conveyor belt transportation. The primary mills can run on open or close circuit. The mills are running in open circuit when the underflow of the primary mill cyclones feeds the regrind mill. But when the cyclone underflow returns back into the mill, thus the mill is on close circuit. The ore is milled to obtain a product with a density of 1.45 to 1.50 containing minimum 45 % of 75 microns. The mill

product is diluted in the discharge sump to reach the required cyclone feed density between 1.35 and 1.40 depending on the ore type. The hydro cyclones (Krebs cyclones) classify the slurry to get an overflow with minimum 80% of fractions minus 75 microns. The throughput averages 330 tph in open circuit and 270 tph in close circuit. The viscosity modifier is added into the mills when the slurry viscosity is above 80 kpa.s^{-1} . A gravity plant installed since Dec 08 consists of a screening facility, a falcon concentrator and a Gekko unit used for intensive cyanidation in the leach reactor. The pregnant solution is pumped to electrowinning in the smelt house and the solids residue back to the regrind mill.

3. Leaching section

The cyclone overflow passes through linear screens prior discharging into the preoxidation tanks. There are EDR pumps connected to the preoxidation tanks to supply oxygen through injection points on the pipeline. During sulphide ore treatment it is necessary to add some hydrogen peroxide in order to increase the dissolved oxygen concentration to the right level and maintain it. The preoxidation tank overflows into the surge tank where the lead nitrate is added at a rate of 300 g/t during sulphide treatment. No lead is added when processing oxide ore. The lime addition is performed in tank 1. An EDR pump is fitted to that tank as well. The slurry pH is controlled at 10.0 – 10.2 before sodium cyanide addition. The cyanide is added into the leach tank2 at a concentration between 450 and 500 ppm for sulphide and 180 to 200 ppm for oxide. There are ten leach tanks on each stream with a capacity of 1350 m^3 to assure the required residence time. Automatic cyanide analyzers are in line to control the cyanide concentration and dosing rate as closer as possible to the set point. No more cyanide is added downstream to maintain the concentration.

4. Adsorption section

The slurry overflows by gravity into adsorption vessels containing activated carbon except the first vessels used as grit catchers. The interstage NKM screens retain the carbon in the tanks. The carbon movement upstream is performed with the carbon transfer pumps installed in each tank. There are height adsorption tanks in series with gravity flow. The last tanks are used for detoxification of residue slurry prior pumping to slimes dam. The cyanide level in adsorption tank 5 is determined by the in line cyanide analyzer and the results are used to predict the quantity of reagents required for an effective residue cyanide destruction. A WAD (Weak Acid Dissociable) cyanide analyzer is installed at the plant tail for optimization control of the cyanide neutralization process. The unit takes sample every 30 minutes on each stream and measure the WAD cyanide level. EDR pumps are installed at the detoxification CIP tanks in order to supply dissolved oxygen required for cyanide neutralization. Hydrogen peroxide 70% strength, sodium metabisulphite with solution RD from 1050 to 1070, and copper sulphate are dosed in last CIP tank for the detoxification.

5. Residue section

A manual sample is taken every hour at the common residue line and sent to the chemical laboratory for free cyanide and WAD cyanide analysis. There are 6 pumps on each residue stream connected the main residue line. After adsorption

the slurry flows into linear screens for catching eventual coarse carbon leaving the circuit when the NKM screens are passing.

6. Tailing storage facility

After detoxification the residue is pumped from the residue tank to the slimes dam via a steel pipeline 500 mm inside diameter. The flow pumped per hour varies between 1200 to 1400 m³/hr with a pressure of 10 to 12 bars. The slurry is cycloned to remove the coarse fractions for impoundment wall building. The fine fractions from cyclone overflow run down to the pool. The decanted water is pumped to the plant via the return water dam or directly from a barge decants system with four submersible pumps capable of pumping 300 m³/hr each. There are underdrains and elevated filter drains for stability of the wall. Piezometers installed along the starter wall and vibrocores allow determining the level of water at the wall foundation.

7. Elution and regeneration

The Loaded carbon is pumped from second adsorption tanks to elution on a daily basis. The carbon is acid washed with hydrochloric acid, neutralized with caustic soda and washed with clean water before elution. The elution consists of heating the carbon, soak in hot caustic cyanide solution (1.5 % cyanide and 3% caustic), and rinse with hot soft water. The gold bearing solution is pumped to electro winning in the smelt house and the eluted carbon is regenerated at 700°C and pumped back to adsorption circuit to the tank 6 or 7.



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

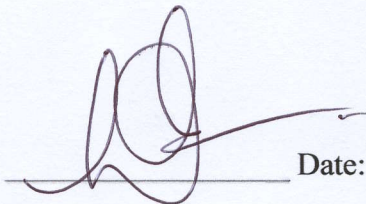
Audit Team Leader: Arend Hoogervorst

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Names and Signatures of Other Auditors:

Name : Dawid L Viljoen

Signature



Date: 21/9/09

Dates of Audit: 3rd – 7th November 2008

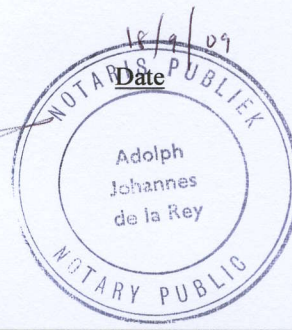
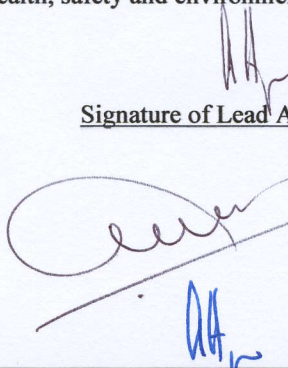
I attest that I meet the criteria for knowledge, experience and conflict of interest for Code Verification Audit Team Leader, established by the International Cyanide Management Institute and that all members of the audit team meet the applicable criteria established by the International Cyanide Management 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.

Sadiola Gold Mine

Facility

Signature of Lead Auditor



Certified/notarized:-

Sadiola Gold Mine

Signature of Lead Auditor

11th September 2009

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 Sadiola 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.

X in full compliance with

The operation is 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. The road transport contractor from the port of Dakar to the mine, SDV, is a Code signatory and was certified as fully compliant in August 2009. A due diligence exercise was undertaken for the sea transport leg and the ports of Freemantle and Dakar, internally by AGR and reviewed by an ICMI transportation auditor who found them Code compliant.

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

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

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 3.1**

 not in compliance with

Basis for this Finding/Deficiencies Identified:

The operation procures solid cyanide and mixing of solid cyanide is done on site. In addition to detailed, professionally designed, drawings for the cyanide mixing and storage area, an audit report of the civil engineering aspects of the cyanide facility by a Professional Engineer was sighted. Cyanide facilities are located on concrete and away from people and surface waters. Although they are in the same unit area as other reagents, separation walls are in place. 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 alarming at 80% and the interlocked cyanide transfer pump stops at 80%. 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. 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. The off-loading and “destuffing” procedures are thorough and detailed and PPE requirements are included. Use is made of the Buddy system to optimise safety and safe handling. 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.

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 25 cyanide specific procedures, 10 cyanide specific engineering procedures and 130 plant cyanide equipment operating procedures in place. 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. The site change management procedure was reviewed and examples of its used sighted.

Although GoldSim computerised water balance scenarios have not identified power outage needs for emergency power, the plant has emergency generators on the TSF to run a decant pump to remove water from the pool. There are also mobile diesel pumps available to pump water from the return water dam to the settling dam in case of power outages. The plant has contingency procedures covering start up and shutdown of the detoxification plant and the whole plant, which are governed by increase on on-line WAD cyanide levels and the results of monthly water balance evaluations and scenario checks.

Preventative maintenance and inspection type and frequency is controlled by an electronic system called PRAGMA. Key pumps, tanks, pipelines, bunded areas and equipment in the plant and the TSF were checked on the PRAGMA system and found to be systematically maintained through visual and mechanical checks, thickness tests and historical reviews. Although the Preventative Maintenance System (PMS) in place was found to be sound, some weaknesses were identified with the job cards and inspection criteria. It was agreed that these could be corrected by changing forms and demonstrating usage over time and this was included in a Corrective Action Plan.

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

X in full compliance with

The operation is in substantial compliance with Standard of Practice 4.2

- not in compliance with
- not subject to

Basis for this Finding/Deficiencies Identified:

Tests have been conducted to determine the optimum leach parameters for the various oxide and sulphide ores. Bottle roll tests are conducted on a daily basis and in-house test work is conducted. Diagnostic leach reports have been carried out by external laboratories and indications were that lower cyanide consumption was possible using a gravity recovery plant. Gold recovery and improved cyanide consumption was the result. A TAC 2000 cyanide on line analyser, supported by leach operator titrations, is used for automatic cyanide control. The cyanide control logic includes fuzzy logic algorithm using current and historical information to compute the new addition rates. A variable speed mono pump is used to vary cyanide feed rates automatically as per control algorithms. A WAD 1000 WAD analyser is used after detoxification on the residue. Cyanide control level set points are varied according the feed ore mineral composition: for sulphides : 450ppm and Oxides to 180 (reduced from 200ppm as NaCN before commissioning of the gravity circuit).

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 water balance was prepared using the GoldSim computerised, water balance model which covered the TSF and the water bodies associated with the plant. The model incorporates reliable, localized rainfall data for the last 20 years and considers both 1:50, 72 hour storm event and 1:100, 24 hour storm event. Operating parameters for the water usage strategy are updated monthly, based on 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. An emergency 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. The TSF is a valley dam and the phreatic surface is not affecting the water balance of dam stability.

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

in full compliance with

The operation is **X in substantial compliance with Standard of Practice 4.4**

not in compliance with

Basis for this Finding/Deficiencies Identified:

It was not possible to judge the WAD cyanide compliance status on the TSF, due to insufficient reliable monitoring data. Changing deposition points meant that the monitoring procedures needed to be modified to accommodating changing deposition circumstances which were affecting Code compliance points on the TSF. No confidence could be placed in whether the collected data was taken from the correct compliance points. A Corrective Action Plan was agreed upon to amend sampling procedures and collect sufficient WAD cyanide data from the TSF to obtain confidence in WAD cyanide compliance levels. However, the plant does have cyanide detoxification systems and on-line WAD cyanide measurement and the plant can be stopped if WAD cyanide levels cannot be reduced to below 80ppm (the level identified as being the maximum to ensure that the level does not exceed 50ppm WAD by the time it reaches the TSF) on leaving the plant.

Although the measurement levels on the dam, need improving, it is the auditors' opinion that the plant process controls are sufficient to keep the levels of WAD cyanide in the residues going to the TSF below levels at which they would be a risk to wildlife.

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 and maintains a zero discharge policy. There are also no surface water systems in the vicinity of the plant and the TSF.

The discharge system was not used for the last 2 years as more effective water management and pool control systems were put in place. There is provision for a detoxification in the discharge point for emergency situations, as discharging to the stream is only possible – but not definitely happening – during severe emergencies.

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

The mine applies measures to reduce seepage to groundwater. The TSF is equipped with under drains as well as elevated drains and plans are in hand to install additional elevated drains. A cut-off trench on western side is installed with the whole TSF surrounded by a clean/dirty water separation system. A borehole monitoring program is in place with monthly samples taken and analysed for WAD cyanide and results indicate cyanide levels at below the limits of detection. No beneficial uses are defined by legislation and there are no actual users of ground water down gradient of the site. Furthermore, the jurisdiction has not established a numerical standard for cyanide in ground water.

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

in full compliance with

The operation is **X 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, leach, CIP, residue, elution and acid wash tanks are all located within adequately sized, bunded areas. The TSF pipe route is equipped with trenches to contain flow leakages and catchment areas are located at low points to collect any leakages. Pipe patrols are undertaken daily by both operations and maintenance staff and there are no areas that warrant special protection due to risk to surface water. The plant is designed with sumps and pumps to return all spillages back to the process circuit. All cyanide tanks and pipelines are constructed of mild steel.

Cyanide dosing lines run across sections of unlined soil en route to leach and elution and require secondary containment. In addition, double wall pipes to and from the ILS (Intensive Leach System) system are mechanically incomplete and therefore not code

compliant. A Corrective Action Plan has been agreed to install appropriate secondary containment. The site has implemented additional inspection and control actions to manage the cyanide risk until the permanent solutions in the Corrective Action Plans are implemented.

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:

The new Intensive Leach Reactor (ILR) was built according to AngloGold Ashanti Corporate material specifications and quality control/quality assurance documentation relating to this was sighted, including foundation and excavation specifications, compaction tests and concrete testing results. An audit report of the civil engineering aspects of the main cyanide facility by a Professional Engineer was reviewed and the annual Plant Engineer's Inspection Report covering the entire plant was also sighted. The TSF is audited externally on an annual basis by a Geotechnical Engineer and monthly surveillance data is sent to consulting engineers for conformance evaluation and reports.

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:

A Monitoring Plan is in place which covers sampling of both surface and groundwater for cyanide. 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 daily to monthly. 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 procedure for decommissioning of the cyanide facility is in place which includes an implementation schedule. The procedure 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 Mine Closure Estimates include third party cyanide decommissioning costs.. 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 Finance 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 25 cyanide specific procedures, 10 cyanide specific engineering procedures and 130 plant cyanide equipment operating procedures in place. The procedures include PPE requirements and appropriate pre-work inspections. Min- risk assessments are used prior to tasks commencing and the clearance certificate specifies a range of pre-work inspections. 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. The site change management procedure was reviewed and examples of its used sighted.

A variety of opportunities are in place for worker inputs which include participation in risk assessments, daily safety meetings and weekly communication meetings, monthly safety representatives meetings, and pre-shift safety talks. Evidence was sighted which demonstrated active involvement in these forums.

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 pH is controlled at 10.2 and leach feed pumps and cyanide dosing pumps are interlocked with pH measurement to stop if the pH falls below 9.5. 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 and cyanide mixing and storage tanks are appropriately labeled and colour coded. There are 9 fixed HCN Polytron monitors and 62 hand held Monitox personal HCN monitors on site and these are calibrated and maintained by on-site Instrument Technicians according to procedures using manufacturers recommendations and ICMI Code requirements. MSDSs were sighted in both English and French. Appropriate pictogram warning signs were sighted throughout the site. 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 procedures 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:

A dedicated cyanide emergency station on site is fully equipped to handle cyanide incidents. Medical first aid boxes are placed at strategic areas: Solid cyanide make up and storage, top of leach and CIP at both trains, smelt house, emergency trailer, and control room. Audible and visual alarms are linked to man down alarms and also alarming in the control room on the SCADA. An emergency response team responds to cyanide emergencies and there is 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, which is 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, in conjunction with the clinic and hospital and the training officer. 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 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, in liaison with the Mine General Manager.. Emergency equipment lists were checked and site inspections confirmed availability and readiness. The Plan includes contact references (telephone, cell phone, etc) of resources for the various scenarios. 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 are available and which are updated regularly. Media communication is done via a formal procedure.

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. 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. 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 and response team coordinators are trained in emergency response procedures. 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:

Sadiola identified 8 villages:- Sékokoto, Médine, Sirimana, Farabakouta, Sadiola, Borokoné, Nétéko, Tabakoto as container key stakeholders. A representative workshop consisting of 2 men and 2 women from each of the 8 villages is in place. Village representatives change periodically. The function of the workshop is to act as a general liaison with the Mine. A fixed Cyanide Committee for the 8 villages in place. A plant visit explained the safety practices in place to prevent exposure to the work force and the environment to the adverse effects of cyanide and its derivatives. 3 Monthly cyanide awareness and emergency training is in place for the cyanide committee, including a plant visit. The representatives are the main contacts for communicating any cyanide emergencies to the village and the mine is in telephonic communication with key members of the committee. The various communication sessions gave the visitors and members, opportunities to communicate and dialogue on issues about cyanide on the site.

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:

The mine uses the same mechanism for receive comments and dialoguing with stakeholders so the evidence in 9.1 applies equally in 9.2. Sadiola identified 8 villages:- Sékokoto, Médine, Sirimana, Farabakouta, Sadiola, Borokoné, Nétéko, Tabakoto as container key stakeholders. A representative workshop consisting of 2 men and 2 women from each of the 8 villages is in place. Village representatives change periodically. The function of the workshop is to act as a general liaison with the Mine. A fixed Cyanide Committee for the 8 villages in place. A plant visit explained the safety practices in place to prevent exposure to the work force and the environment to the adverse effects of cyanide and its derivatives. 3 Monthly cyanide awareness and emergency training is in place for the cyanide committee, including a plant visit. The representatives are the main contacts for communicating any cyanide emergencies to the village and the mine is in telephonic communication with key members of the committee. The various communication sessions gave the visitors and members, opportunities to communicate and dialogue on issues about cyanide on the site.

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:

Plant visits are used for communicating how mine activities are conducted owing to illiteracy problems. Flow sheets describing the site process are handed out, supported by verbal presentations in Bambara (the local language). A communication protocol is in place which 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: capacity to spread or may have influence on neighboring activities or enlarge and may require internal / external emergency resources. The incident or emergency is dealt with by the emergency preparedness plan. Level 3: 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.