

***INTERNATIONAL CYANIDE
MANAGEMENT INSTITUTE***

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

Recertification Summary Audit Report

***AngloGold Ashanti
EGAF Gold Plant
South Africa***

17th – 21st May 2010



Name of Operation: AngloGold Ashanti EGAF Gold Plant

Name of Operation Owner: AngloGold Ashanti South African Region
Metallurgy

Name of Operation Operator: AngloGold Ashanti South African Region
Metallurgy

Name of Responsible Manager: Charles Wade, Plant Manager

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Location detail and description of operation:

AngloGold Ashanti East Gold Acid and Flotation (EGAF) Plant is situated in the North West Province of South Africa, approximately 10 km north of Orkney.

The plant processes reclaimed tailings material from the South Pay Dam (SPD) which constitutes 62 % of the feedstock, while part of the tailings (Tau Lekoa stream) from the Kopanang Gold Plant makes up 33% of the intake. Rehabilitation material from surface clean-up operations around the Vaal River Operations complex, which accounts for 5 % of EGAF's throughput, is first milled by a small ball mill (the milled product was previously treated by a dedicated CIL circuit but this was discontinued in 2009) and the milled product is now combined with the treatment of the SPD material. Residue from EGAF is pumped predominantly to Compartment 4 of the West Tailings Storage Facilities (TSFs). EGAF, as its name suggests, comprises a gold recovery plant, a sulphuric acid plant and a floatation plant that produces pyrite as the feed source for the acid plant. EGAF is really a hybrid of the geographical area of an old conventional gold plant and uranium plant that were built in the 1950s, but have incorporated recent technologies into some sections to improve the recovery efficiencies. The uranium circuit was dismantled in the early 1990s.

The main gold plant treats reclaimed material from the South Pay Dam (SPD) via receiving vessels (air agitated pachucas in the pre-leach section), where the pH is adjusted to 10,5 using slaked lime. Thereafter, cyanide is added to the slurry and the

cyanided pulp is pumped to the leach (slimes) section comprising 12 air agitated, pachucas. After a retention time of approximately 15 hours in these pachucas, the slime is transferred to a CIP circuit that utilizes 6 pump cells (mechanically agitated, flat-bottomed vessels operated in a carousel mode) to load the soluble gold onto the carbon contained in the pump cells. Loaded carbon is dropped out of the pump cell circuit on a daily basis and sent to the AngloGold Ashanti Noligwa Gold Plant for elution and ultimately, the production of bullion gold for despatch to the Rand Refinery. Eluted carbon is returned daily to EGAF and added back to the pump cells.

Residue slurry from the pump cell circuit is transferred to the float conditioning circuit where it can be combined with the Kopanang Gold Plant residue stream to prepare the slurry for the floatation plant. At the float conditioning circuit, 2 banks of 100 mm diameter cluster cyclones are used to effectively dewater the residue streams with a mass recovery of approximately 60% to the underflow and 40% to the overflow. The RD of the underflow stream is of the order 1.6 which means that this stream contains about 40% or less of the original cyanide bearing solution. The underflow is then contacted with sulphuric acid and calcine water (containing approx 4 g/l SO₂) from the Acid Plant to adjust the pH to 3.5. Thereafter, copper sulphate is dosed to this stream to further condition the stream ahead of the flotation process. Pyrite (FeS₂) is floated off from the underflow stream, thickened and pumped to the sulphuric acid plant where it is roasted to form sulphur dioxide. This gaseous stream is then treated further using the contact process to produce concentrated sulphuric acid which is sent by rail tankers to the South Uranium Plant. The solid remains from the acid plant, called calcine is pumped to the pre-leach circuit where it is combined with the SPD material for gold recovery as this material ultimately follows the SPD treatment route.

After the flotation process, the tails from this section is combined with the dilute stream (approx 60 % solution m/m) from the cluster cyclone overflow and transferred to the "backfill" thickeners for the recovery of the associated process water in the slurry stream. The underflow stream is pumped to the residue pachucas and then transferred to the TSFs for deposition. The overflow from the thickeners which is the water recovery is pumped back to the main plant for re-use as process water in the EGAF Plant's water reticulation circuit. NOTE: This section is not used for the generation of backfill as its name implies.

Rehabilitated material from surface clean up operations on the Vaal River Operations complex is first fed into a small ball mill that grinds the material to the required fineness. Thereafter, the milled slurry is transferred by pump to the leach section of the plant where this slurry is combined with the SPD material from the pre-leach section. On-line pH measurement in the first leach tank is used to adjust the pH of the slime to 10,5 if it is necessary to maintain the protective alkalinity. Thereafter the combined slurry is transferred to the CIP circuit (pump cells) and follows the treatment route described previously.



Auditor's Finding

This operation is

X in full compliance

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

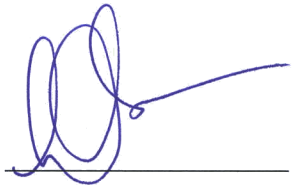
Audit Team Leader: Arend Hoogervorst

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Names and Signatures of Other Auditors:

Name : Dawid M. L Viljoen

Signature



Date: 24/9/2010

Dates of Audit: 17th – 21st May 2010


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.

EGAF Gold Plant

Facility

Signature of Lead Auditor


24/9/2010
Date

EGAF Gold Plant

Signature of Lead Auditor

24th September 2010

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:

There is an AngloGold Ashanti cyanide supply contract, covering all AngloGold Ashanti Gold Plants, including the EGAF Plant, in place with SASOL Polymers, as the sole supplier of liquid Sodium Cyanide, delivered by bulk tanker. The contract requires that the producer or supplier of cyanide must be a signatory to the ICMI Code and the producer or supplier must be ICMI certified. SASOL Polymers is a signatory to the Cyanide Code and was re-certified as a fully compliant Production Facility with the ICMI Cyanide Code on 2 March 2010.

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:

The supply contract between SASOL Polymers and AngloGold Ashanti specifically covers the responsibilities and requirements for transport, safety, security, unloading, emergency response (spills prevention and clean-up), route planning and risk assessments, community liaison, emergency response resource access and availability, training, and communication. SASOL Infrachem SiLog was re-certified on 13 January 2010 as a fully ICMI Code compliant transporter.

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 AngloGold Ashanti supply contract requires that the producer/supplier of cyanide must be a signatory to the ICMI Code and the producer, supplier and transporter must be ICMI certified. SASOL Infrachem SiLog was re-certified on 13 January 2010 as a fully ICMI Code compliant transporter, thus meeting all the requirements for appropriate emergency response planning and cyanide management.

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 uses only liquid cyanide, delivered by bulk tanker, and no mixing or storage of solid cyanide takes place on site. Cyanide manufacturer technical inspections have been successfully undertaken annually since certification. The offloading and storage facilities were designed and built with materials appropriate for use with cyanide and are located in concrete bunds away from people and surface waters. Cyanide is stored away from incompatible materials. The Cyanide offloading area is located on a concrete surface equipped with humps, for containing any spilled solutions. Solution from offloading ramp flows to a spillage sump where it is pumped to the process. The Tanks' level indicators display at the tank site and on the control room SCADA. High level alarms are set at 85% and interlocked with the delivery air valve to stop offloading at 85%. The Tanker offloading area is inspected on a shift basis and during pre-use checks before offloading to ensure no cracks are present that could lead to seepage to subsurface. The procedure covering cyanide unloading and pre-offloading inspections was reviewed and found to be effective. The Cyanide areas are within the access-controlled, plant security area which is securely fenced and not accessible by the public.

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:

Only liquid sodium cyanide is used and is delivered via bulk tanker to storage tanks and no mixing or storage of solid cyanide takes place on site. The offloading procedure is detailed, including PPE requirements, the use of a buddy in the process, and clearly sequenced actions to prevent spillages and accidental releases during off-loading.

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 47 cyanide process and engineering procedures in place, 22 environmental procedures, and 19 general emergency procedures which include consideration of the facility's design and operating assumptions and parameters;. These are supported by 30 TSF contractor operating and management procedures and a mandatory Code of Practice covering TSF operation. Operations and maintenance manuals for Mispah 2 TSF (incorporating the extension to the TSF), the cyclone operating manual for the conversion of West extension, and the Vaal River operating manual east and west complex, Mispah 1 and 2 paddock dams were also reviewed and found to be effective.

A CMMIS (Computerised Maintenance Management Information System) planned maintenance system and procedure is in place and functioning. Operational inspections conducted include: Shift inspections; Cyanide storage facility daily inspections; Legal two weekly inspections; Weekly engineers inspections; Annual PCR (Physical Condition Rating) inspections; and Shift foreman's daily inspections. Tank thickness testing is done on a planned basis for all high and low strength cyanide tanks. Flood tests are conducted on cyanide reagent strength bunds, triggered by the CMMIS system.

Routine daily, weekly, monthly and quarterly inspection reports, legal inspections, and checklists for proactive and reactive management were sampled to check the effectiveness of systems. Surface water diversions are inspected as part of the daily inspections and all return water dams are equipped with level indicators and transmitters displaying on the SCADA (computerised control and monitoring) system. There is a probabilistic water balance in place, and no scenario has been identified where the need has been highlighted to shut down the plant to prevent overtopping. Proactive planning and management of containment dams, dam levels and normal and abnormal conditions contributes to reduction of risk and the unlikely need to temporarily cease plant operations under abnormal precipitation events.

TSF inspections are carried out on a shift basis, daily, monthly, quarterly and annually. A change management procedure covering health, safety and environment is in place and operational and examples of major and minor change management exercises indicated that the process is used effectively.

The plant is equipped with pollution control dams, overflowing to a central spillage dam with sufficient reserve capacity to handle any potential scenarios which could lead to overtopping of the plant secondary containments without the need for emergency power.

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:

To date, dosing optimisation has resulted in lower than design dosing rates and a reduction in the cyanide consumption. Monthly bottle roll tests are conducted at SGS laboratories for the three different ore sources. The cyanide optimisation project for SPD (South Pay Dam) concluded that 4 hours after the initial cyanidation of the SPD and at a cyanide concentration of 0.25 kg/t (current plant conditions) will be the most economical choice for the addition of rehabilitation material for the combined treatment of these streams. The optimisation program for 2008 to date indicated further planned changes and the cyanide leach set points were reduced from 205g/t to 184 g/t in the year to date, 2010.

The strategy is to evaluate feed mix that is ratio of SPD to rehab material, conduct laboratory diagnostic leach programs and make addition changes based on results from laboratory tests. The control strategy is to use on-line instrumentation measuring throughput and on line instrumentation measuring cyanide levels in leach. These are integrated, using set points to control reagent strength cyanide addition rates. The plant uses an on-line, MINTEK cynoprobe to measure and control reagent strength cyanide addition rates. Evaluation of new control strategies to find improved control methods is practiced.

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 probabilistic water balance for the Vaal River TSF complex, including all the TSFs and the return water dams, and the plant itself, is in place. Information is included in the water balance on rainfall, 1:50, 1:100 year, 24 hour storm events, evaporation, and solution deposition. Rainfall data is collected daily on the TSF and combined with local rainfall measurements and data from the SA Weather Bureau. No run on occurs as all the TSFs and return water dams are on higher level than ground level. Storm water cut off trenches are in place around the plant. Rainfall scenarios in the water balance were used to determine return dam operating levels and emergency strategies to prevent overtopping. The water balance model considered power outages and showed that the containment dams could handle the 1:100 year storm event if the dams were 40% full. The dams overflow to the lined central spillage dam where an additional 10 000m³ is reserved for the EGAF in emergency conditions. The 10 000m³ capacity covers the 1:100 year

storm producing 9 355m³, assuming that the plant dams are 100% full and all precipitation will end up in the central spillage dam. Return water pond and containment dam levels are monitored ultrasonically and displayed on the SCADA system and are also subject to regular shiftly inspections. TSF phreatic levels are measured and stability analyses are conducted every two years, with reviews and recommendations regularly made on freeboard and pool management.

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:

Water samples are taken at tip points, decant and return water dams. WAD cyanide is measured at the plant tailings tanks using an on-line Cynoprobe and no value above 50 ppm WAD cyanide is allowed to be pumped to the TSFs. All return water dams are containing less than 50 ppm WAD cyanide and do not require any special measures to restrict access by wildlife. Monitoring records for the period since certification were reviewed and apart from a few exceedances in the three year period (which were investigated and recommendations implemented), there were no trended exceedances of the 50ppm WAD cyanide levels. Wild life mortality inspections are conducted daily and no cyanide-related mortalities have been reported for the whole TSF complex at Vaal River or at the EGAF plant during the period since certification.

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:

No direct or indirect discharges to surface water from cyanide facilities exist. No established mixing zone has been identified by regulatory authorities but river samples are taken for monitoring and control purposes. Upstream WAD Cyanide values from the Vaal River are at less than 0.217ppm (other non-signatory gold mining operations are operating upstream of the Vaal River Operations). Samples from down stream in the Vaal River are less than 0.015 ppm WAD Cyanide.

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

Mining processing plants' process water is the only beneficial use of groundwater in the area and all other water for domestic and livestock use is supplied in pipes by the Midvaal Water Company. The plant floor area is mostly covered with hard surface, all key areas are bunded, the plant is equipped with storm water drains flowing to containment dams and central spillage dam. Clean dirty water separation trenches are in place, Bokkamp dam is equipped with cut-off trenches. The Woodland Project (trees absorbing water) at MIZPAH and WEST slimes dam complex is in place to prevent possible seepage from contaminating ground water. Slimes dams are designed with under drains and trenches to collect seepage and prevent contamination. The Vaal River Dewatering Project includes the use of interception boreholes drilled on the bank of the Vaal River where seepage in the groundwater is pumped into a tank and recycled to the plants for operational use. No current jurisdictional standard exists for cyanide in groundwater, no beneficial use has been established, and no compliance points have been established.

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:

Pre-leach tanks, CIL tanks, residue tanks, pump cell tanks, cyanide storage tanks, are installed above concrete floors, equipped with bunds and links to lined spillage containment dams. Residue tanks are without a secondary containment and any spillage will drain across concreted areas to a concrete lined trench to a lined anti pollution dam, from where the spillage is returned to the process All leach tanks, reagent strength cyanide storage tanks are placed on concrete legs inside concrete bunds. All secondary containments are adequately sized to contain at least 100% of the largest tank. Solutions and liquids in secondary containment areas are pumped back into the circuit and all secondary containment areas are kept empty.

All reagent strength cyanide pipelines are equipped with secondary containment systems draining back to the reagent strength bund area. Slurry pipelines are fitted on pipe racks over concrete areas with leakages directed to the antipollution dams.

All unlined slurry pipelines are part of the CMMIS system. Pipelines are being lined with HDPE, urethane and rubber where previous leaks occurred. All new pipe lines will be lined. Pipelines where the risk of pollution exists, are placed in earth trenches to prevent spillage from entering the environment. Cyanide tanks and pipelines are manufactured from materials compatible with cyanide and high pH conditions, as per the AngloGold Ashanti Cyanide Guidelines document.

One area where the slurry lines crosses the 9 shaft bridge was identified as a potential risk. Special protection measures include the lining of all lines before crossing, and after crossing, the bridge.

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:

Detailed Quality Control/Quality Assurance documentation is available for the TSFs. The cyanide plant structural and civil investigations and a subsequent Audit of civil structures at the cyanide plant declared remedial work to the civil structures to have been completed satisfactorily and thus the professional engineer confirmed the plant, “fit for purpose”. A professional engineer also conducted further visual inspections and concluded that the plant is fit for purpose.

A sampled annual TSF audit report for 2009, signed by a professional engineer, concluding that the TSFs at Vaal River are generally in a good condition with no significant issues, was noted. The annual report utilises monthly piezometer data, freeboard surveys, monitoring and management data from the hazard management system, deposition strategy and data from the Life of Mine deposition plan.

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:

Procedures for environmental monitoring (including sample preservation and chain of custody procedures) of surface water and borehole water, developed by competent persons, were sighted and checked. Boreholes are placed and sampled upstream and downstream of the plant, The Vaal River is sampled up and downstream of the mine property. Boreholes are sampled monthly, the Vaal River is sampled monthly, wildlife is monitored daily, water dams are sampled monthly and plant boreholes are sampled quarterly.

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 cyanide decommissioning procedure is in place. The procedure includes a formalised schedule for decommissioning. The decommissioning 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 "AngloGold Ashanti Annual review and update of 2009 environmental rehabilitation and closure estimate" used the WAFU plant rehabilitation costs by an outside contractor and the cyanide producer as a basis for the cyanide decommissioning estimates. The Cost update for EGAF of November 2009 was reviewed and is reviewed annually. The AngloGold Environmental Rehabilitation Trust fund (as required by SA Law) includes provision for decontamination of the cyanide equipment at EGAF Gold Plant. Estimates

include line items which are decontamination of storage and dosing system, flame cut old sodium cyanide tanks, chemical cleaning of storages, decontamination of SASOL tanker, and associated medicals, induction, screening training and travel. A signed audit report for the trust fund by accountants Ernst and Young, dated 7 April 2010 was sighted.

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 52 cyanide process and engineering procedures in place, plus 26 general emergency procedures, supported by 30 TSF contractor operating and management procedures and a mandatory Code of Practice covering TSF operation. Operations and maintenance manuals for Mispah 2 TSF (incorporating the extension to the TSF), the Vaal River East and West complex Mispah 1 and 2 paddock dams and the Cyclone operation at the conversion of the West extension were also reviewed and found to be effective. Routine daily, weekly, monthly and quarterly inspection reports, legal inspections, and checklists for proactive and reactive management were sampled to check the effectiveness of systems. A change management procedure covering health, safety and environment is in place and operational and examples of major and minor change management exercises indicated that the process is used effectively.

Every procedure is developed from a risk assessment where worker input includes the Health and Safety Rep, artisans and management. Worker input is considered in Health and Safety meetings, mock cyanide drills, and Green Area Meetings. The plant newsletter, EGAF Times, is also used as a two way communication tool.

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 control in the plant is set at 10.5 with an interlock to cyanide pumps which are activated and alarmed at pH 10.5. A hot spot survey indicated no hot spots were identified in the plant. HCN gas monitors are calibrated three monthly (manufacturer's minimum requirement is six monthly) and manufacturer's calibration reports for fixed and portable units (four PAC 7000 personal monitors, five fixed Polytron monitors, and three Xam 5000 personal monitors) for Feb 2010. The records were confirmed for 2009. During 2009, Miniwarns and PAC III personal gas monitors were swapped for new equipment. Daily cyanide gas monitor inspection checklists were sighted and reviewed. On-going inspections and checks are also used to monitor and check facilities and emergency response equipment functioning and checklists covering three years since certification were sampled. Safety equipment such as safety showers, low pressure eye wash stations, and fire extinguishers are evident and adequately signposted.

Signage is in place warning on pipelines of toxic poisonous water, with no entry signs and no swimming signs, and no drinking signs are posted around the TSF area at appropriate points. Eating and drinking is only allowed in dedicated areas and this is indicated on signs and trained and reinforced during annual induction of contractors and plant staff. Cyanide pipelines are colour coded, and labelled, also indicating directional flow. Formal employee interviews were used to check awareness and sensitivity to health and safety measures and the response from employees and contractors alike, was found to be appropriate and acceptable. Accident and incident reporting and investigation procedures, based upon the site safety reporting requirements, were 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:

Cyanide alarms are raised using the man down alarm, portable radios, and Telkom telephones, potable water, medical oxygen resuscitator, and antidote kits which are kept in fridges, are all available in the cyanide storage area, top of leach and CIL, and an emergency cyanide trailer is also available. Inspection lists for the antidotes, oxygen BA sets, safety showers, Oxygen cylinders, and first aid boxes were inspected confirmed for the whole plant and sampled for the three years since certification. The Emergency Response Team, consisting of cyanide Appointees, is in place to deal with cyanide exposures using the Emergency Response Plan and related procedures. The West Vaal hospital in Orkney is the captive Company hospital to treat cyanide cases with the ambulance contractor, ER 24, available on site for patient transport and paramedical

services. Cyanide equipment is regularly checked and tested and mock drills are held regularly on site.

Man down drills are used to assure that the medical facility is competent and equipped to handle emergencies. Hospital staff are specifically trained to handle cyanide emergencies.

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:

The EGAF Emergency Response Plan was developed using the AngloGold Ashanti procedure ISO 14001 / OHSAS 18001 Reference ERP Procedure and the Plan includes cyanide scenarios as per a HAZOP study of emergency scenarios assessment for the EGAF plant. The emergency response plan is linked to specific emergency situations and the appropriate procedures and responses within the site's systems. The Emergency Response Plan includes escalations of emergency levels from level 1 to level 2 or 3, defined in the plan and includes managing issues such as evacuation and community impacts. 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:

HAZOP and risk assessments involve the work force and the update of risk assessment on emergency scenarios included the fulltime Health & Safety Steward. Green area meetings, Safety meetings and the “EGAF Times” are used to highlight and discuss cyanide issues. Emergency drills are used to involve the workforce in the response planning process and drill reports indicated evaluation and feedback. The Emergency

Response Plan is discussed in safety and health meetings. The community is not directly involved in the Plan but is informed on its contents during dialogue sessions. Drills are used to involve hospital and ambulance staff in planning processes.

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 Response Plan details clear duties, roles and responsibilities for the various emergency scenarios. The emergency equipment inventory was checked and site inspections confirmed availability and readiness. The Plan includes contact references (telephone, cell phone, etc) of internal and external resources for the various scenarios, particularly with detail where external resources and skills might be needed. Periodic drills involving internal and external stakeholders ensure that roles and responsibilities are understood and clearly implemented.

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 details for appropriate emergency notification and reporting (internal and external) and the call-out procedure and contact information lists which are updated regularly. Internal and external communication (including the Media) is dealt with in the Plan.

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 Response Plan cross-references 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 the disposal of contaminated materials and the use of treatment chemicals such as ferrous sulphate in surface water is prohibited.

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 Plan is required to be reviewed annually, following incidents and emergency drills or when new information regarding cyanide becomes available. The report of a drill which included a cyanide spill and cyanide related injury was sighted. Evidence was sighted of learning points emerging from the various cyanide man-down drills.

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 staff entering the plant gate receives 2 days induction refresher valid for 18 months, basic cyanide first aid valid for 12 months. Written tests are conducted with an 80% pass mark. All contractors working on the plant for longer than 2 days will receive the same induction as above, including any work involving the reagent strength cyanide facilities. All contractors or visitors working less than 2 days (working under direct supervision of a plant employee) will receive plant specific induction which includes cyanide overview. A

Training matrix is in place for staff and permanent contractors. Induction refresher training is done 18 monthly, cyanide related training 12 monthly, and all long term contractors induction refresher is done annually. A training matrix with a flagging system is used to ensure all staff is covered. Selected employees were checked in interviews on their understanding of cyanide hazards, first aid and emergency response and this was further verified through checking of their training records. Training records are kept indefinitely.

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:

A formal training matrix covers all process and engineering staff and National Unit Standards are used as a basis for the training. Competency is tested by on-the-job competency assessments. All employees receive cyanide induction training before being allowed on the plant. A Human Resources Department screening system is used as a control mechanism. No refresher training is done on National Unit Standards, but task assessments are done to ensure continued competency. Retraining is done in the case of deviations or substandard activity. On the job training is done using unit standards followed by assessment. Regular Task Assessments are done to measure continued competency. Records are kept indefinitely, centrally in an electronic matrix and also as hard copies. An electronic back up system is also in place.

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:

The Cyanide Emergency Response Team is in place on each shift and only cyanide appointees form part of the cyanide teams. The training matrix specifies training as per the Emergency Preparedness Plan (EPP). The shift foremen are trained in cyanide emergencies on afternoon and night shift and take responsibility as incident commander. Shift teams take part in after hour drills as part of emergency training. The EPP is trained

through the emergency drills, and no classroom training on the use of the actual plan and documentation is currently taking place. All Cyanide Appointees receive advanced training, including BA set training. The West Vaal Hospital and ER24 staff receive cyanide first aid intermediate training and are assessed for competency. They are also involved in drills for training purposes. The plant training officer is present at all drills and evaluates training effectiveness and reports to the AngloGold Ashanti central training unit where any changes to training procedures are made and implemented.

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:

Dialogue meetings are two-way dialogue sessions involving both dissemination of information and the answering of questions on cyanide. Discussions were held with the Farmers Forum, Polsec (Police security liaison meeting), traffic department, and the Kanana community forum. Cyanide was also discussed at an Emergency Response workshop involving the neighbouring Klerksdorp Fire and Rescue, and Traffic Departments, Potchefstroom fire service, SASOL Emergency Services, the Provincial Safety and Security Dept, Merafong Fire and Rescue, Potchefstroom traffic department, Randfontein Public Safety Department, and Randfontein and Westonaria Emergency Services. Cyanide was also discussed at an NUFCOR emergency response workshop. School presentations on cyanide were given at the Vaal Reefs primary school, and Technical high school, accompanied by warnings about cyanide contents of slimes dams.

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:

Dialogue meetings are two-way dialogue sessions involving both dissemination of information and the answering of questions on cyanide. Discussions were held with the Farmers Forum, Polsec (Police / security liaison meeting), traffic department, and the Kanana community forum. Cyanide was also discussed at an Emergency Response workshop involving the neighbouring Klerksdorp Fire and Rescue, and Traffic Departments, Potchefstroom fire service, SASOL Emergency Services, the Provincial Safety and Security Dept, Merafong Fire and Rescue, Potchefstroom traffic department, Randfontein Public Safety Department, and Randfontein and Westonaria Emergency Services. Cyanide was also discussed at an NUFCOR emergency response workshop. School presentations on cyanide were given at the Vaal Reefs primary school, and Technical high school, accompanied by warnings about cyanide contents of slimes dams.

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:

Cyanide Management Brochures were issued to local workers, hostel dwellers and township people. The brochure includes cyanide information, emergency information, cyanide exposure, and uses of cyanide. Leaflets containing TSF drowning warnings, electricity warnings, and vehicle safety were also distributed. The Vaal Reefs area has relatively high literacy levels in English but at meetings a senior company HR Officer translates in Zulu / Xhosa /Tswana / Sotho where required.

Any cyanide exposure is reported to the national Department of Mineral Resources and the Department of Water Affairs and exposure reports are available on the AngloGold Ashanti public web site. Cyanide incidents are reported in the AngloGold Ashanti Country Report South Africa Vaal River Operations. An incident was reported on leak on CIL cyanide delivery line 9 Feb 2007 in AngloGold Ashanti Country Report 2007 report. (<http://www.anglogold.co.za/NR/rdonlyres/8E6B8C1D-05C4-43E0-B63E-8CD8ACD12391/0/vaal.pdf>, Page 49). No cyanide exposures, hospitalisation or fatalities occurred or were reported during the period since certification.

