

***INTERNATIONAL CYANIDE
MANAGEMENT INSTITUTE***

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

Recertification Summary Audit Report

***AngloGold Ashanti
Mponeng Gold Plant
South Africa***

26th – 29th June 2017

***For the
International Cyanide Management Code***

Name of Operation: AngloGold Ashanti Mponeng Gold Plant

Name of Operation Owner: AngloGold Ashanti

Name of Operation Operator: AngloGold Ashanti

Name of Responsible Manager: Mr Rollet Masakona

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Location detail and description of operation:

Mponeng Gold Plant is located in the West Witwatersrand area, about 80km south west of Johannesburg. Mponeng Gold Plant is located in the West Wits complex. The West Wits complex is operated by AngloGold Ashanti and consists of 3 operational shafts and 2 metallurgical plants. Mponeng Gold Plant processes ore from TauTona, Savuka and the Mponeng shaft.

The plant is divided into three sections namely ore transport, treatment and recovery. Milling is comprised of ore receiving and preparation. Treatment is the processes in which the gold is extracted and concentrated, before transfer to the recovery section.

Ore is received from the Mponeng mine shaft on a daily basis, varying from 1000 tons per day on weekends to close to 6000 tons per day at peak production. The ore is stored temporarily in the reef silo with a capacity of ~2000 tons. Ore transport to the mill silos is by means of conveyer belts with a carrying capacity of between 200 to 500 maximum tons per hour. A vibrating feeder is used to feed Mponeng ore from the reef silo. The sequence of conveyers progress from R1, R3, R4, R5 and R9 respectively. R8 is the conveyer used to in-load Savuka and Tau Tona shafts' ore from the stockpile. R1 delivers the ore from the reef silo in series until R5, where it is combined with the stockpile from R8, all together to the milling sections through R9.



Lime is added to the thickener feed to achieve a pH of 10.2 reporting to the pre-leach tank. The leach section consists of 10 leach tanks in series. The first tank is used for pre-oxidation while cyanide is added to the second leach tank. Cyanide dosing control is affected by means of an on-line cyanide analyser and cyanide addition is controlled according to the dry tonnage feed to the leach and concentration set point in the dosing tank.

The leach slurry reports to the CIP tanks where activated carbon is used to adsorb the dissolved gold. The gold loaded carbon is removed from the CIP tanks and reports to the elution circuit for de-sorption of the gold back into solution. The CIP residue slurry reports to the backfill feed tank feeding the backfill section. The excess residue slurry not used for backfill reports to the final residue tank together with the fines removed from the backfill product. The final residue slurry is pumped to the tailings storage facility for disposal. The WAD (Weak Acid Dissociable) cyanide in the final residue is continually monitored by means of an on-line cyanide WAD analyser located in the plant. Ferrous sulphate is used to complex the residual free cyanide in the backfill material before it reports to the shaft backfill storage tanks.

Loaded carbon from the CIP section is washed before reporting to the acid wash columns where it is treated with hydrochloric acid. Following a sodium hydroxide neutralisation step, the gold is stripped from the carbon in the elution columns using a hot caustic cyanide solution. The gold solution from the elution circuit reports to the smelt house where the gold is recovered in the electrowinning cells and smelted into bullion bars.



Auditor's Finding

This operation is

in full compliance

in substantial compliance

not in compliance

with the International Cyanide Management Code.

This operation has not experienced compliance problems during the previous three year audit cycle.

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: 18/12/2017

Dates of Audit: 26th – 29th June 2017

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 Mining Operations Verification Protocol and using standard and accepted practices for health, safety and environmental audits.

Mponeng Gold Plant

Facility

Signature of Lead Auditor

Date



21/12/17

Mponeng Gold Plant

Signature of Lead Auditor

17th December 2017

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 Mponeng Gold Plant, in place with Sasol South Africa, as the sole direct supplier of liquid Sodium Cyanide, delivered by bulk tanker. The contract requires that the producer or supplier of cyanide must be compliant and certificated to the ICMI Code at all times for the duration of the agreement. 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 29 March 2016.

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:

There is a tripartite agreement between Sasol Polymers (cyanide producer), Tanker Services (cyanide transporter) and AngloGold Ashanti (all gold plants including

Mponeng Gold Plant) covering the transport and off-loading of dangerous goods in terms of SANS 10231:2006 and the National Road Traffic Act 93/1996 and its associated regulations. The agreement 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. Tanker Services Specialised Products Division, South Africa, was re-certified on 17 July 2015 as a transporter. Tanker Services provide the transportation of liquid sodium cyanide as part of the Sasol contract with AngloGold Ashanti (AGA).

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 (AGA) 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. Tanker Services Specialised Products Division, South Africa, was re-certified on 17 July 2015 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. The offloading and storage facilities were designed and built with materials appropriate for use with cyanide. The liquid cyanide storage tanks are each equipped with a ventilation pipe to prevent HCN (Hydrogen Cyanide) gas build-up. The offloading and storage areas for the liquid sodium cyanide are contained, barricaded, closed off with restricted access, bund walls installed and with no public areas close by. There are no surface waters or drainage to surface waters in the cyanide storage area or the Gold Plant as a whole.

Thickness tests were conducted on the cyanide storage tanks in November 2013 and the next tests are due in 2018 as a part of the plant's 5 year thickness test program. The Sasol Bulk Storage Facility Technical Inspection Audit Reports for 2015, 2016 and 2017 scored 98%, 98% and 99% respectively and no non-conformances were identified. The cyanide storage tanks are located on concrete plinths within a concrete bunded area, which acts as secondary containment. A spillage pump is located within the bunded area returning spillages to the barren tank. Flood tests on the Cyanide Storage Bund Area are conducted annually and tests for 2015 and 2016 showed no leaks.

Cyanide areas are away from incompatible materials and within an access controlled area which is securely fenced with strict key control. In addition, all cyanide storage and mixing tanks are located within the Gold Plant with entry being strictly controlled and the plant is surrounded by 3 metre high fences and razor wire. The Cyanide offloading area is located on a concrete surface for containing any spilled solutions. Drainage flows to a spillage sump equipped with a pump, which delivers into the main bund area. The procedure covering cyanide unloading was reviewed and found to be complete and functional. To prevent over filling, the cyanide off-loading procedure states that off-loading may not take place when the level of the receiving tank is 50% or higher. At 80%, the air valve will close automatically as the air valve is interlocked with the tank level indicator.

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:

Liquid sodium cyanide is delivered in bulk tankers from Sasol Polymers, by Tanker Services, directly to the Plant and offloaded into cyanide storage tanks. No solid cyanide



is used on the plant, therefore the only delivery containers are the bulk tankers themselves.

The offloading procedure is detailed, spelling out PPE (Personal Protective Equipment) requirements, use of a buddy in the process, spills clean up, cleaning after offloading, and tasks are clearly and appropriately sequenced to prevent spillages and accidental releases during off-loading. Supporting procedures include handling of cyanide spillage, using ferrous sulphate, and the AGA South Africa Region Metallurgy (SARM) Cyanide Code Implementation Guidelines, covering 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 Mponeng Gold Plant has the 93 special cyanide safety procedures. The TSF (Tailings Storage Facility) contractor has 8 TSF procedures used to operate the facility. A mandatory Code of Practice (COP) and operating manual covering TSF operations in the West Wits area (Savuka and Mponeng) is also in place. The freeboard and design storm event (1.3m and 1:50 year 24 storm event) are defined in the COP. The "Tailings Management Framework" (2007) prepared by the AGA Corporate Tailings Engineer is used as a management guideline. The aim of the document is stated to: present a fundamental set of principles, standards, objectives and performance criteria with which each TSF should apply, provide a yardstick against which TSF's should be assessed and measured, and encourage continuous improvement. The document is comprised of three main elements namely "Principles", "Standards of Practice" and "Guidelines". The Annual West Wits Operations Tailings Facilities Audit Report by the AGA Corporate Geotechnical Engineer for 2016 concluded that West Wits TSF 's are, "...well managed, evidencing good pool control and diligent operational practice. Deposition rates for both operational complexes are significantly lower than design and as a result the rates of rise are well within acceptable limits..." The Annual West Wits Operations Tailings Facilities Audit Report for 2015 was also sampled. Pipe patrols are done on the TSF on a 24 hour basis by the contractor. Faults are recorded in the contractor log book and reported to the Mine TSF Person on Standby, who will call out the artisans at the Maintenance Department, as appropriate. Monthly Surveillance Meetings and inspections are done for



both Savuka and Mponeng TSFs and surveillance reports were sampled for 2016 and 2017.

In the plant, routine daily, weekly, monthly and quarterly inspection reports, legal inspections, and checklists for proactive and reactive management on the plant and TSF were sampled to check the effectiveness of systems. The auditors deemed inspection frequencies adequate to assure and document that the plant is functioning within design parameters.

A temporary cessation of operations due to a power failure will be managed in accordance with the Cyanide Related Activities and Power Failures procedure, which states that all cyanide-related work is to stop during power outages due to the unavailability of safety alarms.

All liquid sodium cyanide and mixtures containing sodium cyanide is contained in tanks and pipes. If the power fails all liquids and mixtures will remain in their appropriate storage tanks and pipelines. No cyanide will be released into the environment due to the power failure. It is thus concluded that the operation does not require emergency power to prevent unintentional releases.

Chapter 31, “Backfill Product Management”, of the South Africa Region Metallurgy (SARM) Cyanide Code Implementation Guidelines, states the levels of cyanide permissible in the Backfill and provides management guidelines and a procedure covering backfill quality is in place.

The plant has a software-driven, SAP (Proprietary Name) Planned Maintenance System (PMS). The system lists assets, including cyanide equipment, and schedules planned maintenance inspections and keeps history of planned and breakdown maintenance carried out. The system was interrogated electronically and it was confirmed that the system has full historical details of planned and breakdown maintenance of cyanide equipment since the last recertification audit. This is supported by a corporate SIMM (Structural Integrity Management Monitoring) system. Operational inspections conducted include: shiftly inspections; cyanide storage facility daily inspections covering tanks, pumps, pipes, valves and secondary containment. Records were sampled for 2015, 2016 and January to June 2017. Tank inspections are done on a planned annual basis for all high and low strength cyanide tanks and this was checked in the SAP PMS electronic review. The plant and the TSF contractor use the same change management procedure covering health, safety and environment which are in place and operational.

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:

Various sampling and test work has been done to determine optimum cyanide addition. The work includes the following:

- Diagnostic Leach Analysis - December 2015 results indicated that the gold loss in residue attributing to cyanide leach issues is low. This result shows that cyanide addition in the leach was sufficient. The 30 May 2017 results indicated that feed material to the plant was different from the normal mix due to shaft upsets and the diagnostic leach results were also different from normal for this limited period. The January 2017 sample results indicated that the recovery performance was dependent on the ratio of feed from the different shafts. The automatic cyanide control system is used to dose the optimal rate of cyanide to the leach. A size analysis project was completed to improve grind by a cyclone upgrade. Bottle roll tests on two reef samples in December 2016 concluded that cyanide consumption is predicted to reduce, in line with the waste rock ratio in the mill feed increasing. A project is currently running to evaluate the impact of oxygen injection on process recovery. A project is currently running to evaluate the impact of oxygen injection on process recovery.

An online TAC 1000, free cyanide analyser is used to measure free cyanide and control the cyanide additions. Cyanide dosing control is done, based on the TAC readings sending a signal to a variable speed reagent dosing pump feeding into the leach feed dosing point. Free cyanide is measured in the leach head tank. Manual back-up titrations are done to check the TAC 1000 readings and identify any malfunctions.

The plant uses a TAC1000 on-line analyser to measure cyanide addition in the head leach tank and a Cynoprobe to monitor terminal cyanide in the Leach Residue before it leaves the Plant to go to the TSF. The TAC 1000 free cyanide measurements are used to adjust the cyanide automatic dosing valve. The leach feed pump is interlocked with the cyanide feed pumps, so as to stop the cyanide dosing when the feed stops. The cyanide dosing pump shares interlocking with the leach feed pH which kicks in at a pH of 10.25. The sampling interval on the TAC 1000 is set on 15 minutes and manual sampling is done at 2 hourly intervals to confirm TAC 1000 results. This information is fed into the ROC (Remote Operations Control - an advanced data collection system and monitoring station) on-line system so that all metallurgical staff can see the data. The addition of sodium cyanide is set at a mean of 115 ppm (parts per million) free cyanide. This point has been set as part of the optimisation program. If the set point is exceeded or if it is too low then the Metallurgical Engineer is informed via SMS text message and email. Currently the mine is not considering other control strategies.

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 GoldSim Probabilistic Water Balance (PWB) for the TSFs was developed in 2010 and incorporates scenario planning to do water demand and water conservation strategy. Water balance input sheets are updated quarterly and fed into GoldSim. Other updates are done when major changes occur such as the recent influx of additional groundwater due to neighbouring shafts that stopped pumping. Clean dirty separation studies (1:50 year storm event) data is fed into the GoldSim model in terms of dam sizes and overflows. The 50 year storm event model run on the GoldSim software includes every plant and TSF, dam and related catchment area reviewed, post-2009. A meteorological assessment was conducted by an independent consultant and the 1:50 year storm event was revised from 118mm to 130mm of precipitation in 24 hours. From there the plant specific conditions and requirements were assessed. The GoldSim model was used until the end of 2014.

Changes since 2014 included the newly commissioned re-mining operation (2016) depositing tailings on the Savuka TSF. The additional water, pumped from Savuka and the Blyvoor shafts underground pumps, following the closure of the neighbouring DRD Blyvoor mine, was added to the water input balance. (The underground water supply changes from the Blyvoor shafts do not fall into the scope of the ICMI audit as they contain no cyanide.) The GoldSim model was replaced at the end of 2014. The changes, as mentioned above, require a significant design change to the GoldSim model and a new water balance model for the West Wits region is being subsequently used. The model (sighted April 2017 probabilistic water balance update) includes evaporation, rainfall, seepage and interstitial water in the calculations. All the TSFs are using the conventional paddock dams and thus no run-on is appropriate. Storm water cut-off trenches are in place to prevent any potential run on. The model is updated monthly using actual rainfall, slurry feed rates and standard assumptions and actual measurements for interstitial water, seepage, and evaporation.

There is a spreadsheet-based Probabilistic Water Balance (PWB) for the Mponeng Gold Plant covering the pollution control dams (PCDs), which are the only dams in the process plant. The plant shift inspections include checking the dams, and the anti-pollution dam water control procedure requires levels to be kept at a maximum of 15% in order to maintain capacity to prevent overtopping.

The Mine constructed additional storm water cut-off trenches to prevent run on to the TSF, and thus reduce the overflow risk posed on return water dams during power outages and storm events.

The operation's operating procedures incorporate inspection and monitoring activities as necessary to implement the water balance and prevent overtopping of ponds and impoundments and unplanned discharge of cyanide solutions to the environment.

Overtopping risk has been checked by the South Africa Region (SAR) Surface Operations Dam Capacity Risk Assessment (September 2016), which includes the return water dams and the Corporate Environmental Department's Surface Water Management Procedure (2014).



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

X in full compliance with

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

Basis for this Finding/Deficiencies Identified:

The Gold Plant measures WAD (Weak Acid Dissociable) cyanide on-line, using a Cynoprobe unit sampling the tailings from the TSF tailings transfer tank at a frequency of 20 minutes. The data sighted are based on the daily average of the 72 samples. The data is also transferred to the ROC (Remote Operations Control) management system. This sampling point is before the tip point depositing the tailings to the TSF and is used as the WAD cyanide compliance point.

The WAD cyanide daily average graphs for 2014, 2015, 2016, 2017 were reviewed and the results summarised here.

2014: Only one period of exceedances was identified:-

- June showed exceedances for 4 days between 52.71 and 64.95 mg/l. The investigation was reviewed. The problem included the calibration of the TAC 1000 and an increased barren solution volume (pumped to CIP1) due to more elutions being done. Corrective action undertaken was to correct the TAC 1000 calibration and apply better control of barren pumping rates during the additional elution requirements.

2015: No exceedances were observed for the year.

- The Cynoprobe was down from 18 January to 8 February and the CIP tails free cyanide manual titration results used for monitoring cyanide during Cynoprobe off-line periods were reviewed. The tails two hourly samples showed only three points where the free cyanide was at 50 ppm.

- The plant was stopped periodically due to ore shortages in March.

2016: Two exceedances were observed:

- The plant was stopped periodically due to ore shortages in March.

- Exceedances were observed from 25 April to 30 April. The exceedances were investigated and traced to multiple issues including TAC 1000 under reading, high barren tank levels, uncontrolled feed to leach, and thickener underflow pumps cutting flow. Immediate remedial action included switching pumps, closer supervision of cyanide control and getting the TAC 1000 supplier in for TAC repairs and maintenance.

- October: An exceedance on 11 October of 55 mg/l resulted in the investigation pointing to the excess barren production again.

- November: An exceedance of 67 mg/l on the 11 November resulted in an investigation which identified extended pumping of barren solution. A longer term solution for the barren pumping issue includes a change to the design flow sheet and engineering of the barren system and pipelines, is underway. The HAZOP (Hazard Operability



Study/Analysis) study of rerouting barren to pre-leach project is complete. The actual work will commence early 2018.

2017:

- March: There were exceedances on 15 March to 72 mg/l and on 17 March to 53 mg/l WAD cyanide. The investigation identified the pumping of excess barren solution as the main reason for the high WAD cyanide. The increased requirement for elutions, due to changes in feed ore sources, caused the increased production of barren solution from the section. A long term solution was indicated.

- The longer term solution for the barren pumping issue includes rerouting the barren flow pipe to the leach feed which will result in cutting back the cyanide addition rates during the pumping of barren. As a result, the WAD cyanide should be controlled to less than 50 mg/l in the tailings tank and the residue delivered to the spigot at the TSF. The project is in the process of applying for capital as it is a major change to the process design. As the tip point at the TSF is deemed the compliance point and no significant, unexplained, exceedances were observed since the previous re-certification, the operation does not need to implement measures to restrict access by wildlife and livestock to open waters. No wildlife mortalities were recorded or reported since the previous re-certification and thus maintaining WAD cyanide concentrations of below 50mg/l is deemed effective preventing significant wildlife mortalities.

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:

There is no direct discharge from the Gold Plant to surface water. The West Wits tailings facilities have four legal discharge points to surface water. These discharges are not from any of the cyanide facilities (i.e. they are facilities that have less than 0.5 mg/l WAD cyanide and are therefore not defined as cyanide facilities) and, therefore, do not form part of the scope of the audit.

There have been no instances where the downstream river samples exceeded 0.022 mg/l WAD cyanide since the previous recertification. Therefore no remedial action has been required to prevent degradation of surface water.

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

There are no identified beneficial users of groundwater, other than mine processing plants, immediately down-gradient of the TSF operations.

Phyto-remediation (use of trees to absorb water) and evaporation paddocks have also been implemented to intercept any seepage.

All other water for domestic and livestock use in the immediate area is supplied by Rand Water, the local water supply utility. There is no numerical standard established by the applicable jurisdiction for WAD cyanide or any other species of cyanide in groundwater, therefore there are no compliance points below or down gradient of the gold plant or tailings facilities. Groundwater monitoring is undertaken to establish whether the tailing facilities are having an impact on the surrounding groundwater. Phyto-remediation and evaporation paddocks have also been implemented to intercept any seepage. Groundwater monitoring is undertaken twice a year. Since the last recertification, Groundwater monitoring results associated with the TSFs from 1 January 2014 to date, that were observed, did not exceed 0.02 mg/l for the Mponeng TSF.

The plant produces backfill for shafts and this is managed using Chapter 31, Backfill Product Management, of the South Africa Region Metallurgy (SARM) Cyanide Code Implementation Guidelines, which states that the levels of cyanide permissible in the backfill are :- Free Cyanide 26.5 ppm, Sodium Cyanide (total) 50 ppm, WAD Cyanide <50ppm. This is as per a MINTEK Technical Report: PWL AGA BF 100112 dated 12 January 2010. (MINTEK is South Africa's national mineral research organisation specialising in mineral processing, extractive metallurgy and related areas.) Backfill batch sample reports were reviewed and found to show free cyanide levels of below 3 ppm.

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

X in full compliance with

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

Basis for this Finding/Deficiencies Identified:

The offloading area for the liquid sodium cyanide is closed off with an installed concrete surface equipped with humps and drains to contain any spills. The drainage for this area is to a spillage sump equipped with a pump, which delivers any liquid into the main bund area for the sodium cyanide storage tanks from where it can then be pumped back into the process. The pump is manually started prior to offloading and is run during coupling and



uncoupling. There are no public areas close by. There are no surface waters or drainage to surface waters in the cyanide storage area or the Gold Plant as a whole.

The leach tanks and carbon in leach (CIL) tanks are located within separate concrete bunded areas, which act as secondary containment. A spillage pump is located within these bunded areas. Any overflow from these bunded areas goes to the large bunded area for the residue pumps via a concrete lined trench.

The liquid cyanide storage tanks, leach tanks and CIL tanks are adjacent to each other with the connecting pipe work being located above concrete bunded areas. The bunds for the leach and CIP tanks are interconnected with the bund for the residue which provides sufficient volume for all of the tank areas. The backfill bund area is connected to a silt trap and then to the concreted trench leading to the anti-pollution dams. The anti-pollution dam operating requirement is 2,780 m³ and the largest backfill tank is 1,020 m³. In summary, all secondary containments for cyanide unloading, storage, mixing and process tanks are sized to hold a volume greater than that of the largest tank within the containment area, and any piping draining back to the tank, and with additional capacity for the design storm event.

All cyanide dosing pipelines are contained in launders with splash covers. The launder drains back to the cyanide storage bund. All cyanide process pipelines run within the plant above concreted areas. Visual inspections are conducted daily.

Some 95% of the TSF pipelines for Mponeng were replaced with HDPE (High Density Polyethylene) lined steel pipelines as a spill prevention measure. Thickness testing is done on the remaining steel pipelines and managed via the SAP PMS. Pipe patrols are conducted six times per day to identify any leaks timeously.

As per the engineering design specification, Chapter 42 of South Africa Region Metallurgy (SARM) Cyanide Code Implementation Guidelines, July 2013, all pipelines and tanks for containment of cyanide solutions are made of steel, which is compatible with cyanide and high pH conditions.

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:

No material engineering design or practices have been undertaken at the Plant in the last three years. The original certification audit in 2007 confirmed quality control and quality assurance programs for the cyanide facilities.

The Annual West Wits Operations Tailings Facilities Audit Report by the AGA Corporate Geotechnical Engineer for 2016 concluded that West Wits TSFs (including Mponeng) are, "...well managed, evidencing good pool control and diligent operational

practice. Deposition rates for both operational complexes are significantly lower than design and as a result the rates of rise are well within acceptable limits...". The West Wits Operations Mponeng and Savuka Tailings Storage Facilities - Field investigations and Side Slope Stability SLR project dated March 2017 was also sighted. The report contains detailed conclusions and on-going recommendations.

AngloGold Ashanti has in place an on-going SIMM (Structural Integrity Management Monitoring) system report, which is a corporate risk monitoring system for plant structures for all mines, which regularly reviews and re-prioritises all structures and recommends repairs and maintenance. This replaces the need to keep original QA/QC records and covers where records are not available.

The Backfill plant structure repair project is currently underway and is estimated to be completed in Q1 2018. Cracking on the support columns for the CIP tanks is not seen to be nearly as critical as the backfill structures and will be scheduled after the completion of the backfill structural repair.

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 how samples should be taken, sample preservation techniques, chain of custody procedures and cyanide species to be analysed) of surface water and borehole water, and specialised speciation and environmental samples, developed by competent persons including a cyanide specialist chemist, were sighted and checked.

The sampling procedure for pulp and sampling solutions sampled from process streams, tailings discharge, bore-holes, penstocks, and return dams also includes unprotected soil contaminated by cyanide bearing slurry / solution or by concentrated cyanide reagents. The Procedure also includes a model cyanide environmental and speciation samples log sheet which includes sampling conditions covering weather, presence of livestock/animals and anthropogenic factors.

Boreholes are placed and sampled upstream and downstream of the plant twice yearly. Plant boreholes are sampled twice yearly, wildlife is monitored daily, and surface water is sampled monthly. The auditors deem the frequency with which the surface water and groundwater is monitored to be adequate to characterise the medium being monitored and identify any changes in a timely manner.



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:

The Cyanide Plant Decommissioning procedure stipulates the requirements (including a schedule) for decommissioning 12, 6 and 3 months prior to decommissioning of cyanide related infrastructure and equipment at the cessation of operations. The decommissioning procedure is reviewed every three years. Chapter 38, Basic Demolition Practices, in the South Africa Region Metallurgy (SARM) Cyanide Code Implementation Guidelines, July 2013 describes the process to be followed during decommissioning.

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 environmental liability estimates accounting, 2016, for Mponeng Gold Plant to fully fund third party implementation of the cyanide-related decommissioning measures identified in its site decommissioning plan was sighted. This included line items covering decontamination of storage and dosing systems (ZAR 296 502), JJM Filtration to fill and decontaminate a Sasol tanker (ZAR 54 947), chemical cleaning of the storage tanks (ZARR128 409) and associated medicals, induction and screening, training and travelling (ZAR 44 327). Closure liabilities are updated annually to take account of any changes at the facilities. The AngloGold Environmental Rehabilitation Trust Fund (as required by SA law) includes provision for decontamination of the cyanide equipment at Mponeng Gold Plant. The trust fund annual statement 2015 was signed by Accountants Director, A Darmalingam, of Nexia SAB & T, 30 March 2016 and sighted. The financial assurance mechanism is sufficient to cover cyanide-related decommissioning activities.

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 Mponeng Gold Plant has 93 special cyanide safety procedures. The TSF contractor has 8 TSF procedures used to operate the facility. A sample of procedures were checked and found to include requirements for appropriate Personal Protective Equipment (PPE) and appropriate pre-work inspections. A mandatory Code of Practice (COP) and operating manual covering TSF operations in the West Wits area (Savuka and Mponeng) is also in place. The freeboard and design storm event (1.3m and 1:50 year 24 storm event) are defined in the COP. The "Tailings Management Framework" (2007) prepared by the AGA Corporate Tailings Engineer is used as a management guideline. The aim of the document is stated to: present a fundamental set of principles, standards, objectives and performance criteria with which each TSF should apply, provide a yardstick against which TSF's should be assessed and measured, and encourage continuous improvement. The document is comprised of three main elements namely "Principles", "Standards of Practice" and "Guidelines". The Annual West Wits Operations Tailings Facilities Audit Report by the AGA Corporate Geotechnical Engineer for 2016 concluded that West Wits TSF 's are, "...well managed, evidencing good pool control and diligent operational practice. Deposition rates for both operational complexes are significantly lower than design and as a result the rates of rise are well within acceptable limits..." The Annual West Wits Operations Tailings Facilities Audit Report for 2015 was also sampled. Pipe patrols are done on the TSF on a 24 hour basis by the contractor. Faults are recorded in the contractor log book and reported to the Mine TSF Person on Standby, who will call out the artisans at the Maintenance Department, as appropriate. Monthly Surveillance Meetings and inspections are done for both Savuka and Mponeng TSFs and surveillance reports were sampled for 2016 and 2017.

In the plant, routine daily, weekly, monthly and quarterly inspection reports, legal inspections, and checklists for proactive and reactive management on the plant and TSF were sampled to check the effectiveness of systems. Chapter 31, "Backfill Product Management", of the South Africa Region Metallurgy (SARM) Cyanide Code Implementation Guidelines, states the levels of cyanide permissible in the Backfill and provides management guidelines and a procedure covering backfill quality is in place.

The plant has a software-driven, SAP Planned Maintenance System (PMS). The system lists assets, including cyanide equipment, and schedules planned maintenance inspections and keeps history of planned and breakdown maintenance carried out. The system was

interrogated electronically and it was confirmed that the system has full historical details of planned and breakdown maintenance of cyanide equipment since the last recertification audit. This is supported by a corporate SIMM (Structural Integrity Management Monitoring) system. Operational inspections conducted include: shiftly inspections; cyanide storage facility daily inspections covering tanks, pumps, pipes, valves and secondary containment. Records were sampled for 2015, 2016 and January to June 2017. Tank inspections are done on a planned annual basis for all high and low strength cyanide tanks and this was checked in the SAP PMS electronic review. The plant and the TSF contractor use the same change management procedure covering health, safety and environment which are in place and operational.

Worker inputs for health and safety matters, including procedures are obtained through plant Safety, Health & Environmental (SHE) meetings, Green Area/One Team Meetings (OTMs) and involvement in risk assessments. This was confirmed in reviews of a number of sampled meeting minutes held in 2015 and 2017. Monthly West Wits Tailings SHE meetings are undertaken involving both contractor and AGA TSF staff and the discussion of procedures is included in these meetings. It was confirmed in interviews that workers could raise health and safety issues (including procedures) at SHE meetings.

Standard of Practice 6.2: Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 6.2**

 not in compliance with

Basis for this Finding/Deficiencies Identified:

The Mponeng Gold Plant is currently operating a pH in the thickener of 10 and the PH in the leach is set at 10.5. There are 15 fixed HCN gas monitoring Polytrons units located around the plant at key hot spot areas. The plant has 14 Pac 7000 HCN gas personal monitors, 3 X-am 5000 HCN personal gas monitors and the TSF team leader has 1 PAC 7000 HCN gas personal monitor. The personal monitors are set with instantaneous (STEL) alarms set at 7.5 ppm and 10 ppm. The TWA is set by the occupational hygienist at 4.7ppm over an 8 hour period, with settings being password protected. Plant calibration frequency is 3 monthly and the manufacturers requirement is a minimum of 6 monthly. Calibration certificates for all equipment were sampled and reviewed.

All safety showers have an integrated eye wash and are linked to alarms in the SCADA (“Supervisory control and data acquisition” system” –computerised control system) in the control room. Safety showers were located at appropriate locations including the offloading and storage area and the leach dosing point. The safety showers are inspected and safety shower checklists for 2015 and January to July 2017 were sampled. Dry powder extinguishers located at strategic locations in the plant were observed during the site visit. Fire extinguishers are checked monthly and serviced annually. The monthly checklist files for fire extinguishers for 2015 and January to July 2017 were reviewed and sampled.

Slurry pipelines are marked indicating the presence of a toxic substance and flow direction. The use of appropriate signage is in place and covers no smoking, no open flames and no eating and drinking, which was confirmed during site inspection of the plant. It was further confirmed that this is trained and reinforced during annual induction of contractors and plant staff by staff interviewed. Pipelines are identified by colour coding. All reagent strength cyanide pipes are colour coded purple and indicate that they contain cyanide as well as indicating the appropriate flow direction. TSF pipelines are labelled indicating the presence of a toxic substance.

MSDS (Material Safety Data Sheet) documentation and cyanide first aid information was located throughout the plant. An accident and incident reporting and investigation system is in place and an example of a completed incident report and investigation was sighted. There have been no cyanide incidents on site since the last recertification audit.

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:

Written emergency response plans are in place covering the plant and the TSF and all employees and contractors. Mponeng Gold Plant has first aid rooms at the following locations: Cyanide Emergency First Aid Room (Cyanide Off-loading), Leach First Aid Room, Emergency Trailer and First Aid Room. It was observed during the site visit that water, oxygen, antidote kits, telephones and alarm systems are present where employees could potentially be exposed. A fully equipped emergency trailer is parked at the Cyanide Emergency Room. ER24 (ambulance/paramedic service provider) are called when there is an incident to provide paramedic response and transportation to West Wits AGA Hospital. ER 24 are on 24 Hour Emergency Response and have oxygen, resuscitator and qualified personnel available to assist with any cyanide exposure incident. Each operational ambulance and response vehicle has a Cyanide First Aid Kit. West Wits Hospital has oxygen, antidote kits, and resuscitator available to accept patients exposed to cyanide.

Cyanide antidote kits on site are stored in refrigerators and as directed by the manufacturer and are replaced on a central schedule that assures they will be effective when required.

Inspection registers for emergency equipment was checked as follows:- Plant Cyanide Antidote Kit (TriPac) was sampled from January to June 2017 and January to December 2015. Expiry dates of the TriPac are included in the inspections. The Self Contained Breathing Apparatus (SCBA) Equipment Register was sampled from January to June 2017 and January to December 2015. The First Aid Box Inspection Register was sampled from January to June 2017 and January to December 2015 and the Cyanide Emergency



Trailer Inspection Register was sampled from January to June 2017 and January to December 2015.

Cyanide Appointees have undertaken the relevant first aid training and make up the first aid team trained to conduct cyanide related first aid. ER24 are contracted to provide emergency assistance and transport patients to West Wits Hospital, which is operated by AGA. Hospital and ER24 staff are specifically trained to handle cyanide emergencies.

In the event of an emergency at the TSF, the Shift Forman will be immediately informed who will then call ER24 and at the same time inform the Tailings Production Metallurgist who then informs the nearest Plant Production Metallurgist who will send their Emergency Response Team (ERT) (The TSFs do not have their own ERT.). The Shift Foreman/ Tailings Production Metallurgist will also inform the AGA Occupational Health Doctor and Occupational Health Sister. ER 24 (contracted) and West Wits Hospital (AGA owned) provides emergency response and casualty assistance to the Savuka Gold Plant, Mponeng Gold Plant and West Wits Tailings. ER24 is stationed on site at West Wits Hospital close to Savuka Gold Plant.

Man down drills are used to assure that the medical facility is competent and equipped to handle emergencies. Drill reports were sighted and reviewed. A Drill schedule is in place and this was sighted for 2017, showing monthly cyanide drills. Full chain drills to the hospital are alternately scheduled between Savuka and Mponeng and drill reports shared. Hospital staff are specifically trained to handle cyanide emergencies and participate in drills.

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 Mponeng Gold Plant Emergency Preparedness Plan includes site specific cyanide scenario responses, based upon an Issue Base Risk Assessment, "Procedural HAZOP (Hazard and Operability Study (or Analysis)), Emergency Scenarios Assessment for Mponeng Gold Plant". The response scenarios are included in the Plan and make use of procedures. The Mandatory Code of Practice Mine Residue Deposits West Wits Tailings includes a section on TSF emergencies categorised as Situations A – D, which lists actions to be taken, and various responsibilities. The West Wits TSF section also has a procedure, Preparedness for Handling and Emergencies associated with TSF failure at



West Wits, and the TSF contractor has his own Emergency Response and Preparedness Plan.

The emergency response plans are linked to specific emergency situations and the appropriate procedures and responses within the site's systems.

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:

The operation involves its workforce in risk assessments, with the following being sighted, Issue-Based Risk Assessment, "Procedural HAZOP, Emergency Scenarios Assessment for Mponeng Gold Plant". Plant SHE Meetings also discussed different aspects of emergency response and the Plan. Different sections of the Plan are raised at One Team Meetings (OTM) and this was reflected in the meeting files that were reviewed. Potentially affected communities are not involved in the Plans but are kept informed of relevant sections via community meetings and presentations.

The various medical facilities and services involved in cyanide emergencies (ER24 and West Wits Hospital) are included in the emergency drills to keep them informed and in practice. The AGA Fire Captain liaises with the Municipal Fire Department on a regular basis and at gatherings like the Annual General Meeting of the Local Farmers and Randfontein Association where issues regarding the emergency response planning can be brought up. The West Wits Fire Department is also a member of the Fire Protection Association (FPA) where relevant topics are discussed. The Fire Captain also discusses emergency planning with neighbouring land owners to ensure there is a co-ordinated response. This includes the neighbouring game farm. Chemical HAZMAT, including cyanide truck accidents, are also discussed with the municipal fire department.

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 and training requirements 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 and through associated procedures.

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 to detailed and specialised procedures which cover clean-up and remediation relating to releases, use of ferrous sulphate, pipeline failures and spills, as appropriate to the site-specific identified scenarios. Use of neutralization processes and materials are clearly covered, as is disposal of contaminated materials, spill clean-up debris, and the use of treatment chemicals such as sodium hypochlorite, ferrous sulphate and hydrogen peroxide near the rivers and streams.

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 three yearly, following incidents and emergency drills or when new information regarding cyanide becomes available. Reports of drills which were held, including spill drills, were 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 AngloGold Ashanti staff entering the plant gate (Including TSF staff) receive a 2 day Induction. A refresher is undertaken no longer than 18 months after the previous course. This includes cyanide hazard recognition and basic cyanide first aid, which is refreshed every 12 months. The presentation used to undertake the Induction was sighted. Written tests are conducted for the induction and refresher courses which have a pass mark of 80%.

Contractors that will spend more than 3 days on the plant or if the contractor will be on the plant for less but will perform high risk work, will receive the same Induction Training as the employees. Contractors that will work less than 3 days on the plant (under direct supervision of a plant employee) will receive plant specific induction.

A training matrix is in place for all employees per plant/area showing the individuals and the various training modules including job specific training. The training matrix colour coding highlights the training employees have received (green); where the training is due to expire within 3 months (yellow); and where the training is out of date (red). The permanent contractors, Cyclone Projects, who work on the West Wits TSF keep their own training matrix.

The Induction is given to all people working for longer than 3 days on the process plant and includes the hospital staff and Cyanide Appointees and Emergency Response Team members. The General induction covers cyanide, PPE, symbolic signs, tools and equipment, waste management, emergency response, good housekeeping, SHE management, as well as security and workplace related hazards as part of the modules over two days. Training is done at West Wits by qualified trainers.



The basic cyanide first aid and medical treatment for cyanide exposures training includes cyanide chemistry, interacting with oxygen, toxicity, symptoms, gas generation, how cyanide is transported, SHE issues in the event of cyanide poisoning, first aid equipment for cyanide, first aid training, emergency response chain, warning alarm systems, emergency response by control room, buddy system requirements, Cyanide PPE requirements and use, cyanide PPE for hospitals, Gas detection instruments, Cyanide first aid and antidote kit regulation 24.8.2, contents of medical aid kit details, cyanide exposure and symptoms, consequence of cyanide poisoning, generation of HCN (Hydrogen Cyanide) gas, first aid procedure for cyanide poisoning, cyanide patient to be transported to the hospital directly, emergency response in case of incident including taking TriPac and the Chapter 42 Medical Treatment Procedure (South Africa Region Metallurgy (SARM) Cyanide Code Implementation Guidelines, July 2013, Rev 06), in the ambulance transport to the hospital, and the cyanide first aid protocol flow sheet and decision tree.

The Mponeng Gold Plant Training Matrix was sighted and confirmed that the 169 employees records are up to date and 99% trained as per matrix requirements. The Matrix has been in place since the previous re-certification audit and is rolled over as training is completed. Hard copy training records are kept.

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:

Workers (including plant and TSF employees and contractors) are trained to perform their normal production tasks, including unloading, mixing, production and maintenance with minimum risk to worker health and safety and in a manner that prevents unplanned cyanide releases. The training matrix was observed that defines what training each worker is to receive, based on their position and the tasks required of that position. The cyanide matrix covering all disciplines including Engineering (Maintenance), and Metallurgy (Plant Operations) was sighted and sampled. All positions and tasks where high cyanide risk exists, must, in addition, receive training as a Cyanide Appointee and be found competent in the training.

At Mponeng Gold Plant there is one trainer:- WC Diniso is a Registered Assessor, and he has done courses in best practice in training, presenting with confidence, and professional train the trainer.

All employees and permanent contractors are trained during the induction training prior to commencement of work related to cyanide. All employees receive Basic Cyanide First Aid Training during induction. Cyanide Off-loaders and Appointees are further trained



before working in areas where there is a potential for cyanide release. A Planned Task Observation (PTO) is undertaken the first time they are required to work in an area where there is a risk of cyanide release.

Once trained, Cyanide Appointees and Off-loaders receive identification cards with expiry dates of training so that it can be confirmed that training is up to date before any permit to carry out work in an area where cyanide may be released is issued. The Human Resources routing form covers all the necessary sign offs before an access card is issued. That includes all the necessary sign offs by the training department. Transferred employees are covered by the internal transfer system and they will receive section induction at the new plant.

The Mine conducts Planned Task Observations (PTOs) and conducts refresher training if deviations are identified by the PTO. Deviations on PTO's are recorded in the Risk Management System (RMS) and corrective actions will follow, as appropriate, which includes retraining, coaching or disciplinary measures. A schedule for PTO's is in place at the Plant. PTO's are done by the Supervisor at a minimum of 4 per month. If a deviation is noted, the person is sent for re-training and again for a PTO by the Training Officer. Examples of completed PTOs from various departments were sampled and reviewed. Records of all training are retained electronically for at least the life of the plant in the EduCos software package. Hard copy records per person per plant and per contractor are also kept for at least the life of the plant. All hardcopy training records are archived at the metallurgy central training centre where the hardcopies are being scanned using the ScanCo system since 2017. The training records of interviewees (see list above) were sampled to check the record keeping process of training and this was found to be accurate and complete.

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 and contractors receive Basic Cyanide First Aid training during the induction training. However, only Cyanide Appointees form the Emergency Response Team in the plant. The Emergency response procedure is trained during monthly training drills and full scale emergency drills. Cyanide Appointees have all obtained a certificate in Self Contained Breathing Apparatus and Confined Space Rescue (SCBA) training. Furthermore the Medical Response Team (ER 24, Casualty Department Nurses) receive Intermediate Cyanide First Aid training. Community members are not involved in the Emergency Plan.

Refresher Basic Cyanide First Aid is conducted every 12 months. Intermediate Cyanide First Aid is assessed every 12 months as part of the training for the Cyanide Appointees and Off-loaders. Advanced Cyanide First Aid (including SCBA) is refreshed every 2

years. Fire Incident Command is refreshed every 2 years. The Cyanide Appointee and Off-loading training is refreshed every year and Cyanide Emergency drills are undertaken monthly. It was confirmed that training and refresher training were up to date in the training matrix.

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.

Records of all training are retained electronically for at least the life of the plant in the EduCos software package. Hard copy records per person per plant and per contractor are also kept for at least the life of the plant. All hardcopy training records are archived at the metallurgy central training where the hardcopies are being scanned using the ScanCo system since 2017. The training records of interviewees (see list above) were sampled to check the record keeping process of training and this was found to be accurate and complete.

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. Members of the Community can raise any mine-related concerns (including cyanide) at the Vaal River and West Wits Environmental Forums. Attendance lists of Community members, local businessman, Government Officials, and Councillors were sighted. Minutes of meetings were sighted of the West Wits Operations Forum meeting held on 9 March 2017 in the municipal boardroom, Carletonville and the Vaal River Operation meeting held on 18 May 2017 at the Peacock Guesthouse, Stilfontein.

A Cyanide Management Poster for Processing Plants is posted at the plant and is made available publically. Examples were placed at the Vaal Reefs Supermarket and Take Away, the Orkney Library, and the Vaal Reefs Technical High School.

A Walk about at the Taxi Rank and Spa shops at Wedela Township on 22 Aug 2016 involved members of the pipe patrol, cyanide champion, and the Production Metallurgist: Tailings, to inform community members about the Mines activities and raise cyanide awareness.

At a 15 July 2015 meeting of KOSH (Klerksdorp, Orkney, Stilfontein, Hartebeestfontein) there was mention of the presence of toxic chemicals on the TSF which was of interest to



cattle owners. The meeting was held at the offices of the Department of Mineral Resources (DMR), Klerksdorp.

A presentation to Umsizi (running the AGA Livestock Management Plan-LMP) made in May 2017 detailed the LMP which was developed as a result of problems with free ranging livestock (e.g. accidents and drinking of contaminated water and destruction of veld). The initiative is aimed at the owners of livestock which might affect, or be affected by, the mining operations.

The West Wits Fire Captain liaises with the Municipal Fire Department on a regular basis on all fire matters related to the mines (including, where appropriate, cyanide). The Fire Captain also discusses emergency planning with neighbouring land owners to ensure there is a co-ordinated response. Chemical HAZMAT, including cyanide truck accidents, are discussed with the municipal fire department.

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. Members of the Community can raise any mine-related concerns (including cyanide) at the Vaal River and West Wits Environmental Forums. Attendance lists of Community members, local businessman, Government Officials, and Councillors were sighted. Minutes of meetings were sighted of the West Wits Operations Forum meeting held on 9 March 2017 in the municipal boardroom, Carletonville and the Vaal River Operation meeting held on 18 May 2017 at the Peacock Guesthouse, Stilfontein.

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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:

A Cyanide Management Poster for Processing Plants explaining what cyanide and ICMI are, the possible effects on the environment, and reasons for its use is available publically and displayed in the plant. This poster is available for distribution by the Plant either electronically or in paper form. The majority of the community in the vicinity of the AGA Gold Plants in the West Wits Region are literate. A “Walk About” at the local Taxi rank was conducted in the local languages (Xhosa and Sotho).

Any cyanide gassings must be reported to the Department of Minerals within 14 days, when confirmed to be inhalation of poisonous gas. Fatalities are reported immediately.

The Group-wide, AGA Workforce Management Reporting System (WMRS) is used as an electronic reporting platform for all safety and environmental incidents, inspections and deviations as per the procedure. Accidents are classified as Minor, Moderate, High, Major and Extreme.

No cyanide exposure, hospitalisation or fatalities occurred or were reported in the last three years at the Savuka Plant or TSF and no cyanide release of water or slurry containing cyanide was released.

The following were sighted on the AGA website:

1. AGA Sustainability Report published 2016 - page 42 - reporting on ICMI certification for AngloGold Ashanti - report on incident Cocoruto in Brazil, p 46. Cyanide usage is reported on in the report. (<http://www.aga-reports.com/16/sdr>)

2. AGA Sustainability Report for 2014 - p 25 reporting on cyanide usage. 20 AGA cyanide plants are certified under the ICMI Cyanide Code. (<http://www.aga-reports.com/14/sdr/>)

3. AGA Sustainability Report for 2015 - p 38 mentioning 4 sites were recertified, p 39 reporting on 2 Obuasi incidents, 1 Vaal River 2015 incident when slurry pipeline failed at Kopanang resulting in a spillage to the storm water trench. Cyanide Code and cyanide consumption were covered (<http://www.aga-reports.com/15/sdr/home>).

