INTERNATIONAL CYANIDE MANAGEMENT INSTITUTE

Cyanide Code RecertificationAudit Gold Mining Operations

Summary Audit Report

Harmony Gold Mines Limited Kusasalethu Gold Plant South Africa

16th – 20th November 2020

For the International Cyanide Management Institute

Name of Operation:	Kusasalethu Gold Mine
Name of Operation Owner:	Harmony Gold Mines Limited
Name of Operation Operator:	Harmony Gold Mines Limited
Name of Responsible Manager:	Mr Juan Oosthuizen, Plant Manager
Address:	Private Bag X2025, Carletonville
State/Province	North West Province
Country:	South Africa
Telephone:	+27 18 782 9344
Fax:	+27 18 782 1706
E-Mail:	juan.oosthuizen@harmony.co.za

Location and General Description of the Operation

The Harmony Kusasalethu Gold Plant is situated 18 km from Carletonville, which is 85 km from Johannesburg, South Africa.

The gold plant consists of the Milling section for grinding of ore, Thickeners 1 and 2 for dewatering (pulping for leach feed), a Leach section for dissolution of gold using liquid Sodium Cyanide as one of the reagents, and Carbon in Pulp for adsorption of dissolved gold. Backfilling for producing support material for underground is undertaken, of which only 30% is subjected to classification for backfilling, with the remaining 70% being pumped to thickener 3 for dewatering, before being pumped to the tailings storage facility (TSF).

Ore Reception

Run of Mine (ROM) is conveyed from underground to the stock pile facility of 28 000 tons capacity. The stock pile material feeds to the three parallel silo bins of 2550 tons live storage capacity. Ore is drawn from each silo to be taken to the three parallel run of mine mills for grinding to the required size. Other surface source material is fed to the silos through a conveyor from an open stockpile feed grislier, taking the ore up into one of the three silos.

Milling

The milling section consists of three ROM mills with design capacity of 140 tons per hour (t/h). The three parallel and independent milling lines, each having a conveyor underneath each silo, get material delivered onto the conveyor via a Langlaagte chute. Steel balls are used as grinding media, supplemented by wide range particle size of mill feed. The current feed rate is 70t/h. The mill feedbelts and discharge pumps have variable drives to enable control of optimal efficiency for grinding and classification.

There is a single stage cyclone classification process, with cyclone overflow feeding onto a linear screen for woodchip removal then into a common tank (the secondary cyclone feed tank). The material passing through the linear screen is normally at a density of 1.1 -1.2 t/m3 and a grind of 80% -75 micron and allowed to gravitate to the thickeners for dewatering.

Thickening
There are three thickeners, two of which are always fed with mill final product material from a distribution box of the thickeners feed launder. Calcium oxide (lime) is added at the thickeners for maintaining a level of alkalinity with a pH of 10.4 to prevent the generation of poisonous HCN (cyanide) gas at the leach section. Flocculant is added to aid with settling of solids, pulping the slime to densities of 1.5 to 1.6 t/m3. The other thickener (Thickener 3) is utilized as a residue or tailings dewatering thickener. This is conducted in order to maintain proper densities to the slimes dam. Each thickener is equipped with variable speed drives to control leach feed densities which are linked to the installed densitometers that speeds or slows down the pump, based on the underflow densities. The overflow water of the thickeners gravitates to the two mill return tanks to be reused in the milling process.

Leach
The leach circuit consist of 12 tanks, each with a height of 20m and diameter of 9.0m Only six of the 12 are online. Cyanide is automatically added to the third tank, at a concentration of 160ppm, for dissolution of gold. Cyanide in the first tank is added through a 3mm orifice which results in concentrations of about 30ppm. Compressed air is used to agitate the slurry, suspending solids in pulp and raising dissolved oxygen to about 10ppm for optimal leach efficiencies. Retention time in each tank is 3.5 hours totalling to 21 – 24 hour leach period for the 6 tanks online.

Carbon in pulp
The carbon in pulp circuit is a carousel system design with eight tanks of 3.6m diameters and 9m height each. A cylindrical screen with 0.630mm apertures is used in every tank to retain activated carbon added at concentration of 55g/l. The first tank loads up to 10Kg/t by adsorbing the dissolved gold while allowable dissolved losses at the last tank on line is controlled at 0.01g/t. The loaded head tank is pumped back to the leach second tank for gold adsorption. Then the carbon is allowed to gravitate until it reaches the loaded carbon tank. The carbon is subjected to screening before it pumped to the elution circuit.

Backfill
The backfill plant consists of four modules. Each module comprises of a primary, scavenger and cleaner cyclone. All four modules draw feed from the common tank with a level sensor linked to the splitter box for directing flow from CIP. The feed tank level is set at 80% to subject material to classification and material is pumped to the TSF when the feed tank is above 80%. An automatic WAD cyanide analyser is installed at the residue line (feed to the backfill) to sample and analyses WAD cyanide levels for environmental compliances of allowable discharge levels of WAD from mine process circuit in case of spills and water overflows. The underflow of the primary cyclone is further subjected to classification by cleaner cyclone, producing a final product of 1.7t/m3 and permeability of over 200mm/s. The overflow of the cleaner cyclone and the

underflow of the scavenger cyclone are recycled to the primary feed tank for reclassification while the overflow of the scavenger gravitates to the reject tank and it is pump to thickener 3, where flocculant is added to aid in settlement of solids to increase the relative density to the required standard (1.4t/m3) for tailings deposition the slime dam tank. About 0.11ppm of ferrous sulphate is added to neutralise the cyanide concentration of backfill product to less than 10ppm free cyanide concentration.

Auditor's Finding

This operation is

X 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

E-mail: arend@eagleenv.co.za

Names and Signatures of Other Auditors:

Name : Dawid M. L Viljoen Signature _____ Date: 3/5/2021

Dates of Audit: 16th – 20th November 2020

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.

Kusasalethu Gold Plant

Facility

Signature of Lead Auditor

5/5/2021
Date

Auditor's Findings

1. PRODUCTION: Encourage responsible cyanide manufacturing by purchasing from manufacturers who operate in a safe and environmentally protective manner.

Standard of Practice1.1: 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 a Harmony Group-wide, supply and transport agreement, covering all Harmony Gold Plants, in place with Sasol South Africa, as the sole supplier of liquid Sodium Cyanide, delivered by bulk tanker. This agreement includes Kusasalethu Gold Plant. Sasol South Africa is a signatory to the Cyanide Code and was re-certified as a fully compliant Production Facility with the ICMI (International Cyanide Management Institute) Cyanide Code on 23rd January 2019.

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 Harmony Group-wide, supply and transport agreement, covering all Harmony Gold Plants, in place with Sasol South Africa, as the sole supplier of liquid Sodium Cyanide, delivered by bulk tanker. Sasol South Africa is also responsible for the transport of cyanide solely using Tanker Services Food and Chemicals/Imperial

Logistics. Tanker Services Food and Chemicals/Imperial Logistics is a certified Transporter re-certified on 21st November 2018. A Memorandum of Agreement (MOA) for the off-loading of liquid sodium cyanide in terms of SANS (South African National Standard) 10231:2006 between Tanker Services Food and Chemicals/Imperial Logistics and Harmony Gold Mining Company is in place. The supply agreement and MOA cover the responsibilities and requirements for 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.

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:
Offloading is covered by a MOA for the off-loading of liquid sodium cyanide in terms of SANS 10231-2006 and codes of practice incorporated into legislation and the national Road Traffic Act 93 of 1996 and regulations between Tanker Services and Harmony Gold Mining Company Kusasalethu Gold Plant. The MOA also covers the responsibilities and requirements for 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.
Chain of Custody documentation for liquid sodium cyanide bulk deliveries were sampled and reviewed for 2018 and 2020. Documents reviewed included: - Harmony purchase orders, Sasol delivery note and invoice information, Sasol Certificates of analyses, Sasol delivery notes, and Tanker Services delivery notes.

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 sodium cyanide, delivered by bulk tanker, and no mixing takes place on-site. Evidence from the first certification audit has not changed, and no changes were made in the plant designs since the last re-certification audit. Design drawings of the cyanide plant foundation reinforcing details were signed by a consulting civil and mechanical engineer and the cyanide tanks are located on solid bases. Tanks are made of mild steel, pipelines are made of HDPE (High Density Poly Ethylene), all valves are made of stainless steel and polyurethane DLM (Dupleix Liquid Meters) valves and rubber-lined Saunders valves. Sasol cyanide producer's inspections (including a technical report) were conducted by a Sasol Technical Officer on 5th February 2019 (scored 98%) and on 6th February 2020 (scored 100%).

The facilities are located away from people, away from incompatible materials, and are built with materials appropriate for use with cyanide and high pH conditions. No surface water is present in the area. The Plant has marked pedestrian walkways on the opposite side of the road to maintain passing distance away from the cyanide off-loading area. The off-loading area is barricaded off from both sides, during cyanide off-loading, to prevent access.

The concrete slab is sloped and drains spillages into the main cyanide bund. The cyanide sump is equipped with a pump that returns the spillages to the process. The cyanide tanks are equipped with ultrasonic level indicators, alarms, and ventilation pipes. The high-level alarm is set on 75% of cyanide tanks' physical capacity. An automatic off-loading air valve shut-off mechanism is activated at 90% of the operating capacity. The level indicators and alarms and alarms are subject to weekly checks by the Instrument Technician.

Tanks are placed inside a concrete bund with flood tests conducted to check for leaks. Flood tests are done as per a procedure. Test results sighted include one dated 11 Aug 2020 (no leakage experienced), a second dated 4 Aug 2019 (no leakage experienced), and a third dated 10 Oct 2018 (no leakage experienced). An off-loading procedure is in place, specifying activities by the off-loader to prevent cyanide tanks overtopping.

The cyanide storage area is situated inside the Plant and equipped with access control. The storage area is within a fence and behind locked gates. The key is kept at security with a key procedure and register controlling access and use.

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, which is delivered via bulk tanker to dedicated storage tanks. The off-loading procedure is detailed, spelling out PPE (Personal Protective Equipment) requirements, use of a buddy in the process, and tasks are clearly sequenced to prevent spillages and accidental releases during off-loading. The task sequencing is also included in the Memorandum of Agreement (MOA), the legal requirement covering transport and off-loading of cyanide. Both the off-loading procedure and the MOA specify that any spillages must be cleaned up, equipment washed thoroughly, and the tanker exterior washed.
The offloading procedure and signage specify PPE to be worn during off-loading. The Off-loading procedure refers to the second individual observing from a safe area ("Buddy"), and the Buddy procedure was also sighted. Red dye is added by cyanide producer, Sasol, at source, and the colour is referred to in the Safety Data Sheet (SDS). The red colour of liquid cyanide is included in the annual cyanide awareness training and refresher training.

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 utilising 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 83 cyanide specific procedures, covering both operations and engineering. There are also procedures for start-up and shutdown. An additional Start-up operational procedure in place to enable safe start up under Covid-19 conditions. The Procedures are reviewed by a multi-disciplinary review committee every three years. These procedures are supported by the Mandatory Code of Practice (COP) for Tailings Disposal, the Intasol (TSF contractor) Tailings Operational Manual, and 8 procedures for TSF (Tailings Storage Facility) operations. A mandatory COP on Cyanide management is also used.
Routine shiftly, daily, weekly, monthly, quarterly and annual inspection reports, legal inspections, and checklists for the Plant and TSF were sampled to check the effectiveness of systems and ensure that proactive and reactive management takes place. Inspections are documented, including the date of the inspection, the name of the inspector, and any observed deficiencies. Tailings inspections include freeboard, physical integrity of any surface water diversions, Piezometer readings, and meteorological data. The nature and

date of corrective actions are documented, and electronic records are retained. The inspection frequencies are deemed sufficient to assure and document that equipment is functioning within design parameters.
Allowable WAD (Weak Acid Dissociable) cyanide in the final plant tailings to TSF is specified as a max of 50 ppm in a plant procedure. There are legal requirements for maximum freeboard under 1:50 and 1:100 year, 24 hour, rainstorms. Operating and design criteria are monitored daily, weekly and reported quarterly. No discharge to surface water is permitted.
The process ponds and return water dam do not have leak detection and collection systems. There is a weekly boilermaker PM inspection of the slimes dam and pump station. This includes: - pipe inspections, condition of paddocks, slimes spillages, return water dam levels, pipe leaks, valve conditions, pump operations, seepage, and spillage pond 1 and 2 levels.
The plant maintenance and inspection schedule include preventative maintenance inspections on cyanide critical equipment (tanks, pipes and pipelines, secondary containments, pumps, valves, ponds and impoundments), using a computerised Planned Maintenance System (PMS) called the DMS (**D**ocument **M**anagement **S**ystem-proprietary) system. Quarterly technical inspections with consultants of the TSF facilities are undertaken to ensure integrity and safety in addition to the monthly TSF inspections involving the site staff and TSF contractors. A change management procedure covering health, safety and environment is in place and operational.
Although there is no need for emergency power to prevent cyanide releases as all solutions and slurries require pumping and the process plant does not use gravity flow in the design, a back-up generator is in place to run the thickener tunnel pumps to enable pumping of spillage and prevent discharge to the spillage dams. The generator is maintained 6 monthly by Harmony Transport Department. A portable generator is also available to run pumps on the TSF, if additional pumping is required during a power outage. In an interview, the Plant Engineer confirmed that the portable generator is on a DMS maintenance schedule. All spillages will be contained in bunded areas when power trips occur.

Standard of Practice 4.2: Introduce management and operating systems to minimise 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:
Optimisation work includes previous testwork in 2017 done by Maelgwyn Mineral Services Africa on residues, including sample characterisation, leach testwork and diagnostic leach work. Recent testwork by Maelgwyn in 2020 included evaluation of lead nitrate to improve recoveries and lower cyanide consumption. The results did not show significant improvement
Test work by Maelgwyn in 2020 included diagnostic leach and bottle roll tests. The results indicate that that CIL (Carbon In Leach) will improve recovery due to the presence of preg robbers in the feed sources. The process was converted to a CIL operation, and results indicate improved recoveries and lower cyanide consumption. TAC 1000 on-line cyanide measurement and control is used, and a WAD 1000 on-line analyser on the plant tails is used for cyanide control and for WAD cyanide monitoring purposes.
TAC 1000 on-line cyanide measurement and control is also used, and a WAD 1000 on-line analyser on the plant tails is used for cyanide control and WAD cyanide monitoring purposes. Variable speed Bredel pumps, equipped with frequency drives, are used to control cyanide addition rates, based on reading from the TAC 1000. The TAC 1000 results are cross-checked with manual titrations. No other control strategies are under consideration currently.

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:
The Mine Water balance is a spreadsheet-based, probabilistic water balance (PWB) model, developed in conjunction with Jones and Wagener, the consulting engineers advising on the TSF. The PWB accounts for the natural variability and uncertainty of precipitation and evaporation and the average precipitation and evaporation rates. The model was reviewed, electronically, and it was noted that the model was up-to-date. Information included in the model covers rainfall, storm events (1:50 and 1:100 year storm events), infiltration, surface runoff entering the TSF, seepage losses, phreatic levels and solution deposition rates. Rainfall data is collected daily on the TSF and at the Plant.
In the event of a power failure at the return water pump station, the consequences differ depending on the seasonal changes, if the power failure happens during the dry season (April- September) the risk of the return water dam overflowing (and discharging to the environment) is very low compared to wet season (October- March).
Should it happen that there is power failure in summer, the likelihood is that the operation will discharge affected water into the environment. However, it is important to note that the discharge contains cyanide which is below limits of detection. Mobile back-up pumps

are available, if required. Excessive quantities with elevated cyanide levels would trigger the Emergency Response Plan.
Return water pond freeboard is determined using the water balance, and rainfall scenarios consider seasonal variation. It is not permitted to store any stormwater in the TSF supernatant pool. The TSF freeboard is measured monthly and quarterly and return water dam levels are measured by a level indicator reporting to the control room SCADA (**S**upervisory **C**ontrol **A**nd **D**ata **A**cquisition) and inspected by artisans and Environmental Department. Stormwater diversion trenches are formally inspected and cleaned. The operation measures precipitation, compares the results to design assumptions and revises operating practices as necessary in an ongoing process which is evaluated during the quarterly TSF meetings. This was confirmed during review of the quarterly reports.

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 TSF compliance point is the tailings tank in the backfill section, where the thickened cyclone overflow is pumped to the tails tank. The CIP tails is also pumped to the tailings tank when the backfill is offline. The tailings tank is pumped to the TSF. An on-line WAD 1000 analyser is determining the WAD cyanide in the tails on a sample taken from the tailings tank.
WAD cyanide levels were reviewed from the on-line WAD cyanide analyser for the following years: -
2018: Exceedance during March were due to power failures resulting in communication being lost between the main cyanide dosing pump and the TAC 1000 Analyzer. In April, there was one exceedance spike, causing data loss from the old WAD 1000 analyser. The four June exceedances were due to spikes caused by TAC 1000 instrument faults. In August, the single exceedance was again due to communication being lost between the main cyanide dosing pump and the TAC 1000 Analyzer, caused by power failure. In September and October, there were a number of exceedances due to TAC 1000 control filter clogging and agitation issues. Extensive tank maintenance was done at the time which may have been the problem, In December, there two exceedances. The exceedances were a maximum 70 mg/l and no bird mortalities were observed at the TSF.
2019: The January exceedance was caused by the auto sampling tube being torn and unable to take enough samples. This was repaired. The single April exceedance was due to the Plant PLC (Programmable Logic Controller) losing memory and affecting the main cyanide dosing pump, resulting in uncontrollable addition of cyanide at the leach. The 2 exceedances in May were due to the laboratory swopping reagents for the TAC 1000.

The one exceedance in June was due to communication being lost between the main cyanide dosing pump and the TAC 1000 Analyser caused by a power failure. In July, 4 exceedances were due to the Plant PLC losing memory and affecting the main cyanide dosing pump, resulting in uncontrollable addition of cyanide at leach.

2020: In January, the two exceedances were due to communication being lost between the main cyanide dosing pump and the TAC 1000 Analyser, due to power failure. The corrective action taken on the previous issues with the TAC 1000 and the cyanide dosing system was mostly resolved, and the rest of 2020 does not show any exceedances in WAD cyanide.

Data indicates levels were mainly below 50 mg/l WAD cyanide, but a number of exceedances were noted, investigated, and corrective actions taken where possible. Following the corrective action taken to rectify cyanide dosing system faults and power losses, no exceedances have been recorded since February 2020. The limited time of disruption meant that there were no wildlife mortalities, and therefore addition protective measures were not deemed necessary. There were no cyanide-related wildlife mortalities reported since the last re-certification, therefore it is deemed that WAD cyanide control is effective in 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:

No direct discharge to surface water occurs under normal circumstances. Additional pumping capacity and security was installed in the anti-pollution sump to manage risks of releases. Any overflow from the return water dam's last containment anti-pollution sump will be treated as an environmental emergency and investigated as per water use licence requirements. Three overflow incidents (one in 2018 and one in 2019 and one in 20200 were reported since the last re-certification. The investigations concluded that high rainfall was the causes in all incidents.

No established mixing zone exists as there is no discharge to surface water. Indirect discharge to the Loopspruit is possible during abnormal conditions, from the bottom of the return water dam. Provision is made for a pump to return seepage from the trench back to the return dams. The Loopspruit is sampled monthly downstream of the TSF and analysed for WAD cyanide. The values sampled since certification indicate values all less than 0.5 mg/l WAD cyanide (DD Laboratories limit of detection) and 0.003ppm WAD cyanide (Aquatico Laboratories limit of detection, used since Jan 2019). Level monitoring of the seepage pump sump is done together with the inspections carried out 3 times per week. A seepage catchment and pumping system to contain and return any

dam seepage to the process and prevent seepage to the Loopspruit across the road is in place.
Indirect discharges do not cause cyanide concentrations in surface water to rise above levels protective of a designated beneficial use for aquatic life. Sample results since certification to date show no values above the limit of detection of 0.5 mg/l WAD cyanide, and since January 2019, 0.003 mg/l WAD cyanide were noted, Thus the operation is not engaged in remedial activity to prevent further degradation and restore beneficial use.

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

X in full compliance with

The operation is □ in substantial compliance with **Standard of Practice 4.6**

□ not in compliance with

Basis for this Finding/Deficiencies Identified
The TSF is equipped with toe drains flowing into the return water dam. A seepage catchment and pumping system, to contain and return any dam seepage to the process and prevent seepage to the Loopspruit across the road, is in place. The Plant is equipped with concrete catchment areas and concrete trenches to prevent seepage. No jurisdictional beneficial use of groundwater is established. Borehole samples are taken downstream of the TSF to establish WAD cyanide in groundwater. Values of mg/l WAD cyanide from the two significant boreholes were noted to be at the limits of detection of 0.003.
A backfill plant is in place at the Gold Plant. A MINTEK (South Africa's national mineral research organisation) study of 12th January 2010 includes evaluation of health impacts of backfill and concluded, "…The backfill section furnishes a product of sufficiently low cyanide to eliminate risks underground. The few ppms of WAD cyanide left are not expected to generate any significant amounts of HCN gas nor pose a risk to accidental ingestion of small amounts by workers exposed to it during the backfill operation underground…" The Report further commented, "…The backfill product contains low enough cyanide levels to rule out Safety & Heath as well as groundwater issues resulting from the seepage water…" The Backfill Operation Procedure specifies free cyanide to be 0.001%. Batches are sampled and titrated before being released. Ferrous sulphate is used to reduce free cyanide to the required standards. Cross-check samples are sent to SGS Laboratories, and batches are checked before release to underground. Manual final production transfer data was sampled from 14/10/2019 to 12/12/2019, showing batches measured at between 0.001 and 002 mg/l cyanide. This information is transferred to the backfill daily log sheet, and measurements are taken from the analyser. Samples were cross-checked from the final production data to the backfill log sheet, and these correlated.

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 Plant was built according to AngloGold specifications, and the tanks are placed on solid concrete civil foundations. AngloGold did not install tanks on ring beams at the time the Plant was built, in around 1980. Containment bunds were sighted for the CIP area, cyanide storage section, and backfill area. All secondary containments for cyanide unloading, storage, and process tanks are sized to hold at least a volume greater than that of the largest tank within the containment and any piping draining back to the tank, and with additional capacity for the design storm event and are linked where capacity is short. The leach tanks are placed on solid concrete foundations on a slope, and the bund is not designed for tank containment, but only for draining tanks. However, the bund is linked to the spillage containment dams via gravity flow.
All bunds are constructed with sumps and sump pumps designed to pump spillages back to the process. The Backfill and tailings bunds volumes are also inadequate but are linked into the same system, linked to the spillage containment dams, to provide for the minimum 110% requirement. The spillage dams are situated inside the TSF footprint and overflows, via the penstocks, to the return water dams.
All reagent strength cyanide pipelines are equipped with secondary containment. The whole reagent strength cyanide pipeline is placed inside a launder. Slurry and process water pipelines are subject to regular inspections in the PMS (Planned Maintenance System) system as part of the spill prevention measures. All of the pipelines run across concrete or tar roads to assist with prevention of releases to the environment. Slurry and process water pipelines are subject to a PMS inspection system as part of the spill prevention measures. Pipelines do not cross any rivers, nor are they placed in close proximity to streams.
Reagent strength cyanide tanks are made of mild steel, and reagent strength cyanide pipelines are made of HDPE (High Density Poly Ethylene). Valves are a mix of Saunders and other suitable valves, made of stainless steel. Slurry pipelines are made of steel, as are leach and CIP tanks.

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

X in full compliance with

The operation is □ in substantial compliance with **Standard of Practice 4.8**

□ not in compliance with

Basis for this Finding/Deficiencies Identified:
The detailed drawings of the original Plant are available, but no new cyanide facilities or modifications to existing facilities have been built and commissioned since the last re-certification audit.
The Kusasalethu Mine Tailings Storage Facility Annual Audit Report, 2018, was reviewed. The synopsis includes mention that discrepancies with the Lidar Survey have been found and the Report authors, Jones & Wagner, strongly recommends an investigation be made into the cause of this discrepancy (as this is the second consecutive year with survey errors). The discrepancy was investigated and the cause was found to be badly aligned freeboard poles. These are being re-aligned
Freeboard at both Compartments is above legal requirements and has been throughout the year. The decline in freeboard corresponds with the substandard densities received at the TSF. The Plant noted the issue and is now using a thickener which has resolved the density issues.
The stability of the outer walls raises no concerns with all major slip failures having a Factor of Safety greater than or equal to 1.3. The Code of Practice and risk management system is considered adequate for the level of risk related to the tailings dams. Freeboard was legally compliant. All major failures Factor of Safety is acceptable. And no further intervention is recommended at present
The Audit Report 2019 states, "The general condition of the facilities is good. In terms of the overall general housekeeping and operations the active facilities are in an acceptable condition, with issues being dealt with as required as part of an on-going process."
Recommendations from the annual audit reports are followed up during the quarterly inspections.
In the initial certification of the operation, the Plant had no quality assurance/quality control (QA/QC) records and therefore reports by competent persons were used to confirm “fit for use”. The operation has continued with this regular inspection approach. Kusasalethu commissions a Plant-wide Structural Safety Audit every two years to check the condition of plant structures and to confirm that the Plant is "fit-for-purpose". The Report is based upon visual inspections and contains extensive photographs identifying concerns, where relevant. The reports also contain observations and recommendations categorised and prioritised into: - “emergency repairs" (Emergency Repair – Potential for serious damage, should be done within 12 months), "repair" (to be repaired to original condition before maintenance can commence, should be done within 24 - 36 months), and "maintenance" (Preventative and corrective should be done on a continuous basis). The "Structural Safety Audit Kusasalethu Plant" dated May 2018, covering the whole Plant, undertaken by a registered Professional Engineer, was reviewed. Repair work was required for the Thickener tanks' concrete, and structural steel in the backfill plan required repairs. It was concluded that no significant structural repairs were required for the cyanide sections.

Similarly, the "Structural Safety Audit Kusasalethu Plant" dated July 2020, covering the whole Plant, by the same registered Professional Engineer was reviewed. There were no emergency repairs required for structures in the cyanide sections.
In the initial certification of the operation, the Plant had no QA/QC records and therefore reports by competent persons were used to confirm "fit for use". The operation has continued with this regular inspection approach.

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, were developed by competent persons, were sighted and checked. Sampling conditions are documented on the sampling log sheet. There are no discharges to surface water, but boreholes are in place downstream of the Plant. There are no upstream boreholes as the site is located on top of the hill on a catchment and watershed boundary. Boreholes are sampled quarterly, the stream is sampled monthly, open waters are sampled monthly, and wildlife is monitored daily. WAD cyanide on the backfill tails to TSF is sampled on-line every 20 minutes. Sampling frequencies are deemed adequate to characterise the medium being monitored and to identify changes in a timely manner.
It was noted that environmental sampling and monitoring services were undertaken by DD Science laboratories until December 2018. From January 2018, Aquatico Laboratory took over the function. This explains the change in laboratory levels of detection specifications. Both sets of laboratory sampling and testing procedures were drawn up by appropriately qualified persons.

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 for cyanide facilities at Kusasalethu is in place which includes a closure schedule and sequence of decommissioning activities. The Cyanide Decommissioning Procedure is reviewed at least every five years, or when there is a change in plan decommissioning techniques or measures, or whenever there is a change in the operation that effects 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 Kusasalethu Closure Cost Assessment Report, dated June 2020was sighted. The Report includes the following, "…Thus, Harmony, as a (Cyanide Code) signatory, is required to set aside money for the closure of the cyanide plant. A figure of R 619 723 has been included for the cleaning and removal of sodium cyanide systems. This figure is based on a quotation from a reputable Cyanide Cleaning Specialist. The basis for this figure includes the following activities:
● Test for explosive gas and high pressure (HP) cleaning of tanks and equipment;
● Flame cut all lines and equipment into 1 metre lengths for safe disposal; and
● Removal of all cyanide pipes and drip trays from Cyanide Tanks to Pachuca's…"
The latest Elandsrand and Deelkraal Rehabilitation Trust Fund Financial Statements for the year ending 30th June 2019, including Kusasalethu, were sighted. The Accounts were signed by the trustee, Melanie Naidoo Vermaak, and one other trustee. They were also signed by Hendrik Odendaal, a registered auditor from PricewaterhouseCoopers Inc. This trust fund is established by legal requirement in terms of the Minerals and Petroleum Resources Development Act. Closure cost estimates are updated annually, as per legal requirement of the Minerals and Petroleum Resources Development Act.

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 83 cyanide specific procedures, covering both operations and engineering. The Procedures are reviewed by a multi-disciplinary review committee every three years. These procedures are supported by the Mandatory Code of Practice (COP) for Tailings Disposal, the Intasol (TSF contractor) Tailings Operational Manual, and 8 procedures for TSF (Tailings Storage Facility) operations. A mandatory COP on Cyanide management is also used. 12 plant procedures were sampled and the TSF procedures checked, and it was confirmed that they included appropriate PPE requirements and pre-work inspections, risk assessments and checks to minimise worker exposure.
Routine shiftly, daily, weekly, monthly, quarterly and annual inspection reports, legal inspections, and checklists for the Plant and TSF were sampled to check the effectiveness of systems and ensure that proactive and reactive management takes place. Inspections are documented, including the date of the inspection, the name of the inspector, and any observed deficiencies. The nature and date of corrective actions are documented, and hard and electronic records are retained. The inspection frequencies are deemed sufficient to assure and document that equipment is functioning within design parameters.
Allowable WAD cyanide in the final plant tailings to TSF is specified as a max of 50 ppm in a plant procedure. There are legal requirements for maximum freeboard under 1:50 and 1:100 year, 24 hour, rainstorms. Operating and design criteria are monitored daily, weekly and reported quarterly. No discharge to surface water is permitted.
The plant maintenance and inspection schedule include preventative maintenance inspections on cyanide critical equipment (tanks, pipes and pipelines, secondary containments, pumps, valves, ponds and impoundments), using a computerised Planned Maintenance System (PMS) called the DMS system. Quarterly technical inspections with consultants of the TSF facilities are undertaken to ensure integrity and safety in addition to the monthly TSF inspections involving the site staff and TSF contractors. A change management procedure covering health, safety and environment is in place and operational.
Risk assessments involving workers evaluating the operating a PAC 7000 procedure, Procedure for cyanide PPE and tool care and examination, off-loading cyanide procedure, flood testing of the cyanide bund area, and fixed cyanide gas monitors and alarms were sighted. The risk assessment team included an Operator, the Engineer, a Supervisor, a Business Unit Leader, the Training Officer, the Reagent Handler, the Safety Officer and the Metallurgist. The weekly Health & Safety meetings were sampled for worker inputs to health and safety procedures and the 12th November 2020 meeting including first aid and medical treatment for cyanide poisoning, and pipe failure; The 8th August 2019 including feedback from a full cycle cyanide drill; the 21st December 2018 meeting included a mandown cyanide drill discussion; the 14th March 2019 including responses to a cyanide mandown and sequence of events; and the 17th January 2019 meeting included a cyanide desk top drill on sequencing of a cyanide man down.

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 Plant controls the pH at 10.5, which is optimal for the type of ore treated and the process water used. The Plant controls the pH using slaked lime by measuring pH using meters at the thickeners, and leach tank no 1, which is backed up by manual pH measurements.

With respect to portable HCN gas monitors, 1 x PAC 7000 unit is kept at the TSF, there are 6 x PAC 7000 units at the Plant, and there is 1 x XAM 5000 at the leach. Fixed HCN gas monitors are installed at the leach dosing area and at the cyanide storage area. The units alarm at 4.7 ppm and 10 ppm instantaneous HCN value, when the area is evacuated. This ensures the workers are not exposed to more than 4.7 ppm average over an 8 hour working period continuously. If a low level alarm is activated, a supervisor will investigate the cause of the activation and institute corrective actions, where appropriate. Formal hot spot surveys were conducted, and known hotspots from experience have been identified and marked. Annual hot spot surveys and sampled forms dated 4th March 2018 and 15th August 2019 were sighted. The only potential TSF hot spots could be the deposition points and the penstock, in case of high cyanide in the leach tails. The gas monitor calibrations are done as per contract with Dräger, the HCN gas monitor manufacturer. The contract also includes maintenance. The manufacturer recommends 6 monthly calibrations and calibration reports and records were sighted for all fixed and portable Monitors dated 10th February 2020 and 4th August 2020.

Safety showers and eyewash baths with diffusers are located at the cyanide off-loading area, the elution area, and at the leach top. They are inspected weekly. The use of dry powder fire extinguishers was confirmed during site inspections. Fire extinguishers are checked weekly and before off-loading.

The Gold Plant working language is English, and SDSs were available electronically or in hard copy, at the cyanide storage area, and control room. First aid procedures and SDSs were also sighted in the first aid cabin.

The Plant uses colour coding and direction flow for reagent strength cyanide lines. Labelling and direction flow on other lines and launders was observed, and labelling on the TSF pipelines was labelled as “Sodium Cyanide”. The plant signage was in good condition and included signage as per ICMI requirements where cyanide is used. Cyanide tanks are painted red with a purple band and labelled with UN number 3414. Lower strength tanks are labelled. Code compliant warning and prohibition signage is installed around the TSF.

All accidents and incidents are investigated as per the Harmony accident and incident reporting procedures. A completed accident report and investigation was reviewed and confirmed to contain reporting, investigation and recommendations. No cyanide accidents reported in the previous three years.

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

X in full compliance with

The operation is □ in substantial compliance with **Standard of Practice 6.3**

□ not in compliance with

Basis for this Finding/Deficiencies Identified:
Emergency communication is done via radio and cell phone with the plant control room and mandown alarms. There is a cyanide emergency cabin at cyanide storage, and at the top of leach. Medical oxygen, resuscitators, water, and antidote kits (Tri-pacs including Amyl Nitrate and activated charcoal) are in place in the cabins. Antidote kits are stored in fridges, as per manufacturer's recommendations. Cyanide antidote re-ordering is done by the Safety Officer, based on daily checks and expiry dates. A pop-up work order is created a month before expiry. At the TSF, medical oxygen and a first aid kit are carried in the TSF supervisor's Light Delivery Vehicle (LDV).
Cyanide equipment (medical oxygen, antidote kits, resuscitators, cyanide emergency trailer) is inspected weekly via the chemical handler's PMS inspection requirement.
Emergency teams are available on each shift, trained to administer oxygen and cyanide first aid. Cyanide emergency cases are transported by Netcare 911 ambulance (private service provider) to the appropriate hospital (Fountain hospital). Formal agreements are in place with both service providers, which is currently in the process of amendment, due to changes in ownership. Confirmed by the Doctor that, in principle, the service providers will continue to provide the same cyanide transport and treatment support. Cyanide training of Fountain hospital staff and 911 ambulance staff was given from 28-29 August 2018 and 29 November 2019 by the Training Assessor of Kusasalethu. Current hospital cyanide refresher training is being delayed by the Covid 19 state of emergency. There is a Kusasalethu Gold Plant Emergency Response Plan and a Kusasalethu Operations, Tailings Dams, Mandatory Code Of Practice For Mine Residue Deposits which includes an Emergency Preparedness and recovery plan for the TSF, in place.
Emergency cyanide drills are conducted every quarter, and an annual full-cycle drill is also held. Desktop drills are conducted monthly during the Thursday training sessions. The following drill documentation was reviewed: - Full **cycle drill**: Mandown to Hospital on 7th August 2019. A Medivac helicopter was involved, and the patient was transported to Milpark Hospital, Johannesburg. The Training officer was included, and drill was discussed on 8th August, during the weekly Health & Safety meeting. **Spill drill:** a leaking cyanide pipe causing a spill was the scenario on 30th September 2020. Learning points identified were: - Workers continued to work despite the alarm; evacuation to the

assembly point was slow; and the cyanide alarm could not be heard at the thickener section. Action items were completed, including installation of an additional cyanide alarm and extra coaching. The **Mandown drill** at the cyanide off-loading area on 20th December 2018 identified the following learning points: - the mill employees could not distinguish between a mill alarm and a cyanide mandown alarm; the ambulance took 40 minutes to arrive; and the Paramedics did not wear cyanide PPE as they received the wrong information. The TSF carried out a cyanide evacuation drill in September 2020 and the attendance register, remarks, checklist and recommendations were sighted.

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 Plant has a Gold Plant Emergency Response Plan and has developed site-specific emergency scenarios (Plant and TSF) and responses for its emergency response plan. The Plan combines existing procedural responses and emergency provisions to deal with the various scenarios.
The Plan does not include provision for transport-related emergencies as these are dealt with by the ICMI certified transporter.
In addition to the specific scenario responses, the Plan also includes an evacuation procedure, responses to cyanide poisoning and a detailed set of responses covering cyanide remediation and mitigation.

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 workforce is involved in the Emergency Response Plan process through involvement in Mock Drills, feedback and discussion in Health and Safety meetings. The community

is not directly involved in the Plan but is informed on its contents during dialogue sessions. Drills are also used to involve hospital and ambulance staff in the Emergency Response Plan process.

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 control room operator is the primary response coordinator, authorised to call ambulance, security, and plant management. . Authority to commit resources is obtained by the Met Plant OCC Controller (Control Room Operator) from either the Plant Manager or unit leader on standby duty. Five emergency team first responders are on each shift, and they would be called via the radio or respond to an alarm to a particular point. 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. Training requirements are specified in the ERP, and the training officer is responsible for providing training for the first responders. Specific details on the training are included in the training matrix for first responders. 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 Response Plan and associated procedures include details for appropriate emergency notification and reporting (internal and external) and the call-out procedure and contact information lists, including management, regulatory agencies, outside response providers and medical facilities of a cyanide emergency, which are updated regularly. Media communication 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 environmental monitoring of surface water, liquid cyanide spillage, Cyanide Remediation Measures, and the use of ferrous sulphate (which includes preparation and management of ferrous sulphate, analysis to be performed, and detailed remediation measures and disposal) procedures cover clean-up and remediation relating to releases, soil and liquid analysis, pipeline failures and spills, as appropriate to the site-specific identified scenarios. Use of neutralisation processes and materials is clearly covered, as is disposal of contaminated materials and the use of treatment chemicals such as ferrous sulphate in surface water which 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, and after a major event or changes in legislation, on a team approach and amended if necessary, to address the deviations or shortfalls identified.
Emergency cyanide drills are conducted every quarter, and an annual full-cycle drill is also held. Desktop drills are conducted monthly during the Thursday training sessions. The following drill documentation was reviewed: - **Full cycle drill**: Mandown to Hospital on 7th August 2019. A Medivac helicopter was involved, and the patient was transported to Milpark Hospital, Johannesburg. The Training officer was included, and drill was discussed on 8th August, during the weekly Health & Safety meeting. **Spill drill**: a leaking cyanide pipe causing a spill was the scenario on 30th September 2020. Learning points identified were: - Workers continued to work despite the alarm; evacuation to the assembly point was slow; and the cyanide alarm could not be heard at the thickener section. Action items were completed, including installation of an additional cyanide alarm and extra coaching. The **Mandown drill** at the cyanide off-

loading area on 20th December 2018 identified the following learning points: - the mill employees could not distinguish between a mill alarm and a cyanide mandown alarm; the ambulance took 40 minutes to arrive; and the Paramedics did not wear cyanide PPE as they received the wrong information. The **TSF** contractor carried out a **cyanide evacuation drill** in September 2020 and the attendance register, remarks, checklist and recommendations were sighted.

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

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

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 8.1**

 not in compliance with

Basis for this Finding/Deficiencies Identified:
All plant personnel inside the plant fence (including security, plant contractors, and TSF contractors) are trained in basic cyanide awareness using e-learning-based methods. A 100% pass mark is prescribed. The training matrix includes a flagging system to timeously indicate need for training and refreshers. Refresher training is done annually, based on schedules on return from annual leave using the training shift system (also used for routine update training) Records are retained for the life of the Plant in the e-learning system and with the Training Department. The interviewee training records were sampled to check retention of records, and this was confirmed.

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:
Plant specific standard task procedures (STPs) are used for training as per the training matrix, the latest of which was reviewed. The latest e-learning training matrix, based on the initial training requirements, was sighted and reviewed. Each person's training requirements are linked to a wage/job code, which details the STP training required for

the job he or she performs. The Intasol (TSF contractor) training matrix was also sighted. The matrix includes all Safe Working Procedures (SWPs), including cyanide-related jobs. The Plant Trainer has a Certificate in conducting, designing and developing outcomes-based assessment, a National Diploma in Chemical Engineering (Vaal University of Technology), a further education and training certificate in occupationally directed education training and development practices, and a Higher Certificate in occupationally directed ETD practice, and is a qualified MQA Assessor. The TSF Trainer has an ETDP SETA certificate, HR Diploma, an HRD Diploma, Management Certificate, a Master of Business Administration, and is a qualified MQA (Mining Qualifications Authority) Assessor.
Supervisors conduct PTO's (Planned Task Observations) and informal observations, which could lead to refresher training/retraining where issues are highlighted. A Plant-specific PTO system is in place, and the requirement is currently for 4 PTOs per Supervisor per month (one per week). Refresher training is done when PTOs identify a problem.
An ID card for time and attendance is only issued after training is received. All employees are trained before being allowed to work on a cyanide section without supervision. New employees receive HR e-learning at the Plant, followed by Plant induction and then are sent to the training officer to do initial training on the appropriate modules for their jobs. The trainee will then go on shift for on-the-job training by the Supervisor, followed by competency assessment by the Supervisor and Training Officer, before being allowed to work unsupervised. Assessments are used to test knowledge and competency.
PTOs (Planned Task Observations) are used for on-the-job competency evaluation as per schedule. The current requirement is for 4 x PTOs per Supervisor per month (one per week). PTOs undertaken were sampled and reviewed.
Records are retained for the life of the Plant. Employee records are kept on the Plant and include the training they have received, including the names of the employee and the trainer, the date of training, and the topics covered. Assessment depends upon the type of training, i.e., examination or observation. Interviewee training records were sampled to check retention of records, which was confirmed.

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 Emergency Response Team (ERT) training matrix including the following courses: - E-learning refresher training, cyanide refresher (including decontamination), first aid training, Attend cyanide drill, evacuation chair training, Dräger gas monitor, basic

firefighting, emergency evacuation drill, and fire drill training. Refresher training is conducted annually, but training is on-going. Training shifts are given refresher emergency training monthly on Thursdays, and Mock drills are done for the whole plant quarterly with a full cycle drill annually. Corrective training was given following mandown and spill drills highlighting deviations. Five trained Emergency Response Team members are available on every shift. The Kusasalethu Training Assessor also provides cyanide training to service provider ambulance and hospital staff. The Assessor is involved in all emergency drills. All cyanide unloading, mixing, production and maintenance workers, depending upon location and drill scenario, take part in routine drills.

Emergency cyanide drills are conducted every quarter, and an annual full-cycle drill is also held. The ERT is involved in the drills. Desktop drills are conducted monthly during the Thursday training sessions. The following drill documentation was reviewed: - Full cycle drill: Mandown to Hospital on 7th August 2019. A Medivac helicopter was involved, and the patient was transported to Milpark Hospital, Johannesburg. The Training officer was included, and drill was discussed on 8th August, during the weekly Health & Safety meeting. Spill drill: a leaking cyanide pipe causing a spill was the scenario on 30th September 2020. Learning points identified were: - Workers continued to work despite the alarm; evacuation to the assembly point was slow; and the cyanide alarm could not be heard at the thickener section. Action items were completed, including installation of an additional cyanide alarm and extra coaching. The Mandown drill at the cyanide off-loading area on 20th December 2018 identified the following learning points: - the mill employees could not distinguish between a mill alarm and a cyanide mandown alarm; the ambulance took 40 minutes to arrive; and the Paramedics did not wear cyanide PPE as they received the wrong information. The TSF contractor carried out a cyanide evacuation drill in September 2020 and the attendance register, remarks, checklist and recommendations were sighted.

The local community is not involved with designated duties in the Emergency Response Plan, but they are kept informed. Training records include the training received, the names of the employee and the trainer, the date of training, and the topics covered. Assessment depends upon the type of training, i.e., examination or observation. Records are retained for the life of the Plant. Employee records are kept on the Plant. Interviewee training records were sampled to check retention of records, which was confirmed.

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.
Currently, problems are being experienced with illegal Miners who are organised into different warring factions. This is resulting in gratuitous violence and high crime. It is noted that these circumstances are making open and inclusive dialogue dangerous and very difficult.
Two presentations to Wedela primary school were sighted: the first on 27th July 2018 on cyanide awareness and the dangers of playing near return water dams, addressing the students and teachers; and the second on 30th August 2019, also addressing cyanide awareness and the dangers of playing near return water dams, aimed at the students and teachers. The 2020 year communication program was affected by the Covid-19 Pandemic restrictions, with the resulting limitation on physical visits to schools and community organisations.
A leaflet dated November 2020, addressed to Wedela Primary School: and "Dangers associated with slimes dam water" was sighted. The leaflet answers the following questions: What is cyanide? What is a slimes dam? Is cyanide dangerous? Do slimes dams and the water dam contains cyanide? and Can we swim in the water dam?
The second part of this campaign was to distribute leaflets to the Wedela High School by the end of November, but this has been delayed.

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.
Currently, problems are being experienced with illegal Miners who are organised into different warring factions. This is resulting in gratuitous violence and high crime. It is noted that these circumstances are making open and inclusive dialogue dangerous and very difficult.
Two presentations to Wedela primary school were sighted: the first on 27th July 2018 on cyanide awareness and the dangers of playing near return water dams, addressing the students and teachers; and the second on 30th August 2019, also addressing cyanide awareness and the dangers of playing near return water dams, aimed at the students and teachers. The 2020 year communication program was affected by the Covid-19 Pandemic restrictions, with the resulting limitation on physical visits to schools and community organisations.

A leaflet dated November 2020, addressed to Wedela Primary School: and "Dangers associated with slimes dam water" was sighted. The leaflet answers the following questions: What is cyanide? What is a slimes dam? Is cyanide dangerous? Do slimes dams and the water dam contains cyanide? and Can we swim in the water dam?
The second part of this campaign was to distribute leaflets to the Wedela High School by the end of November, but this has been delayed.

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:
The majority of the general population is literate. However, presentations are given in the Xhosa and Sotho languages, as appropriate. Copies of presentations are made available to stakeholders who requested them. The 2020 year communication program was affected by the Covid-19 Pandemic restrictions, with the resulting limitation on physical visits to schools and community organisations.
In terms of making information publically available, Group communication policy is followed. Cyanide incident response would need to be prepared by Corporate Communications Dept.
https://www.harmony.co.za/invest links to Harmony Reports. See Page 118 of the Harmony Integrated Report 2020, which includes a discussion on the Cyanide Code in the Harmony Group. The Cyanide Code is mentioned in the sustainable development report. Information on significant cyanide exposures and releases would be made publicly available, after appropriate investigations, via the annual Harmony Integrated Report, should incidents occur. No cyanide accidents or incidents have occurred since the last re-certification.
Fatal accidents or mass incidents will be handled via the Corporate Communications Department. Newsflashes are distributed within the Company via e-mail. Incidents are reported to the Department of Mineral Resources (DMR) by mine management. The DMR reports selectively on repeated or critical incidents. Information on significant cyanide exposures would be made available, after appropriate investigations, via the annual Harmony Integrated Report, should incidents occur. https://www.harmony.co.za/invest
Tanker Services Food and Chemicals/Imperial Logistics, the certified transporter, is responsible for transport incidents and reporting on off-the-mine property transport incidents.
Mine releases are reported to the Department of Water Affairs (DWA) and the Department of Environmental Affairs (DEA), following an investigation by the Mine Environmental Department. Government Departments do not routinely make all incident

reports public. Harmony Group Communications Department will include the information annually on the Harmony websites. Sasol and Tanker Services are responsible for releases as a result of tanker incidents en route to the mine. Group communication policy is followed.