

***INTERNATIONAL CYANIDE
MANAGEMENT INSTITUTE***

***Recertification Audit
Mining Operations***

Summary Audit Report

***Harmony Gold
Doornkop Gold Plant
South Africa***

15th – 19th April 2024

***For the
International Cyanide Management Institute***



Name of Operation: Harmony Doornkop Gold Processing Plant

Name of Operation Owner: Harmony Gold Mining Company

Name of Operation Operator: Harmony Gold Mining Company

Name of Responsible Manager: Mr Jan Roos, Process Manager

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Location and General Description of the Operation

Doornkop Gold Plant is situated 15km south of Krugersdorp, next to the R558 road en route to Lenasia and 25 km west of Johannesburg in South Africa. The plant was commissioned in mid-1985 and has a design capacity to process 200,000 tons of ore per month. Currently, both Reef and Waste material from the Doornkop shaft and third-party material from Amatshe Mining are treated at the plant using two milling streams.

The gold plant consists of a Reclamation section (which is designed to receive the ore by overland conveyor, rail and road trucks), a Milling section for grinding ore to the required size distribution in order to liberate the gold particles, Thickeners for dewatering (pulp for leach feed), a Leach section for dissolution of gold (using liquid sodium cyanide as one of the reagents), Carbon in Pulp for adsorption of dissolved gold and a recovery section which consists of Elution, Electro-winning and a Smelthouse. Bulk liquid sodium cyanide is delivered by a dedicated tanker and stored in bulk storage tanks in a secure, fenced area. Bulk liquid sodium cyanide is delivered by a dedicated tanker and stored in bulk storage tanks in a secure, fenced area. All tailings are pumped to a Tailings Storage Facility adjacent to the plant on the northern side.

The gold extraction technique at the Doornkop plant is based on the cyanide leaching process that is followed by the carbon-in-pulp process to recover the dissolved gold from the leach solution. The addition of cyanide at the leach is based on mass-flow and is controlled by a TAC (Proprietary name) analyser in

order to ensure accurate dosing. A WAD (Weak Acid Dissociable) cyanide analyser is installed to analyse WAD cyanide concentration at the tail end of the plant.



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 any compliance issues during the previous three-year audit cycle

Audit Company: Eagle Environmental

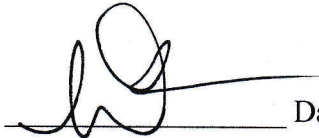
Audit Team Leader: Arend Hoogervorst

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Names and Signatures of Other Auditors:

Name: Dawid M. L Viljoen
Technical Auditor

Signature



Date: 31 July 2024

Dates of Audit: 15th – 19th April 2024

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

I attest that this Summary Audit Report accurately describes the findings of the verification audit. I further attest that the verification audit was conducted in a professional manner in accordance with the International Cyanide Management Code Verification Protocol for Mining Operations and using standard and accepted practices for health, safety and environmental audits.

Doornkop Process Plant



2 AUGUST 2024

Facility

Signature of Lead Auditor

Date

Doornkop Processing Plant

Signature of Lead Auditor

30th July 2024

Principle 1. PRODUCTION AND PURCHASE:

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 certified 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:

A Harmony Group cyanide supply contract with Sasol South Africa (Pty) Limited (Sasol) is in place, and Doornkop Gold Plant, as a Harmony Group member, only purchases liquid sodium cyanide from Sasol. Sasol is a certified cyanide producer, and it was confirmed that Sasol was certified as fully compliant on 7th March 2022. As the cyanide production facility is fully certified, and Doornkop only purchases cyanide from Sasol, the principle is compliant.

Principle 2. TRANSPORTATION:

Require that cyanide is safely managed through the entire transportation and delivery process from the production facility to the mine by use of certified transport with clear lines of responsibility for safety, security, release prevention, training and emergency response.

Standard of Practice 2.1: Require that cyanide is safely managed through the entire transportation and delivery process from the production facility to the mine by use of certified transport with clear lines of responsibility for safety, security, release prevention, training, and emergency response.

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 are only two components of the Doornkop Gold Processing Plant chain of custody, Sasol, the producer, and Tanker Services Food and Chemicals/Imperial Logistics (Tanker Services), the ICMI-certified bulk liquid cyanide transporter, which was recertified on 1st April 2022. Doornkop Mine only purchased liquid cyanide from Sasol, including the production and transport of the cyanide from the Sasol Cyanide production facility to the Cyanide storage on site.

The Chain of Custody document package relating to cyanide deliveries made to Doornkop Gold Mine were sampled for deliveries made in 2022 and 2024. Documents reviewed and sampled included Harmony purchase orders, Sasol tax invoices, Sasol delivery notes-dangerous goods declarations, Sasol Delivery notes, Sasol certificates of analysis, and Tanker Services delivery notes.

Principle 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:

There have been no changes to the unloading and storage cyanide facilities that have occurred since the previous audits, which noted the following: "...The reagent strength facilities are inspected by Sasol annually...Sighted P&ID [Piping and Instrument Drawing] for Calcium Cyanide Storage NAF 200150012, rev. 8 of 23/12/86, P&ID for Sodium Cyanide NAF2001500022 rev 7 of 23/12/86. Doornkop South Reef Project - Feasibility study - Aug 2002 (Doornkop Plant Process Description and Basic Design Statistics - containing cyanide tank volume and pump volume specs) civil or structural drawings available. Sighted civil drawings of cyanide storage: NAF2000130011 ref 226/7/84, General arrangement and concrete details NAF2000100011 ref 2 of 29/6/84. Sighted note from TB Jordaan Pr. Eng. indicating he has completed the inspections and sighted the report K2855, dated 23 November 2011, concluding that the items, including intake structure, bund walls and floors, concrete plinths and supporting steel structures, are in good safe condition and that normal maintenance should be carried out. The cyanide dosing system was replaced with a single line dosing system with polypropylene piping and peristaltic pumps. The pipes material specifications indicate a level 1 (highly resistant) for cyanide and Caustic solutions..." It was confirmed that the documents above and other design documentation were still available and accessible.



Sasol, the cyanide producer, continues to inspect the unloading and storage installation annually. There was no inspection in 2022 due to COVID-19 disruptions. The Inspection Reports dated 21 April 2023 and 23 February 2024 were sighted with audit scores of 92% and 98% respectively.

The cyanide offloading and storage facilities are situated away from any workshops and people. The control room on the first floor across the pathway is the closest area where people are working. The control room windows are sealed, and a fixed HCN (Hydrogen Cyanide) gas monitor is installed in the storage area. The storage area is located in an open-air environment and is not situated close to surface water. The sodium cyanide tankers are parked on a concrete surface, sealed with bitumen, equipped with a drain hole, and drained by gravity into the cyanide bund area. The condition of the surface and offloading area was sealed and in good condition, as noted during the site inspection.

The cyanide storage tanks are equipped with ultrasonic level indicators with alarms linked to the SCADA (Supervisory Control and Data Acquisition) system in the Control Room. Cyanide is ordered monthly and delivered only when the levels are lower than the specified levels (40%). The offloading procedure in Task 10(b) requires the Company Qualified Person (CQP) to ensure that there is sufficient storage space to offload the tanker and verify the tanker quantity with the free storage space in the tanks, and Task 10 (c) requires a pre-offloading checklist to be completed. It was confirmed with the Staff responsible that the cyanide is only offloaded at a maximum of 40% tank level. Levels are checked two days before scheduled delivery to ensure that there is enough space available for the delivery. The SCADA system will alarm at high levels (90%) in the cyanide storage tanks. It was confirmed during interviews with staff and viewing the SCADA in the control room that the tanks are interconnected. It was also observed in the control room that the tank levels were both at 60% and the other at 59%. The third tank was 60%. The tank level indicator system is part of the DMS (proprietary name) Planned Maintenance System (PMS) for inspection and maintenance. Accuracy is confirmed by the mass balance calculations, which correlate with the level indicators.

The tanks are conical bottom tanks on legs, installed inside a concrete bunded area. The bunded area was confirmed to be constructed from concrete, providing a competent barrier to leakage and no cracks were observed.

The cyanide storage tanks are located in an open-air environment, and each tank is equipped with a ventilation pipe on the top to prevent the build-up of hydrogen cyanide gas. The cyanide storage area is fenced in and locked, with only authorised staff being allowed into the area. Keys are kept in an electronic key control lock-up safe. The safe can only be accessed by Staff with a unique PIN, which allows them access to only specific keys they are authorised to use. The procedure, Access, Register and Key Control to Cyanide Installation, was sighted and reviewed. Data is stored for 5 years on the electronic system. The cyanide storage area is further situated within a security fenced area with 24-hour/7-day access control. It was confirmed during the site inspection that the cyanide storage area is located separately from other non-compatible chemicals. The caustic / cyanide storage tanks are situated in the elution area bund system.

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:

There is no empty cyanide container management necessary as only bulk liquid 32% sodium cyanide is used, and it is delivered by tankers from Sasol, the producer, using an ICMI (International Cyanide Management Institute)-certified transporter, Tanker Services. The offloading procedure: Liquid cyanide offloading, includes the requirement to clean the connections, hosing, couplings and the tanker's outside after offloading of the liquid cyanide. This is indicated in detail in Task steps 31, 34 and 35.

The offloading procedure, Liquid cyanide offloading, details the sequential operation of couplings and valves, split between the Company Qualified Person (CQP) and the Tanker Driver, using a pre-offloading inspection checklist. Maintenance of the hoses, valves and couplings on the plant side of the main coupling is the Plant's responsibility and hoses, valves and couplings from the main coupling to the tanker are the transporter's (Tanker Services) responsibility. The Plant couplings are inspected weekly by the Foreman. The procedure under tasks 31, 34, 35 and 36 details the duties of the driver and the Company Qualified Person (CQP) in terms of washing and cleaning of the equipment, the area, and the required Personal Protective Equipment (PPE). Any cyanide spills occurring due to equipment failures or other inadvertent or abnormal events would be dealt with as a cyanide emergency, and responded to accordingly. With regard to offloading, safety signage prohibiting eating and drinking, indicating which PPE must be worn, a general instruction and first aid treatment poster, no smoking signs, no open flames signs, and the emergency alarm location were all observed. Duties of a Buddy (sentry) are covered in the procedure, and are also referred to in the procedure, Buddy System. Red dye is added by the producer at the point of production. Doornkop does not add dye to its liquid sodium cyanide. The Safety Data Sheet (SDS), which forms a part of the contract, stipulates in section 9 - physical and chemical properties, that the colour of the product is light to dark red.

Principle 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 including 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:

There are a total of 73 cyanide-specific procedures in place on the Plant, including appropriate engineering procedures. The Tailings Storage Facility (TSF) is operated using the Harmony Gold Mining Company Limited Doornkop Operations, Tailings Dams, Mandatory Code of Practice (COP) For Mine Residue Deposits and the Intasol (TSF Contractor) Operational Manual, Harmony Gold Mine Doornkop Plant. Intasol uses a total of 20 operating standards to run the TSF, based on a Baseline Risk Assessment. External technical supervision is provided by external Engineers of Record, Jones & Wagner, who monitor activities quarterly and produce an Annual Audit Report. TSF Freeboard requirements are specified by design documentation, government legislation, and ongoing monitoring by the engineers of record. The Plant procedure, High Cyanide Levels in Residue Slime, specifies the maximum level of 50 ppm WAD cyanide in the residue slime."...WAD cyanide readings not to exceed 50 ppm in the residue slime at all times..." Doornkop is not permitted to discharge to surface water.

The Monthly safety inspections book (referring to Mine Health and Safety Act section 11, Minerals Act and Regulation 2.19.1) was sighted covering the whole plant. Faults are recorded, and job cards are made out and entered into the DMS (proprietary name) PMS system. Inspections covering cyanide facilities were sampled. The Shift Foreman's weekly area inspection covering cyanide equipment and cyanide storage, including safety showers, cyanide emergency equipment, first aid kits, PPE (Personal Protective Equipment), antidote expiry, alarm test, bunds, pipes, pumps and tanks for leaks and corrosion, dosing points for leaks, and bird and wildlife mortalities, was sighted and sampled for morning, afternoon and night shifts in 2022 and 2024. The Metallurgical Shift Foreman's Weekly over-inspection of cyanide equipment and cyanide storage facilities which includes checking all cyanide emergency equipment, antidote, safety showers, locked offloading flanges, cyanide cage locked, bund area clean and dry, and whether there is any corrosion, or any leaks on all pipes pumps and storage facilities, was also sighted and sampled for 2022 and 2024.

There is a quarterly inspection of the TSF, which includes the Engineer of Record (Jones & Wagner - J&W). Quarterly Reports were sampled for 2022, 2023 and 2024. The Daily log sheets for tailings dams are contained in a monthly workbook. The checklist includes wildlife mortality rates.

The TSF Daily Diary for December 2022 and April 2024 were sampled. The reports include valves, delivery lines, overtopping observed, vertical freeboard, wildlife mortality rate and general remarks. The daily inspections were signed off by the Operations Supervisor and the Deposition Manager. The forms include the names of the inspector and Safety Representative. The report includes a comments column. No wildlife mortalities have been reported for the three years since the previous recertification audit. TSF contractor Intasol has Hazard Management System (HMS) reports, which are included in a monthly dashboard that is reported to the plant. The HMS reports include freeboard trends, tonnage trends, piezometer readings, average densities, and monthly and yearly rainfall trends.



The Harmony Corporate Management directive on change management, SPP4, is used on the plant. The last MOC (Management of Change) exercise was MOC01-2013, dated 22/10/2013. No MOCs have been undertaken since then. MOCs are signed off by Health, Safety and Environmental officials. No significant changes, which increased the risk potential of cyanide releases and worker exposures, were made to the process plant or the TSF since the previous audit. This was also confirmed during the site inspection.

The Probabilistic Water Balance (PWB) indicates that there is no scenario where the plant needs to be stopped due to water balance upsets. The plant is a net user of water and is subject to potential water shortages. The High Cyanide Levels in Residue Slime procedure, defines what to do in case of WAD cyanide risk in tailings slurry. The plant will be stopped temporarily in the case of breakdowns or planned shutdowns using standard plant stopping and starting procedures. The Plant Stopping and Starting Procedures were sighted.

The procedure, Temporary closure or cessation of operations in case of emergencies, abnormal scenarios, and planned shutdowns, was sighted and reviewed. The purpose of this procedure is to detail the process to follow in the case of the need for a temporary closure of the process plant and TSF when the plant operations need to be suspended due to identified issues or if abnormal or emergency scenarios require the temporary closure of the plant. An issue-based risk assessment would be undertaken to customise responses. Planned maintenance (PM) and operational inspections are carried out on all cyanide equipment in the Plant. The following is a summarised review: -

Tanks

All tanks are subject to 2 yearly thickness testing by external specialists, Quest. Quest is also required to carry out visual inspections on the tanks that they check. A two-yearly PMS work order triggers the thickness testing process. Sequencing of PM inspections on tanks may be disrupted by high-priority tank leaks that have to be repaired first.

Quest Thickness Testing on Cyanide Tanks 1, 2 and 3 was carried out on 5 December 2018, and 7 December 2023 was sighted and reviewed. Testing was carried out on the tanks in 2020, but Quest "lost" the results. The Boilermakers Weekly Visual inspection of tanks and pipes checks for leaks and corrosion. Works Orders dated 11-3-2022, 11-8-2022, 12-3-2024, and 9-4-2024 were sighted and sampled. The Mechanical Foreman carries out a monthly Cyanide Tank visual over-inspection, and Work Orders dated 19-1-2022, 11-4-2022, 24-2-2024, and 25-3-2024 were sighted and sampled. Checks for visual structural integrity, corrosion and leakage in tanks are included in a number of other PMS inspections. These include the shift foreman's weekly inspection, the fitter's weekly Cyanide Area inspection, and the Boilermaker's weekly inspection of the leach. When the Shift Metallurgical Foreman carries out his rotational 3 Monthly Draining of Leach Tanks, he notifies the Mechanical Foreman 24 hours before so that he can arrange a mechanical inspection of the inside of the leach tanks for integrity, leaks, and corrosion. All tanks are inspected for structural integrity and concrete condition in the 2 yearly Structural audits carried out by a Structural Engineer. (This was confirmed in the Audits carried out in 2018 and 2020.)

Secondary containments provided for tanks and pipelines

The Cyanide bund is subject to a flood test every 6 months to check bund integrity, and the Shift Met Foreman's weekly "Inspection of Bund Areas on the Treatment Section"

covers % spillage and cracks and hairline cracks in the Leach bund, CIP (Carbon in Pulp) Bunds 1 & 2, Elution Bund, Electro-winning bund, and Tailings Bund. PM Work Orders dated 4-5-2022, 11-10-2022, 6-1-2024 and dated 13-4-2024 were sighted and sampled. No secondary containments are provided for tanks and pipelines on the TSF as they are all within the TSF footprint.

Leak Detection and Collection Systems at leach pads and ponds

There are no leak detection and collection systems at the ponds, and no heap leach or pads on the mine.

Pipelines, Pumps and Valves

The weekly general plant inspection includes pipelines, pumps, valves, trenches and Works Orders were sampled and reviewed. Pipelines, pumps, and valves are also included in the Boilermaker's weekly "Cyanide Area Inspection". Works Orders dated 11-3-2022, 11-8-2022, 12-3-2024, and 9-4-2024 were sighted and sampled. The Fitters weekly "Inspection of the Cyanide Area also includes pipelines, pumps, and valves and Work Orders dated 16-2-2022, 10-4-2022, 2-2-2024 and 26-3-2024 were sighted and sampled. The Mechanical Foreman inspects the Slimes Dam and Return Water Dam weekly, checking valves, pumps, and pipe leaks. Work Orders dated 11-3-2022, dated 14-10-2022, 11-1-2024, and 16-3-2024 were sighted and sampled. On the TSF, pipes and valves are inspected daily, and reports are submitted. This was confirmed in the Intasol daily inspections. Any problems are reported to the plant and a work order will be raised in the PMS on the Plant. The Tailings TSF pipeline (Rubber-lined) is included in the PMS system.

Ponds and Impoundments

The Plant Surge Pond is inspected during shiftly inspections. An electronic level indicator fitted with an alarm is installed on the Surge Pond. The Met (Metallurgical) Foreman inspects the Return Water Dam weekly. Work Orders for this dated 12-6-2022, 11-12-2022, 2-2-2024, 13-4-2024, and 29-04-2023 were sighted and sampled. The Met Foreman also carries out a monthly Surge Ponds inspections and the work order dated 29-04-2023 was sampled. The Mechanical Foreman inspects the Slimes Dam and Return Water Dam weekly, checking valves, pumps, and or pipe leaks. Work Orders for this were sighted for 11-3-2022, 14-10-2022, 11-1-2024, and 16-3-2024. Surface water diversions are monitored by the Plant personnel. Each dam is inspected for integrity and possible overflows. The process also involves inspecting all water channels. The physical levels are checked by the Environmental Department, who report on the physical level of the Final return water dam weekly. On the TSF, freeboard is measured monthly and reported in the Hazard Management System (HMS) dashboard and reported quarterly, as well as in the Jones and Wagener (J&W) Quarterly reports. The J&W quarterly reports and HMS were reviewed and confirmed in samples for 2022 and 2024. The Plant Foreman is responsible for measuring the return water dam level.

Engineering inspections are done according to the PMS scheduling system (which includes daily, weekly, and monthly) and were started in July 2009. Operational inspections are conducted shiftly, daily, weekly, and monthly by the shift and discipline foremen. On the TSF, inspections are included in Annual Reports and Quarterly Reports. Engineering inspections are done according to the PMS scheduling system (which also includes daily, weekly, and monthly). Intasol conducts daily inspections, which were



confirmed and sampled for 2022, 2023, and 2024. The inspection frequencies are deemed sufficient to assure and document that cyanide facilities are functioning within design parameters.

A detailed review of sampled PMS Work Orders in 2022 and 2024 indicated that the documents include the date of the inspection, the name of the inspector, and any observed deficiencies, the nature and date of corrective actions, and records are retained on the DMS 2000 PMS system. Operational inspection deficiencies are recorded in a work order. Deficiencies may also be loaded onto the PIVOT (proprietary name) Safety System, which tracks the progress of corrective actions and reports progress (or otherwise) by emails to supervisors and managers. On the TSF, inspection reports were reviewed, documenting the date and name of the inspector (printed and signature), observed deficiencies, and corrective actions noted. Thus, it was confirmed that Code requirements were met. The TSF daily log book was sampled, and it was confirmed that the code requirements were being met.

A formal planned maintenance system (PMS) is in place. The DMS 2000 (proprietary name) computerised PMS system, commissioned in July 2009, was electronically reviewed. The PMS focuses on foremen, fitters, boilermakers, electricians, and instrument technicians' inspection schedules and inspections. The metallurgical inspections and over-inspections are also included in the PMS system. A Work Order system is used to form the basis for determining PMS maintenance frequencies. The system includes a root cause analysis facility; breakdown statistics can be drawn from the system to identify specific maintenance issues, e.g., the replacement of the cyanide mono pump with hose pumps. The auditor received an online demonstration of the DMS 2000 PMS system confirming that the critical cyanide equipment is included in the system. The PMS system includes both the Plant and the TSF. The DMS 2000 was a hard copy, document-based system until March/April 2023, when a tablet-based system was introduced to reduce the amount of paper used. Not all foremen have been issued with tablets, so the system currently uses both paper-driven inspections, and electronic inspections recorded on tablets. In sampling Work Orders, all sampled Work Orders for 2022 and 2023 were paper-based, and Work Orders for 2024 were electronically reviewed.

The plant was designed with bund areas that contain all spillages during a power outage. The bund areas are equipped with sump pumps that would return the bund contents to the process following the restoration of power. Overtopping from the bunds will flow to the emergency pond, from where spillage could be pumped back to the process. Thus, no emergency power is needed. During previous audits, the SRK (consultants) report Doornkop Return Water Dam operating and maintenance manual, dated November 2008, calculated dam capacity and ability to contain 1:200-year extreme storm events and demonstrated more than adequate spare capacity. No Emergency power pumping or power generating is required.

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:

The operation implements diagnostic leach and bottle roll tests to evaluate cyanide use in the mill and adjust the addition rate to minimize its use. The following tests sighted are aimed at determining the standard required rate of cyanide addition:

- Bottle roll tests are conducted on various sources, including Sodium Cyanide and Lime consumption results:

- * Tests for Amatshe Mining and Doornkop sources for 4/01/2024 and 11/4/2022 were sighted;

- * Doornkop Reef and Waste dated 8/1/2024, including NaCN and CaO addition rates;

- Diagnostic leach tests are done by SGS Laboratories on Reef and Surface sources on an ad hoc basis. Diagnostic leach reports sampled included: -

- * **2022:** The Metallurgical report no 2022/2545, dated 21 September 2022, reviewed the third-party Amatshe Mining DKS 392 source and Doornkop Reef. The Amatshe indicate 89.29% Gold available to direct cyanidation and 5.36% Preg robbing fraction. The Reef sample Gold available to direct cyanidation is 97.05%, and a Preg robbing fraction of 0.41%. The sulphide fractions vary from 2.09 to 0.39%.

- * **2024:** The Metmin report 2024-3619 Diagnostic leach report, dated 25 March 2024. The report includes two composites, Doornkop Reef and Doornkop Waste. The Reef available to direct cyanidation is 87.8% and with Preg robbing fraction 11.8%, indicating the presence of carbon in the source. The Waste source indicates 23.4% available to direct cyanidation and 70.3% Preg robbing gold association, indicating the need for Carbon in Leach (CIL); and

- Cyanide optimisation tests were also done by a student in 2023, and the test report was sighted.

The Metallurgist reviews all reports and makes recommendations on changing the operating parameters, including leach cyanide parameters, in order to optimise the process efficiency.

A memo dated April 2024 from the Plant Manager to the Senior Metallurgist was sighted, covering dissolution continuous optimisation. This includes bottle roll tests and diagnostic leach tests on ore sources, as well as routing bottle roll tests. The parameters tested include cyanide, as well as keeping records of any parameter changes in the process.

Recoveries are monitored daily on assay results, and cyanide addition rates are reviewed when necessary for leachable gold in residue.

Feed forward cyanide addition is controlled using the thickener underflow mass flows and a NaCN setpoint as g/t (grams per ton) NaCN, changing the speed of variable speed hose pumps at the cyanide storage area. The NaCN ratio/g/t addition rate is further



refined by feedback cyanide dosing control using free cyanide results from the Process Analytical Systems TAC 1000 online analyser. Residual cyanide is measured by the TAC 1000 analyser on the final leach tank and evaluated in the cyanide setpoint decision. The TAC 1000 analyser values are checked using manual titration every 2 hours, and action is taken when significant differences are identified. It was confirmed that titrations are recorded on the shift log sheets. A monthly maintenance contract is in place with Process Analytical Systems, who also can be called in case of TAC 1000 problems. In addition, 2 hourly samples for Free cyanide titration are taken from the first and last leach tanks and the last adsorption tank. Titration values are compared with the TAC 1000 analyser in leach tank 1, and the discrepancy is investigated to determine if it is significant.

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

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 4.3**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

A comprehensive Probabilistic Water Balance (PWB) is in place, which includes the Plant and the TSF. The water balance model is probabilistic because it takes into account the uncertainty and variability inherent in the prediction of precipitation patterns. It includes the frequency and distribution of precipitation events, along with extremes and seasonal variations, not just average conditions. It was confirmed that the PWB includes the actual rates at which tailings are deposited into tailings storage facilities (TSF).

An SRK Consulting report, Doornkop Return Water Dam operating and maintenance manual, dated November 2008, calculated dam capacity and ability to contain a 1:200-year extreme storm event of 144 mm and demonstrated that more than adequate spare capacity was available. No changes were made to the design and operating model used originally. It was confirmed that all the documentation was available, and the above manual was sighted electronically during the audit.

Actual rainfall is measured at the TSF and recorded in the Intasol daily reports and monthly HMS (Hazard Management System) reports. Rainfall data is also obtained from the Durban Roodepoort Deep GM rainfall station (0475611 W), located approximately 9km from the site and with 95 years of historical observed data available. Evaporation data used is from the national Department of Water and Sanitation (DWS) evaporation station C2E007, the nearest source. The evaporation data was obtained from the Department of Water and Sanitation (DWS) online database. The monthly and annual rainfall measurements were confirmed in the Intasol Monthly HMS dashboard reports. The amount of precipitation entering a pond or impoundment resulting from surface run-on from any upgradient watershed, including adjustments as necessary to account for differences in elevation and for infiltration of the runoff into the ground, was confirmed

in the PWB review. The Jones & Wagner (J&W) annual and quarterly reports include freeboard and rainfall reviews. TSF operating practices are revised, as and when necessary. The mine is located in an area where there are no significant snow events that would produce freezing and thawing conditions that would affect the accumulation of precipitation.

Solution losses, in addition to evaporation, such as the capacity of decant, drainage and recycling systems, and seepage to the subsurface, are given consideration in the PWB, as appropriate. There are no treatment, destruction or regeneration systems currently in place and no solution is discharged to surface waters. Phreatic surface measurements from J&W quarterly reports and the Intersol HMS reports are given consideration in the PWB.

In the electronic review of the DMS 2000 system, it was confirmed that there were frequent inspections of the water systems, including storm water trenches, to implement the water balance model. Weekly clearing stormwater drain inspection by the Met Foreman was sighted, and work orders were sampled and reviewed in 2022 and 2024. J&W quarterly reports also checked that ponds and impoundments were designed and operated with adequate freeboard above the maximum design storage capacity.

The Return Water Dam (RWD) is inspected weekly by the Met Foreman, and inspection reports were sampled for 12 June 2022, 11 December 2022, 2 February 2024, and 13 April 2024. The Met Foreman also carries out weekly slimes dam inspections, and these were sampled for 8 May 2022, 13 November 2022, 2 February 2024 and 29 March 2024. Inspection and monitoring activities to implement the water balance and prevent overtopping of ponds and impoundments and unplanned discharge of cyanide solutions to the environment were also confirmed in J&W quarterly reports, Intasol HMS sheets, and daily 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 graph of the WAD 1000 analyser from January 2022 to March 2024 was reviewed. It included approximately 18 exceedances, which were covered by 13 investigation reports that were sighted and reviewed. Some reports covered more than one exceedance.

The reviewed exceedance reports included the issue identified, the corrective action, and any follow-up required. It is deemed that the operation addressed the various problems effectively, and the results show that the WAD cyanide values in the tailings tank were controlled at less than 50 mg/l (milligrams per litre), with the exception of condoned upsets.



As the WAD cyanide in the tip point to the TSF is at less than 50 mg/l, it is assumed that the downstream open water return water dam will also be at less than 50 mg/l WAD cyanide. The analytical results of weekly samples were sighted. They yielded WAD cyanide values at less than 0.5 mg/l from the return water dam. The Return Water Dam WAD cyanide samples from the Environmental Department showed all results are below 0.5 mg/l WAD cyanide. Thus, the return water dam is not deemed a cyanide facility.

The samples indicate that no measures to restrict wildlife and livestock access to the TSF are required. The plant is fenced to prevent livestock from entering the plant.

The surge ponds are operated at cyanide levels below 50 ppm WAD cyanide. Weekly samples are taken, and the results indicate that the dams are less than the limits of detection of 0.5 mg/l. A WAD cyanide analyser is installed, taking samples from the tailings tank, which is pumping slurry to the TSF. The samples are analysed every 12 minutes, spot free cyanide values are recorded two hourly by the control room operators and logged and inputted into a spreadsheet. A screen alarm in the control room activates at 45 ppm, with a red alarm at 50 ppm.

It was reported during the interview with the Intasol Site Manager that no wildlife or bird fatalities have been recorded since the previous recertification audit. The Intasol daily inspection records were reviewed for wildlife mortalities, and it was confirmed that none were present. It can, therefore, be concluded that maintaining a WAD cyanide concentration of 50 mg/l or less in open water is effective in preventing significant wildlife mortality. The mine has no heap leach facilities.

***Standard of Practice 4.5:** Implement measures to protect fish and wildlife from direct and indirect discharges of cyanide process solutions to surface water.*

X in full compliance with

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

Basis for this Finding/Deficiencies Identified:

The mine is a no-discharge mine, with no discharge permits in place. There is no direct discharge to surface water.

Samples are taken from upstream PCD (Pollution Control Dam) RWD (Return Water Dam), and all values are below the detection limits of 0.003 mg/l WAD cyanide. Samples are also taken from the Farmers Dam, and similarly, all values are below the detection limits of 0.003 mg/l WAD cyanide. Groundwater samples are taken downstream of the TSF and the return water dam and the values are at less than the levels of detection. This indicates no indirect discharges due to seepage from the TSF occur. The sampling map indicating the up- and downstream sampling positions of ground and surface water was sighted and reviewed. There is no established mixing zone, and thus, this does not form part of the evaluation process. There are no direct or indirect discharges from the operation that have caused cyanide concentrations in surface water to rise above levels



that are protective of a designated beneficial use for aquatic life, and therefore, no remedial activity has had to take place.

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 plant is equipped with tarred roads, concrete slabs, bund walls and brick paving, reducing the seepage to groundwater in case of any spillage. On the TSF, seepage management practices are in place. The TSF is designed with under-drains draining to the return water dam. The pool is controlled as per the TSF COP. A penstock is used to remove water from the pool, and it drains into the return water pond. The return dam wall is equipped with drain pipes, and any seepage is returned to the main dam. No scavenging boreholes are used. The return water dam is unlined but reported to be on a clay base. This is documented in the SRK report, Return Water Dam Doornkop Analyses, August 2007.

No specific beneficial uses are identified, but the mine chose to use 0.5ppm WAD and Total cyanide as the limit for groundwater levels. Monitoring boreholes are in place and sampled 6 monthly. Samples are also analysed for WAD cyanide. Boreholes cover the upstream and downstream areas of the TSF. The borehole sampling map was sighted, indicating the sampling positions of ground and surface water, and sample values from certification until December 2023 were reviewed.

- Borehole DKP1 Upstream of the TSF - All values are below 0.003 mg/l WAD cyanide.
- Borehole DKP 3 Downstream of TSF - All values are below 0.003 mg/l WAD cyanide.
- Borehole DKP 13 Downstream - All values are below 0.003 mg/l WAD cyanide.

The mine does not make use of tailings as underground backfill. Seepage from the operation has not caused the cyanide concentration of the groundwater to exceed the legal limits for groundwater, and no remedial activity has, therefore, had to be undertaken.

Standard of 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:



There were no changes since the previous recertification audit. The cyanide storage, leach, CIP (Carbon in Pulp), elution and residue tanks are all placed inside concrete bund areas. The cyanide storage tanks and residue tanks are of a conical design type and are placed inside concrete bunds. The CIP tanks are flat bottom tanks, installed on a raised solid concrete civil foundation (confirmed in drawings sighted during the original certification audit) inside a concrete bund. The elution tanks are placed on concrete plinths. The leach tanks are flat-bottomed and installed on a solid concrete civil foundation. Evidence during the original certification audit indicated, "...base design is a solid design and not ring beams - sighted civil drawing - confirmed during original certification audit...". An interview with the Planned Maintenance Foreman and Plant Engineer confirmed that the referred-to drawings are still available.

There has been no change in containment or tank volumes since the previous certification:

- Cyanide storage bund: 142 m³, tank 38 x 2 m³,
- Leach bund: 3 145m³, largest tank operating volume 1372m³,
- CIP (Carbon in Pulp) bund 252m³, tank 229m³,
- CIP2 252m³, tank 229m³,
- Elution 164m³, tank 25m³,
- Tailings tank bund 338m³, tank 276m³.

There are no process tanks without secondary containment. Solutions collected in secondary containment are pumped back to the process. The cyanide sump pump returns the spillage to the leach circuit in the leach feed (manual start/stop), the Leach sump pump return spillage to the leach, the CIP sump pumps return spillage to the CIP tanks, the residue sump pump returns spillage to the residue tank, and the trench pump return water goes to the CIP tanks.

It was confirmed during the site inspection that the cyanide pipelines are placed in secondary containment (launders closed on top) between the cyanide storage and the leach bunds. The Elution feed cyanide line is placed inside a launder and closed on top as secondary containment.

The residue pipe between the plant and the main valve station to the ring main is located inside an earthen trench. The Mechanical Foreman weekly slimes dam and return water dam inspections include pipes and inspections. Inspections dated 11 March 2022, 14 October 2022, 11 January 2024 and 16 March 2024 were sampled and reviewed. All TSF pipelines are rubber-lined as an additional spillage prevention measure. Some sections have been replaced with HDPE (High-density polyethylene) pipes. Intasol inspects the ring main and feed station pipeline and valves and reports to plant management. The Business Unit Leader inspects the pipeline weekly. The Security Department do drive-by monitoring, including TSF pipelines, after hours. Leaks are reported to the control room. This was confirmed during the interview with a Security Officer. The weekly slimes dam inspections by the Electricians dated 10 February 2022, 5 August 2022, 5 March 2024 and 5 April 2024 were sighted and reviewed.

There are no pipelines presenting a risk to surface water as there are no stream crossings or pipelines in proximity to freshwater dams.

Cyanide storage tanks are constructed of mild steel as per drawing, pipelines are constructed of polypropylene and schedule 40 steel lines, compatible with cyanide and

high pH conditions. The cyanide lines to the dosing point are made of HDPE. All TSF pipelines are rubber-lined as an additional spillage prevention measure. Some sections have been replaced with HDPE pipes.

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 significant TSF or Plant cyanide facility additions or modifications have been undertaken since the recertification audit.

Doornkop Mine commissions visual inspections every two years by professional registered engineers to ensure that the operation continues to be fit for purpose. The reports identify items that require repair and classifies them as either "Emergency Repair" – Potential for serious damage, should be done within 12 months, or "Repair" – to be repaired to original condition before maintenance can commence, should be done within 24 - 36 months, or "Maintenance" – Preventative and corrective should be done on a continuous basis.

The Structural Safety Audit Doornkop Plant Randfontein Report, dated May 2018, and carried out by H Dykman Pr. Eng. (ECSA- Engineering Council of South Africa, reg. no 20140475), was sighted and reviewed. No emergency repairs were required for the high-strength cyanide facilities. Some work was required in the category "Repair", and the Professional Engineer noted that this was ongoing. The Structural Safety Audit Doornkop Plant, Randfontein Report, dated June 2020, and conducted by H Dykman Pr Eng (ECSA reg. no 20140475), was also sighted and reviewed. The report uses the same classification as mentioned above in the 2018 report. Once again, no emergency repairs were required for high-strength cyanide facilities. The Plant Engineer continues to incorporate repair recommendations into his rolling repair and maintenance schedules. The eSIMM (electronic Structural Integrity Management Monitoring) Report Doornkop Plant, Randfontein, dated May 2023, was a continuation of the Structural Safety Audis carried out previously. Onsite inspections were done on 18 May 2023 by a Professional Engineer, T.B. Jordaan Pr. Eng., who is registered with the Engineering Council of South Africa (ECSA), registration number 920279. Recommendations were made for repairs, and an ongoing refurbishment program is undertaken annually. The Harmony Process Manager reported that nearly all of the priority work had been completed, including carryovers from previous structural SIMM (Structural Integrity Management Monitoring) audits and that it would all be completed with the new budget allocation this year (2024).



TSFs can be viewed as “works in progress”, and as such, quarterly and annual meetings and reports function as ongoing quality monitoring mechanisms. Various Jones and Wagener (Engineers of Record) Annual Reports were sighted and reviewed:

- Jones and Wagener Annual Report 2021 - Doornkop Mine Tailings Storage Facility signed by Engineer Ushma Vanmali and Technical Director Piet Smit.
- Jones and Wagener Annual Report 2022: Doornkop Mine Tailings Storage Facility - Surveillance 2022 signed by Engineer Ushma Vanmali and Technical Director Piet Smit.
- Conclusions:
 - 2021: "...The general condition of the facility is good. In terms of the overall general housekeeping and operations, the facility (TSF) is in an acceptable condition, with issues being dealt with as and when required as part of ongoing maintenance..."
 - 2022: "...The maximum tonnage allowable to ensure that the RoR (rate of rise) limit is not exceeded was determined to be 310,000 tpm (tons per month) for 2023.
 - Freeboard for the period under review was equal to or above legal requirements..."

Electronic files on quarterly reports for 2022 and 2023 were reviewed and sampled:

- Doornkop Mine TSF Doornkop Mine TSF Quarterly Inspection Second Quarterly Report For 2022, signed by Engineer Ushma Vanmali and Technical Director Piet Smit.
- Doornkop Mine TSF Doornkop Mine TSF Quarterly Inspection Third Quarterly Report For 2023, signed by Engineer Thabo Khoza, Engineer Ushma Vanmali and Technical Director Piet Smit.
- "...Conclusions:
Q2 2022: Freeboard has been above legal requirements, the phreatic surface is below the trigger level, and the average deposition rate for the quarter is 86,454 tons, which is below the operational target set. The current rate of rise (0.60 m/year (metres per year)) is well below 2 m/year, and therefore no concerns are raised. Thus, no “fit-for-purpose” concerns were raised for the quarter affecting TSF stability or overtopping.
- Q3 2023: Freeboard has been above legal requirements. The phreatic surface is below the trigger level for all functioning piezometers. The average deposition rate for the quarter is 120,795 tons, which is below the operational and maximum allowable target set. The current rate of rise (0.68 m/year) is well below 2 m/year, and therefore no concerns are raised. The average densities recorded over the quarter were above target. There was an overall decrease in measured drain flow from the previous quarter. Average pool levels on the TSF were below the standard practice levels for the review period, and no concerns are therefore raised..."

Quarterly meeting minutes for Q2 2022 and Q3 2023, including the corrective action plans and updates/completion columns of items identified during the quarterly site visits:

- Minutes: Third Quarterly Meeting of 2023, Chairperson: Piet Smit, Minutes by: Thabo Khoza, Held at Doornkop Mine on 11 July 2023. The Minutes include Health and Safety and the Quarterly Report Action Items, Action, Date and Priority columns.
- Minutes: Second Quarterly Meeting of 2022, Chairperson: Piet Smit, Minutes by: Piet Smit, Held at Doornkop Mine on 21 April 2022. The Minutes include Health and Safety and the Quarterly Report Action Items, Action, Date and Priority columns.

Standard of Practice 4.9: Implement monitoring programs to evaluate the effects of cyanide use on wildlife, and 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:

Doornkop samples their boreholes and streams according to the procedure: "Sampling solutions for WAD CN [Cyanide] analyses". Appendix 1 includes the sampling map. The procedure was drafted by appropriately qualified personnel from Harmony Gold Mining Company. The person who will be reviewing the procedure is Thabo Sithole, Senior Environmental Officer with a B.Sc. Environmental Management.

The procedure includes:

- How the samples should be taken - Task step 3
- Where samples should be taken: Task step 3 and Appendix 1. It was further confirmed in the map in the Harmony Gold Mine Quarterly Water Quality Report with surface and groundwater sample points (including the map and coordinates of the sampling points)
- Sample preservation techniques - task step 2
- Chain of custody procedures - task steps 13, 14, 17, 18 and 20 and using Aquatico Scientific laboratory.
- cyanide species - WAD Cyanide

The QA / QC (Quality Assurance/Quality Control) information for the Aquatico Scientific Laboratory was sighted and reviewed. There is no written procedure for wildlife monitoring activities. However, the TSF contractor is required to formally report any wildlife mortalities daily and the Environmental Department will investigate any wildlife mortalities on site.

The field sampling sheet was sighted and confirmed to include sampling conditions, i.e. weather, livestock /wildlife activity, and anthropogenic influences.

The surface and groundwater samples are taken every three months. The WAD cyanide values are sampled by an online WAD 1000 analyser, sampling approximately every 15 minutes from the residue tanks from where the tailings are pumped directly to the TSF.



Wildlife mortality monitoring is carried out daily. The frequencies are deemed adequate to characterize the medium being monitored and to identify changes in a timely manner.

Principle 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, livestock, and the environment.

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 decommissioning process was sighted in the "Decommissioning Procedure". The procedure includes the ICMI (International Cyanide Management Institute) definition of "decommissioning". It spells out what is included and what is excluded from the cyanide decommissioning process. The objectives of the decommissioning are

1. To ensure that no residual cyanide or cyanide products remain in the facility that could be a risk to demolition or other personnel at the site;
2. To ensure that no residual cyanide or cyanide products remain in the facility that could result in a risk to the environment or persons outside of the facility (the Public); and
3. To ensure that Demolition, Closure and Rehabilitation of cyanide facilities and associated infrastructure are performed in such a manner that the residual environmental impact from cyanide is minimised. The procedure also includes 14 specific requirements which are aimed at meeting the objectives mentioned above.

The decommissioning procedure, covering the decommissioning of the cyanide facilities, includes a decommissioning and closure schedule, which details the sequence of 15 activities, ranging from the closure decision being made, to the demolition of the facility. The procedure includes a review requirement of at least every three years.

Standard of Practice 5.2: Establish a financial assurance mechanism capable of fully funding cyanide-related decommissioning activities.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 5.2**



not in compliance with

Basis for this Finding/Deficiencies Identified:

The Closure Cost Assessment Closure - Cost Report: Doornkop, dated June 2023 and prepared by Digby Wells Environmental, was sighted and reviewed.

In the document, Section 11: Cyanide decontamination, Harmony, as an ICMI signatory, is required to set aside money for the closure of a cyanide plant. A figure of R719, 185 has been included for the third-party 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 Pachucas.

Closure cost estimates are updated on an annual basis, as per the requirements of the Minerals and Petroleum Resources Development Act, no 28 of 2002. Harmony has established a Trust (Harmony Gold Environmental Trust Fund) to act as the financial provider for expenditures which the members of the Trust are likely to incur in order to comply with their statutory obligations with regard to closure and environmental rehabilitation. The Harmony Gold Environmental Trust Fund (Trust No 8785/99) annual financial statements for the year ended 30 June 2022 (latest available), as required by the applicable jurisdiction, were sighted and reviewed. The Accounts were signed by the trustees Melanie Naidoo Vermaak and Herman Perry. The document was also signed by CS Masondo, registered auditor and Director of PricewaterhouseCoopers Inc., on the 31st May 2023.

Principle 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:

Plant operating procedures cover operations from the milling, leach, CIP, and Elution unit operations. The following procedures were sampled and reviewed to reflect on how they minimised worker exposure: -

- Offloading procedure: Liquid cyanide offloading, DKP55,
 - The duties of a Buddy are covered in the procedure, which also refers to the Buddy system procedure.
- Procedure for Cyanide Decontamination, DKP35

- Sighted clearance certificate procedures for hot work, DKP43
- Clearance certificate procedure for vessel entry, DKP49
- Operating The PAC 7000/ 8000 (Gas monitor), DKP59
- Obtaining And Compiling a Clearance Certificate- Normal Work, DKP29
- De-Choke a Frozen Cyanide Pipeline, DKP37
- Engineer's Permission for Maintenance on Cyanide Equipment, DKP18
- Entering A Confined Space: Sumps or Tunnels, DKP 38

All of the procedures minimised worker exposure through the use of prescribed PPE, pre-work inspections, Stop Look Assess Manage (SLAM) pre-task assessment, sequenced task steps and similar precautionary actions.

The procedure, Cyanide PPE (Personal Protective Equipment) Control, Care and Examination, was sighted and reviewed. During the site inspection, it was noted that signage is used extensively on the plant, indicating what PPE is required in the various sections. PPE for cyanide tasks is identified and trained in the cyanide hazard awareness course or e-learning, and it is trained and refreshed annually. It was confirmed that the TSF safe work procedures include the required PPE and a mandatory Stop Look Assess Manage (SLAM) pre-task assessment.

New and reviewed procedures are circulated to Foremen for discussion, who will involve their Operators for input. All procedures are signed off by a Trade Union Representative during procedure reviews. Planned Task Observations (PTOs) are conducted on Operators where issues of concerns may be raised and escalated for action. SLAMs are conducted before tasks, which includes all workers, and Operators are involved in Risk Assessments, providing feedback, as appropriate. On the TSF, daily toolbox and green area meetings are held based on topics from the Plant and TSF, specific to TSF.

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

X in full compliance with

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

Basis for this Finding/Deficiencies Identified:

The measurement of pH is on the leach feed and residue and is included in the daily log sheet. It is controlled at 10.5, which is the norm for Witwatersrand ores, backed up by CaO (Calcium oxide) in titrations on shift every 2 hours. Slaked lime is added to the thickener, which has automated pH control, using online pH measurements.

During the site inspection, cyanide signage warning of the presence of cyanide and the appropriate PPE required was noted at the dosing point and cyanide storage, Elution sections, CIP (Carbon in Pulp), and the Residue area. A Quarterly hot spot survey is done by the Occupational Hygienist. The Reports for 2022, 2023 and 2024 were discussed, and the maximum measurement was noted to be 1.2 ppm HCN gas. Quarterly hot spot

surveys are done by the Occupational Hygienist on the TSF at the penstock, tipping point, penstock discharge and underdrain. No HCN (Hydrogen Cyanide) gas was detected during the surveys in 2022, 2023, and 2024.

Fixed Polytron (Proprietary name) HCN gas monitors are installed at the cyanide storage area, leach dosing point, tailings tank, and Elution and CIP areas, which are the identified hot spot areas. 6 Portable PAC 7000 / 8000 (proprietary name) personal HCN gas monitors are in use. A PAC 7000 portable gas monitor is issued to the TSF Operational Supervisor and is carried by the Site Team Leader to the TSF daily. Fixed and portable alarms are set at 10 ppm on an instantaneous basis or 4.7 ppm continuously over an 8-hour period, as cyanide, as per the manufacturer's recommendations. Alarms triggering at 4.7 ppm and 10 ppm require immediate evacuation.

The cause of high gas levels will be investigated, and actions will be taken to correct the deviation. In the event that the alarm goes off, the evacuation procedure as per the Emergency Response Plan is followed. The procedure, DKP 69, In the event of hydrogen Cyanide gas, is to be followed when HCN gas is detected.

The monitors' calibration frequency is 6 monthly, as recommended by the manufacturer. The Met Foreman receives a six-monthly PM reminder to schedule the manufacturer to calibrate all the fixed and portable gas monitors. Work Orders dated 28-3-2023, 27-10-2022, 15-3-2024 and 16-9-2023 were sampled and sighted.

Calibration certificates and maintenance records were sighted. The Fixed HCN Gas Monitors (Polytrons) were calibrated, and the 7 Portable HCN gas PAC 7000 monitors were calibrated in 2022, 2023, and 2024. An HCN Gas Monitor Register indicating calibration dates for all monitors was sighted.

During the site inspection, extensive, appropriate signage throughout the plant addressing the presence of cyanide, prohibition of eating and drinking, and prohibition of smoking and open flames was observed. Adequate signage also covered the required PPE. The Cyanide storage area had extensive signage covering dangers, PPE, and additional related information. During the TSF inspection, signs were observed to be located at the lower TSF fence at regular intervals and around the return water dam.

Red dye is added to the liquid sodium cyanide by the cyanide manufacturer, Sasol, at the manufacturing facility before being shipped to the plant. It was confirmed during the site inspection in the cyanide offloading cabin that the Sasol Safety Data Sheet (SDS): Sodium Cyanide Solution, includes under Section 9 Chemical and Physical Properties, colour - Light to dark red.

It was verified during the site inspection that showers are located at various points, including the cyanide storage area and the dosing points at the leach, and are linked to alarms and the central SCADA system in the control room. The Weekly Shift Foreman emergency shower inspections form part of the PMS. Work Orders were sampled in 2022 and 2024: - 15-12-2022 (afternoon shift), 7-7-2022 (night shift), 7-4-2022 (morning shift; 2024, 20-1-2024 (morning shift), 3-2-2024 (afternoon shift), and 26-3-2024 (night shift). Fitter weekly inspections, including safety showers, are conducted. Work Orders were sampled for 16-2-2022, 10-4-2022, 2-2-2024 and 26-3-2024.

The contractor, CSA Fire and Safety, is contracted to carry out monthly and annual inspections on fire extinguishers and all fire equipment on the plant. All fire extinguishers



in cyanide areas are dry powder extinguishers. Sighted monthly and annual service records from 2021 to the present.

During the site inspection, it was observed that the cyanide pipelines are labelled, the flow direction is indicated, and the cyanide storage tanks are labelled. The TSF tailings slurry line and return water lines are labelled with warnings of poisonous water and the direction of flow.

An enlarged display of the latest cyanide SDS board was noted at the cyanide offloading area. SDSs are available at the cyanide emergency cabin, control room, and cyanide offloading area. All SDSs are written in English, the working language of the Plant.

In case of incidents, the Managerial Instruction Accident Incident Reporting and Investigation, are used to investigate and evaluate cyanide exposure incidents, when they occur. As there were no cyanide incidents since the last recertification audit, a foot injury report and investigation were reviewed. The Report included Lessons learned, Comments, Details of injury, Immediate causes, Findings, Sequence of events, Factors that contributed to the accident, immediate causes, basic causes, Management system failures, and remedial actions to prevent reoccurrence.

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:

During the site inspection, it was confirmed that potable water, oxygen, resuscitators, and TriPac cyanide antidote kits were available. Emergency communication is done via radio, backed up with a man-down alarm (offloading), sounding in the control room. Emergency TriPac kits are available at offloading, leach, smelt house, and emergency room. The cyanide emergency cabin is fully equipped for cyanide emergencies, including cyanide antidote stored in a fridge. A risk assessment did not identify the need for any cyanide emergency equipment on the TSF site, as the plant will provide assistance. Contact with the plant control room is primarily via two-way radio or cell phone.

All TriPac cyanide antidotes are stored in fridges, as per the manufacturer's guidelines. All antidotes were checked and found to be still current to July 2024. Antidotes are applied only by professional medical staff trained in cyanide first aid. The PMS weekly cyanide safety equipment checks were sighted. Work Orders for 2022 and 2024 were sampled as well as weekly checks of cyanide antidote. The Safety Officer also independently inspects the antidotes. Sighted Work Orders dated 10-6-2022, 26-9-2022, 30-1-2024 and 4-4-2024.

Antidote replacement is done via orders placed with the Harmony Medical Hub, based on reminder triggers from the PMS system. This was verified during the site inspection. The Safety Officer inspects cyanide equipment every two months at the hospital. Cyanide hazard awareness training at the hospital is done by the Doornkop Training Department.

The Plant has the Doornkop Gold Plant Surface Operations / Emergency Procedures Emergency Plan Manual - Emergency Response Plan to respond to cyanide exposures. The Plan includes reference to the necessary response to cyanide exposure through ingestion, inhalation and absorption through the skin and eyes. To cope with TSF emergencies, Harmony Gold Mining Company Limited Doornkop Operations, Tailings Dams, Mandatory Code of Practice for Mine Residue Deposits, has Section 12.12 Emergency Preparedness, which includes a detailed discussion on the emergency preparedness around Mine Residue Deposits. (Annex A9.14, pg. 69. - A9.14 Emergency Preparedness and Recovery Plan.)

It was confirmed by an interview that an emergency team is trained in the emergency plan and the administering of oxygen. Antidotes are applied only by professional medical staff trained in cyanide first aid. A Netcare 911 ambulance is stationed at the mine clinic across the road from the plant. The ambulance paramedic staff are trained in cyanide emergency first aid, as well as in cyanide awareness. All work done on reagent and high cyanide equipment, including maintenance and offloading, is done with the ambulance in attendance.

There is a procedure called Ambulance Entry in the Event of an Emergency, in which patients are decontaminated and treated on the site using water and oxygen before being taken to the hospital. The control room will contact the Lenmed Hospital and the Netcare 911 call centre, indicating an emergency at Doornkop, who will dispatch the ambulance at the shaft, which will go to the plant. The ambulance will then transport the patient to Lenmed Randfontein Private Hospital for expert medical treatment.

The Lenmed Hospital and Netcare 911(ambulance provider) are involved in full-scale cyanide drills. The Agreement between Harmony and Lenmed Hospital requires drills at least twice per year as part of the medical provider's involvement in Doornkop's emergency response. The Agreement between Harmony Gold Mining Company and Lenmed Randfontein Private Hospital regarding the provision of hospital services for cyanide patients and the management thereof relating to Doornkop Mine was sighted. The Agreement was signed on 23 January 2013 by Harmony Health Risk Manager, Dr L. M. Maepe, and Ms L Baurain. Hospital Manager of Lenmed Hospital Randfontein. The agreement will be for an indefinite period but may be terminated by either party giving one month's notice. The Mine still currently uses the Lenmed Hospital. An Amendment to the main Agreement for the provision of emergency rescue and support services (including ambulance services) between Harmony Gold Mining Company Limited and Netcare Hospitals Propriety Limited, trading as Netcare 911 Emergency Services, dated 1 September 2023, was sighted. The scope of the amendment is to include Doornkop Operations in the main agreement and to confirm all other terms and conditions of the main Agreement remain unchanged.

Principle 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 the Doornkop Gold Plant Surface Operations / Emergency Procedures Emergency Plan Manual - Emergency Response Plan to respond to cyanide exposures and accidental releases. To cope with TSF emergencies, Harmony Gold Mining Company Limited Doornkop Operations, Tailings Dams, Mandatory Code of Practice for Mine Residue Deposits, has Section 12.12 Emergency Preparedness, which includes a detailed discussion on the emergency preparedness around Mine Residue Deposits. (Annex A9.14, pg. 69. - A9.14 Emergency Preparedness and Recovery Plan.)

The Emergency Response Plan includes consideration of the following scenarios: - Hydrogen gas generation/ explosion, Plant or vehicle fires, liquid cyanide spillage, cyanide exposure, pipe, valve, and tank ruptures, hazardous chemical spills, Overtopping of ponds and impoundments, Surface power failure, and Slimes dam failure. Tanker Services has been transporting liquid cyanide since July 2011. They are also fully Code-compliant and responsible for transportation-related cyanide emergency response.

Clearing site personnel and potentially affected communities are adequately covered. (Evacuation of personnel described in section 22 - accident/incident procedure, pages 41-2, and section 33, page 70 - Evacuation procedure. Communities affected by emergencies (as per stakeholder list/zone of influence are identified.)

Use of cyanide antidotes and first aid measures for cyanide exposure. (This is covered in the Plan in Section 28 pages 58 – 60 - response to cyanide poisoning.)

Control of Releases at their Source (The Plan includes this in Section 25 - liquid cyanide spillage, pages 50 - 51 and Section 26, pages 52-53 - cyanide exposure, describes control and containment of releases, section 34, pages 71 - 85 and procedure for cyanide monitoring for borehole water shallow aquifer.)

Containment, assessment, mitigation and future prevention of releases (The Plan addresses this in Sect 34 - containment, assessment and mitigation, pages 72 to 85 and the Procedure for cyanide monitoring for surface water, pages 86 to 98.)

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 included in the emergency response planning and review process through its involvement in cyanide mock drills. Feedback is received from the workforce through the drill post-mortem and feedback sessions. Communities are not directly involved in the emergency response planning and review process but can give input during dialogue sessions. There is dialogue with communities regarding the mine and its activities when hazards and emergencies are discussed.

The only external entities involved in emergency response are the Lenmed Hospital and Netcare 911, which are involved in full-scale cyanide drills. Agreements are in place describing the roles and responsibilities of Lenmed Hospital and Netcare 911.

There was no evidence of specific community engagement on the Emergency Response Plan, although there is some general dialogue. The Community is not directly involved in the Emergency Response Plan. There have been problems with engaging communities since COVID-19, and Harmony Community Affairs staff are trying to restore dialogue levels to where they were before COVID-19.

***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:

In the Emergency Response Plan, Section 27, page 54 - Cyanide emergency drills, designates the duties and roles of responders and the authority to contact the relevant persons for the necessary resources. Section 5, page 8 - Met plant operation control centre, specifies the authority of the control room operator, who is the response coordinator.

All staff are trained to handle cyanide emergencies, and the Plan defines the roles of the 1st, 2nd, 3rd, and 4th responders and the control room operator. This is also described in the procedure, Conducting Cyanide Drills. In the Emergency Response Plan, Section 27, page 54, Cyanide emergency drills, the duties and roles of responders, and the authority to contact the relevant persons are designated. In Section 5, page 9, the diagram: The MET. PLANT OCC - The operator's actions after receipt of an emergency call are illustrated. Training for emergency responders is described in Section 3.1, Training.

The Emergency Response Plan includes emergency telephone numbers (Section 7, page 13, Section 9, page 15 and are displayed in the Control Room), and Emergency Contact Persons (Section 8, page 14). Updated telephone numbers are also available on the standby list and are updated regularly. The Emergency Equipment inventory is included in the Plan in Section 5.1, page 10.

The Cyanide equipment checklist, which includes cyanide emergency equipment, is inspected by the Shift Foreman weekly, and shiftly by the shift Met Foreman. This was



further confirmed during the review of the DMS planned maintenance system inspections.

The role of the ambulance is described in the procedure, Ambulance entry in the event of an emergency. The responsibilities of the Lenmed Hospital are detailed in the contractual Agreement in place.

The Lenmed Hospital and Netcare 911 are contractually involved in full-scale cyanide drills. The agreement between Harmony and Lenmed Hospital requires drills at least twice per year as part of the medical provider's involvement in the Doornkop emergency response. The contractual Agreement between Harmony Gold Mining Company and Lenmed Randfontein Private Hospital regarding the provision of hospital services for cyanide patients and the management thereof relating to Doornkop Mine was sighted. The contract was signed on 23 January 2013 by the Harmony Health Risk Manager and the Hospital Manager of Lenmed Hospital, Randfontein. The agreement will be for an indefinite period but may be terminated by either party giving one month's notice. The Mine still uses Lenmed Hospital. An Amendment to the main Agreement for the provision of emergency rescue and support services between Harmony Gold Mining Company Limited and Netcare Hospitals Propriety Limited, trading as Netcare 911 Emergency Services, dated 1 September 2023, was sighted. The scope of the amendment is to include Doornkop Operations in the main agreement and to confirm all other terms and conditions of the main Agreement remain unchanged.

***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 Plan includes procedures and contact information for notifying management, regulatory agencies, external response providers and medical facilities of the cyanide emergency in Section 5, page 8, Met Plant Operations Control Centre. The same section covers notification of management, regulatory agencies, external response providers and medical facilities, and communication with the media.

The procedure, Procedure to Notify ICMI of any Significant Cyanide Incident, was sighted and reviewed. It includes the ICMI's definitions of significant cyanide incidents and a five-stage process for reporting. There have been no incidents that have been required to have been reported to ICMI.

***Standard of Practice 7.5:** Incorporate remediation measures and monitoring elements into response plans and 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 includes a section, Contain and Treatment - Environmental Manager (pages 82 to 84), which describes the recovery or neutralization of solutions or solids. The procedure, Liquid Cyanide Spillage, contains detailed instructions on how to deal with a liquid cyanide spill, as well as detailed task steps for decontamination of soils and other decontaminated media, and disposal, either back into the process or on the TSF. A risk assessment will be conducted based on the type of material to be discarded, and a decision made whether to dispose at the TSF or feed it into the process. The procedure, Use of Ferrous Sulphate as a cyanide neutralising agent, includes the quantities of Ferrous Sulphate required to neutralise different cyanide concentrations and the locations of stocks of Ferrous Sulphate.

Field checking of the presence of cyanide is done using ferrous sulphate as an indicator. The procedure also includes, under task step 5, the prohibition of chemicals in surface waters unless human life is threatened.

Where appropriate, samples are sent to the laboratory for testing. Drinking water is supplied by Rand Water through a reticulated system. Thus, no risk of contamination of drinking water exists.

The potential need for environmental monitoring to identify the extent and effects of a cyanide release is covered in the Plan under Sections 34 and 35, containment, assessment and mitigation.

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

X in full compliance with

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

Basis for this Finding/Deficiencies Identified:

The Emergency Response Plan is reviewed every 4 years. This is described in section 3.5 of the Plan. The emergency procedures and related standard procedures, training manuals and control measures must be reviewed annually. A review must also occur after a major event or changes in legislation, using a team approach, and amended if necessary to address the deviations or shortfalls identified. Reviews were conducted, but no significant changes were required.

Full cycle drills were constrained during the COVID-19 lockdowns in 2021 and 2022 due to distancing requirements and pressure on hospital staff, beds and resources.



A spill drill was conducted on 7 September 2022, with the scenario dealing with a leaking cyanide pipeline outside of the cyanide bund. A learning point was that the mixing ratios for ferrous sulphate were not readily available. The action was to make sure that mixing ratios could be accessed in the control room. This was finalised, along with additional coaching by the training assessor, by 9 September 2022.

A suspected gassing drill was conducted on 14 December 2022 outside of the cyanide cage. There were problems with the difference between blasting and cyanide alarms. More emphasis was needed on checking wind direction, and better information was needed from the control room. All corrective actions were closed out by 19 December 2022.

A suspected gassing drill was conducted on 11 January 2023 as a follow-up to the drill on 14 December 2022. The scenario was a man collapsed while hosing outside of the cyanide cage, allegedly overcome by HCN gas. All went well (quicker response time, control room provided correct information to paramedics – an improvement on the 14-12-2022 drill), but some minor refresher training was required for a new member of staff (completed by 13 January 2023).

A full cycle drill report dated 14 March 2024 was reviewed. The scenario was a suspected inhalation and spillage: The man was hosing next to the Cyanide cage when the pipe burst, and he was sprayed with high-strength cyanide next to the cyanide cage. The report checklist includes: - Section A - Drill Preparation, Section B - Response by Plant First Aiders, Section C - Response by Ambulance Service Paramedics, Section D - Response by Hospital Personnel, and Section E - Follow up.

A cyanide splashing drill was conducted on June 21, 2023. An employee was walking past the cyanide cage when a pipe was leaking, splashing him. The recommendation that employees wear eye protection while inside the plant was communicated to employees via a weekly safety topic. A boilermaker visual inspection of cyanide pipelines was added to the Boilermaker's monthly PM inspections.

A spill drill was conducted on September 13, 2023. The scenario involved a spill from the cyanide pipe in the elution section, which was leaking and caused spillage on the elution building floor. Recommendations included that additional alarms be installed at the thickeners, and chemical handlers were required to be coached on the area to be barricaded off using wind direction guidance. Corrective actions were completed by 28 September 2023.

An Intasol cyanide drill report dated 13/3/2024 was sighted. The scenario was a cyanide spike was picked up while depositing slurry on the TSF via the PAC 7000 HCN gas monitor. Other cyanide drill reports sighted include on 28 September 2023, 9 January 2023, and 2 February 2022. Procedures were followed with no deviations, and no recommendations for change or improvement were recorded.

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

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



X in full compliance with

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

Basis for this Finding/Deficiencies Identified:

All plant employees receive an e-learning-based induction, which includes awareness of cyanide hazards, the cyanide materials present at the operation, the health effects of cyanide, the symptoms of cyanide exposure, and the procedures to follow in the event of exposure. The training matrix includes all contractors, e.g. Intasol TSF contractors, Bidvest Security, TDS (proprietary name) Re-liners, and Ofentse. The electronic Refresher Induction Matrix 2024, which includes induction and cyanide hazard awareness training, was sighted. Under the heading, Doornkop, Engineering and Plant and Contractors Staff was included. Intasol is responsible for TSF operations and receives induction training from the Plant Training Department when staff return from leave or begin employment. Records are kept at the plant training officer and in the Intasol Training Matrix.

Refresher training is done annually based on schedules on return from annual leave using the Wednesday training shift system (also used for routine update training). Use is made of the matrix with a flagging system to ensure all staff are covered timeously. Green signifies training is up to date, yellow signifies one month before expiring, and red signifies training has expired. E-learning tests are conducted with a 100% pass mark required. If a 100% pass mark is not achieved, the trainee must repeat the module until a 100% pass mark is attained. The plant trainer receives a weekly report which additionally advises on the updated status of training refresher requirements.

Records are retained for the life of the plant in the e-learning system, and hard copies are kept in the employee's training records.

Contractors and employee records are kept on the plant as well as in the e-learning system.

The hard copy and electronic training records of staff that were interviewed were reviewed and found to be up to date and complete.

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 (STP) are used for training. Additionally, Initial Development Workbooks are used for training development, and each area has a workbook which includes training elements necessary for each job. Thickening and Leach Initial Development Workbooks were sampled and confirmed. STP training records are kept in hard copy form for the employees, filed under the section and the individual.

The Intasol Training Matrix, which is updated to date 2024, was sighted. All Intasol worker names are included in the matrix, and the matrix is flagged (yellow: 16 - 31 days), (orange: 1 - 15 days), and (red: expired). The matrix includes all Safe Working Procedures, including cyanide-related jobs. TSF operations staff receives job-specific training based on safe work procedures. It was confirmed in the training matrix that the appropriate training elements for each TSF job are included in the matrix. The training is refreshed once per annum.

The Plant training is provided by a qualified Training Assessor, Millicentia Katametsi. Her certificates were sighted: - Assessor Learning Program to conduct outcome-based assessment Maccau Vlei Learning Academy, ASS0118/01 24 January 2019, Certificate for Facilitating Learning using a variety of given methodologies (unit standard 117871) Aquarius skills solutions certificate number AQUACD069/17 dated 21 August 2017, Coach the Learner Program (unit standard number 117877, 123393 and 114878) CTL0515/02 dated 27 January 2016.

Intasol training is provided by Meuwmesen Marnel. He was trained as an Assessor, his course was dated 14 April 2023, and he was accredited by ETDP (Education, Training and Development Practices Sector Education and Training Authority) SETA (Sector Education and Training Authority) by Resonance Institute of Learning. His Competency Confirmation Letter was sighted: Facilitate learning using a variety of methodologies – SAQUA (South African Qualifications Authority) registered 24 April 2023. His Competency Confirmation Letter: Conduct outcomes-based assessment NQF (National Qualifications Framework) Level 5 - SAQUA registered 24 April 2023. He has an Occupational Certificate: Project Manager NQF level 05 OFO Code 101869 dated 7/12/23.

The training system uses a matrix to ensure that all cyanide personnel are trained prior to starting work in the cyanide areas and work under supervision until they are found competent. All chemical Offloaders must be issued a letter of appointment before being allowed to offload cyanide. Separate Metallurgical Plant induction is a prerequisite to getting access through the card access control system. For Intasol, it is reported that all new employees are given a site-specific induction, followed by on-the-job task training using procedures and PTOs (Planned Task Observations).

In the plant, an employee is deemed competent once trained and assessed. If he is found incompetent through PTOs or other assessments and observations, he may be required to undergo refresher or retraining. The primary method of assessing competence is through the use of PTOs. Plant Foremen conduct 1 PTO per week, per Foreman.

Formal assessments are done by a qualified Assessor before an employee commences a new job. The effectiveness of cyanide task training is generally assessed through the use of PTOs. The workbook system is used, and the book includes details of training undertaken, supervised practical exposure, practical assessment, progress meetings, and

panel assessments. Nine PTOs were sampled and reviewed in 2022 and 2024. Intasol uses PTOs and informal, safe behaviour observation methods. Two PTOs are completed per month per employee. Six PTOs were sampled and reviewed from 2022 and 2024. Any training done via the e-learning system is kept in an electronic record and can be accessed by trainers and managers. Records include the names of the employee and the trainer, the date of training, and the topics covered. The hard copy and electronic training records of staff that were interviewed were reviewed and found to be up to date 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 cyanide section employees are trained in the cyanide emergency procedures, including cyanide release scenarios, cyanide first aid, and training in cyanide emergency response equipment. This is done during the cyanide induction and refresher courses. Cyanide antidote is only administered by Paramedics and medical doctors. Employees are trained in the administration of medical oxygen and decontamination (included in cyanide first aid). Spare shift training on Wednesdays reinforces cyanide training and includes practicing and drilling with cyanide emergency response equipment. The Plant conducts all high-strength cyanide tasks in the presence of an Ambulance with a Paramedic on standby. This includes cyanide unloading, confined space entry, and maintenance of cyanide equipment.

Routine drills are conducted for all shifts. Additional refresher training for the Emergency Response Team was sighted for the 1st, 2nd, 3rd, and 4th Responder system, which is spelt out in the Emergency Response Plan and the procedure, Conducting Cyanide Drills. The Lenmed Hospital and Netcare 911 ambulance service are involved in full-scale cyanide drills.

The requirement for drills at least twice per year is included in the Agreement between Harmony and Lenmed Hospital as part of the involvement of the medical provider in the Doornkop emergency response.

Any training done via the e-learning system is kept in an electronic record and can be accessed by trainers and managers. Records include the names of the employee and the trainer, the date of training, and the topics covered. Hard copy training records comply with Cyanide Code requirements. The hard copy and electronic training records of Staff that were interviewed were reviewed and found to be up to date and complete.

Principle 9. DIALOGUE AND DISCLOSURE: Engage in public consultation and disclosure.



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

X in full compliance with

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

Basis for this Finding/Deficiencies Identified:

The operation has a program of meetings with various representatives of Community Groups. Whilst not all of these meetings are exclusively cyanide-related, the opportunity to raise cyanide issues is always present. A meeting between Harmony and Mogale City Community Representatives was held on 30 November 2021. (19 attendees) The agenda included Human Resource Development (HRD), Bursaries, Interns, Learnerships, Recruitment, Local employment, Harmony CSI (Corporate social investment) and Trust, and Environmental Management. Most of the Environmental Management session was taken up by discussions and questions on radiation, and questions were also asked about wind and dust and the spread of radiation.

Minutes of the 1st Meeting of the City of Johannesburg Community (COJ) Engagement Structure dated 30 March 2022. These meeting agenda items included Mine Community Development, Corporate Social Investment, and Community Complaints and Grievances. The main grievance discussed was the problem of cracked houses.

The COJ Meeting of 6 March 2024 (18 attendees) included Human Resources Recruitment, Human Resources Development, Environmental Management, Local Economic Development, Corporate Social Investment, Community Complaints, Concerns and Grievances. Under Environmental Management, topics discussed included: - rehabilitation of the slimes dam; solution trenches water is a no-go area for communities as the water may not be of sufficient quality to be used by humans or animals; and community members residing in Rietvlei were spotted fetching contaminated water from the Tailings Dams due to water pollution outbreak, and preventive measures need to be considered.

Minutes of the 3rd Quarterly Meeting of the City of Johannesburg Community Engagement Structure on 11 November 2021. The items discussed included human resource development, recruitment, CSI and Development Trust, environmental management, mine community development, community complaints, and grievances. Environmental management issues related to dust and dust management were raised, with questions being asked about the medical impacts of dust.

The meetings are accessible forums for the Community to raise questions or discussions regarding cyanide. Nothing has been raised since the last recertification.

Careers Expo Day On 11 October 2023 - Harmony representatives, including Staff from Doornkop, participated in the Gauteng Regional Schools career expo day. Harmony staff conducted environmental awareness sessions and educated the children about the risk of playing around the mine tailings dam and the return water dam.

World Environmental Education Day - Harmony Gold Mine commemorated World



Environmental Education Day by visiting Slovoville Primary School on the 26th of January 2024. School children were educated about the dangers of mine dams and warned not to swim in the dams for fear of drowning. They were also cautioned not to walk around the mine waste rock dump because trucks and moving mine machinery might injure them.

Minutes and notes on meetings are always available on request.

***Standard of Practice 9.2:** 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 9.2**
 - not in compliance with

Basis for this Finding/Deficiencies Identified:

Cyanide presentations are in English but presented in the language of the audience. Minutes and notes of meetings and forums are available, on request. Cyanide presentations can be printed out in English on request.

Information on fatal 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 and Energy (DMRE) by mine management. The DMRE reports selectively on repeated or critical incidents.

The Harmony ESG (Environmental, Social, and Governance) report 2022, dated 30 June 2022, includes multiple references to the Cyanide Code in text and tables, website reference <https://www.har.co.za/22/download/HAR-ESG22.pdf>

The Harmony ESG report 2022, dated 30 June 2023, includes multiple references to the Cyanide Code in text and tables - website reference <https://www.har.co.za/23/download/HAR-ESG23.pdf>. Tailings and waste management: "...Cyanide Code is a voluntary industry programme for safe management of cyanide and cyanidation of mill tailings and leach solutions. Our plants uphold the International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold (the Cyanide Code). The outcomes of audits by an independent third party are outlined in the table below..."

Mine releases are reported to the Department of Water and Sanitation (DWS), the Department of Environmental Forestry and Fisheries (DEFF) and the National Nuclear Regulator (NNR) following an investigation by the Mine Environmental and Occupational Hygienist Department. These Departments do not publicly release information on these reports. However, if they occurred, the information might be included in their annual reports.

Sasol and Tanker Services are responsible for releases as a result of tanker incidents en route to the mine. Group communication policy is followed. Tanker Services, the ICMI-certified transporter, is responsible for transport incidents and reporting on and off the mine property.



There have been no cyanide incidents at Doornkop that have required reporting, so it is not possible to verify the public availability of cyanide incidents.

