

FINAL COMPLETION REPORT

Gold Fields Driefontein Gold Mine

Introduction

This Final Completion Report presents the evidence to support the successful implementation of the Corrective Action Plans to correct the deficiencies identified in the certification audits at Driefontein Gold Plants 1,2 and 3 held from 4th – 22nd August 2008 at Gold Fields Driefontein Gold Mine.

The sections below detail the evidence of completion of corrective actions, agreed by the Gold Fields Driefontein No 1, 2 and 3 Gold Plants and the Lead Auditor, necessary to bring Gold Fields Driefontein Gold Mine into full compliance, as indicated in the Detailed Audit Report.

Corrective Action Plan 1 (Driefontein 1, 2 and 3)

Principle 4 – Operations: Manage cyanide process solutions and waste streams to protect human health and the environment.

Operations Practice 4.1 Implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventative maintenance procedures.

Deficiencies

- The Plant has recently introduced a new generation of cyanide management procedures which have significantly changed operating practices, reviews, checks and inspections. Whilst the procedures appear sound and effective, there has been insufficient time since they were introduced in which to demonstrate their effective implementation and sustainability.

Corrective Actions

- Time is required to fully roll out the new procedures and implement all of the new related management practices and checks and balances.
- Planned Tasks Observations (PTOs) need to be undertaken to check the understanding of the workforce and the effectiveness of the new procedures.
- Subsequent re-training and competency assessments need to be undertaken to reinforce the implementation and use of the new procedures.
- Review and fine tuning of the new procedures, where appropriate, needs to be undertaken, based upon the results of the PTOs and competency assessments.

Evidence for Auditors

Evidence sighted by auditors:-



- The finalised 37 core cyanide standard operating procedures for all three plants (same framework for all plants) with the first formal review having been completed. (June 2009). It was also confirmed that the procedures were cross-referenced with the appropriate environmental and TSF procedures.
- Meeting minutes (Divisional Health & Safety meetings and Tool Box talks) showing reporting and discussion of cyanide procedures were reviewed.
- Sample PTOs (Planned Tasks Observations) were reviewed from all plants which confirmed understanding and implementations of procedures.
- Competency assessments, covering all three plants, carried out upon workers to demonstrate the effective application of new procedures were reviewed and qualitative feedback on the tasks was noted in the documents.

Corrective Action Plan 2 (Driefontein 1, 2 and 3)

Principle 4 – Operations: Manage cyanide process solutions and waste streams to protect human health and the environment.

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

Deficiencies

- Although WAD cyanide measurements are being taken, only three months of confirmed data is available.

Corrective Actions

- Continue taking WAD cyanide measurements to build up at least 6 months of confirmed data to demonstrate sustainable WAD cyanide management performance below the 50ppm WAD cyanide threshold.

Evidence for Auditors

Evidence sighted by auditors:-

- Advances in process control and measurement technology were applied in all plants, resulting in reduced WAD values in residue. The control point is the WAD measurement at the CIP tails, before pumping to residue. WAD values sighted with every exceedance of the 50 ppm have been investigated. Data for the past 6 months showed peaks which occurred during stop start periods: No 1 plant showed 5 exceedances; due to the stop start outliers (probes not submerged in sample); No 2 and 3 plant had 7 exceedances over the last 6 months (variability of feed consisting of surface rock dumps impacting on cyanide control, one incident caused by cyanide spillage from storage tank pumped to head brown). Control samples are taken at the TSF tip point spigots in addition to the return water dams. The no 1 plant spigot values vary from 24 ppm down to 0.7 ppm as WAD CN. Return dams vary from 7.67 ppm down to 0.15 ppm WAD CN. No 2 and 3 plant spigot varies from 73ppm (coincided with spill incident in plant and was investigated) down to 0.2 ppm WAD CN: return water dams vary between 10.49 ppm down to 0.03 ppm WAD.



Corrective Action Plan 3 (Driefontein 1, 2 and 3)

Principle 4 – Operations: Manage cyanide process solutions and waste streams to protect human health and the environment.

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

Deficiencies

- Original containment design provisions for cyanide process solution tanks were inadequate for effective cyanide solution containment both in terms of capacity and effectiveness in preventing seepage. **(Driefontein 1,2 &3)**
- Trenching and paddocking to contain potential tailings spillages not yet in place. **(Driefontein 2 &3)**
- Sections of the reagent strength pipeline from the combined No 2 and No 3 Plant offloading area to No 3 Plant reagent storage area have inadequate secondary containment. **(Driefontein 3)**

Corrective Actions

- Accurately survey bund capacities and calculate capacity required to meet Cyanide Code requirements. **(Driefontein 1,2 &3)**
- Upgrade current bunds on tanks for the leach, backfill, CIP and Mill return to ensure sufficient capacity. **(Driefontein 1,2 &3)**
- Undertake an identification and repair program to effectively isolate and seal all cracks in current bund areas. **(Driefontein 1,2 &3)**
- Adequate trenching and paddocking for containment of potential tailings spillages or mitigation by re-routing of tailings pipeline away from risk areas. **(Driefontein 2)**
- The reagent strength pipeline should have adequate secondary containment for the entire length of its course. **(Driefontein 3)**
- Adequate trenching and paddocking for containment of potential tailings spillages or mitigation by re-routing of tailings pipeline away from risk areas. **(Driefontein 3)**

Evidence for Auditors

Evidence sighted by auditors :-

- The bunds were surveyed and checked by a Professional Engineer and this resulted in a program to raise or modify all bund walls requiring extension to meet Cyanide Code containments. The Engineer's Reports on the bund capacities for the three plants was sighted and completion of the work to achieve compliance in bund capacities was observed.
- A full inspection of all the cyanide bunds (high and low strength) was undertaken by the auditors at Driefontein 1,2 and 3 gold plants and all the identified cracks were seen to be repaired and the bund floors re-screed or coated with an appropriate sealant.



- The tailings pipeline has been re-routed away from the areas where it posed a risk to people (i.e. the clinic, passing over mine hostel buildings and mines offices, and adjoining mine workers family accommodation). A Preventative Maintenance System (PMS) and inspections on the pipelines are in place and functioning. The PMS includes pipeline thickness testing annually and daily pipe inspections.
- The reagent strength pipeline from the combined Driefontein 2 and 3 off-loading and storage area to the Driefontein 3 cyanide storage area is contained in a launder covered with a Perspex observation panel, and was sighted by the auditors. At appropriate intervals, a drain pipe from the launder is in place to detect potential leaks from the gravity drop of that section of the pipeline.

Corrective Action Plan 4 (Driefontein 1,2 and 3)

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

Operations Practice 8.2 Train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.

Deficiencies

- The plant is in the process of implementing and training new procedures and has only completed approximately one third of the program. **(Driefontein 1, 2 & 3)**

Corrective Actions

- The training needs to be fully completed to ensure that the new procedures are properly understood and implemented. **(Driefontein 1, 2 & 3)**

Evidence for Auditors

Evidence sighted by auditors:-

- Documents indicating all training of new procedures has been completed. The training matrix and training schedules were reviewed and training attendance registers sampled.
- A sample of PTO's of employees working with new procedures was reviewed and found to be appropriate,
- A sample of competency assessments for all three plants was reviewed and feedback on operations and activities was noted.



Corrective Action Plan 5 (Driefontein 1,2 and 3)

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

Operations Practice 8.3 Train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.

Deficiencies

- The plant is in the process of implementing and training new procedures and has only completed approximately one third of the program. **(Driefontein 1, 2 & 3)**
- Training of the Emergency Response Teams in the revised Emergency Response Plan and advanced cyanide training has not yet been completed. **(Driefontein 1, 2 & 3)**

Corrective Actions

- The training needs to be fully completed to ensure that the new procedures, Plans and responses are properly understood and can be effectively implemented. **(Driefontein 1, 2 & 3)**

Evidence for Auditors

Evidence sighted by auditors:-

- The training matrix and training schedules for all three plants were reviewed and training was found to be appropriately completed.
- A sample of PTO's covering employees and the Emergency Response Team in all three plants were reviewed and found to be satisfactory. Evidence was sighted of completion of advanced training by selected members of the Emergency Response Teams from all plants and shifts.

Conclusion

The Lead Auditor, following discussions within the audit team, is satisfied that the corrective actions taken, meet the requirements of the corrective action plans and thus enable substantial compliance in these operations and production practices to be revised to Full Compliance.



Arend Hoogervorst
Lead Auditor

Date: 28th August 2009

