

**INTERNATIONAL CYANIDE MANAGEMENT CODE
GOLD MINING OPERATIONS**

SUMMARY AUDIT REPORT
SUNRISE DAM GOLD MINE

PREPARED FOR:
ANGLOGOLD ASHANTI AUSTRALIA LTD

March 2007



SUMMARY AUDIT REPORT
Auditor's Findings

Mine: Sunrise Dam Gold Mine (SDGM)
Mine Owner: AngloGold Ashanti Australia Ltd
Mine Operator: AngloGold Ashanti Australia Ltd
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Location and Description of Operation:

The Sunrise Dam Gold Mine is located within the Northern Gold Fields region of Western Australia, some 220 km north-northeast of Kalgoorlie and 55 km south of the township of Laverton. The mine is situated immediately to the east of the hypersaline Lake Carey and is surrounded by numerous other small saline lakes. The operation has processed some 20.5 million tonnes of ore to produce 2.68 million ounces of gold since the commencement of operation in 1997. The process plant capacity is some 3.6 million tpa, subject to the characteristics of the ore feed.

Ore, which is sourced from open pit and underground mines, is trucked to a run of mine (Rom) pad, prior to being blended and fed to the process plant. Milled ore is treated using a Carbon in Leach (CIL) process that involves the use of sodium cyanide to leach gold from the ore into solution, which is then recovered using carbon adsorption methods. The barren "tailings" slurry from the CIL is pumped to a tails thickener.

The tails thickener underflow is pumped to a Central Thickened Discharge (CTD) storage facility at a density of 65% solids, with overflow water returning to the process. The concept of stacked tailings, or "central thickened discharge" system was developed in Canada during the 1970's. There are currently six CTD tailings storage facilities operating in Australia. The CTD can be classified as a low hazard facility in accordance with the Western Australian Department of Minerals and Energy "Guidelines on the Safe Design and Operating Standards for Tailings Storages".

The process plant's sodium cyanide consumption ranges from 0.45 to 0.50 kg/tonne ore milled which equates to an annual consumption of some 1,600 tonnes (based upon the 2005 mill throughput). The operation uses 30% w/v liquid cyanide which is transported by rail from the suppliers production facility (located at Kwinana some 40 km south of Perth within the state of Western Australia), to a transshipping facility at Kalgoorlie, where it is then transported by road to the SDGM site. Solid cyanide is not transported to, stored, mixed or used at the operation.

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This operation is

- in full compliance
- in substantial compliance with the International Cyanide Management Code***
- not in compliance

* A copy of the Corrective Action Plan to bring the operation into full compliance is included with this Summary Audit Report. The plan must be fully implemented within one year of the date of this audit.

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Date(s) of Audit: Inclusive of the period June 19 to June 23, 2006 #

Audit Team Leader: Mark Thompson (mthomps3@bigpond.net.au)

Names and Signatures of Other Auditors:

<u>Name of Auditor</u>	<u>Signature</u>	<u>Date</u>
Raymond L. Biehl		March 4, 2007
R. John McKenna		March 4, 2007

Note: this audit report was submitted for completeness review on August 9, 2006 in accordance with the Code requirements, whereupon the audit report was subsequently revised and resubmitted on March 4, 2007 to include additional information at the request and consent of the ICMI.

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

I attest that this Summary Audit Report accurately describes the findings of the verification audit. I further attest that the verification audit was conducted in a professional manner in accordance with the International Cyanide Management Code Verification Protocol for Gold Mining Operations (dated November 2005) and using standard and accepted practices for health, safety and environmental audits.

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March 4, 2007

Facility:

Signature of Lead Auditor

Date:

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

Standard of Practice 1.1: Purchase cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide and to prevent releases of cyanide to the environment.

The operation is in full compliance
 in substantial compliance with Standard of Practice 1.1
 not in compliance with

Basis for this Finding/Deficiencies Identified:

The operations contract with the manufacturer includes the requirement for the production facility to be certified as being in compliance with the Code. The manufacturer has not completed a Code or equivalent certification audit for the production facility, although the manufacturer is a Code signatory and has given an undertaking to complete a Code certification audit of the production facilities within the second half of 2006.

The manufacturer's production facility is classified as a Major Hazard Facility (MHF) as specified in the Australian National Standard for the Control of Major Hazard Facilities, which includes facilities such as oil refineries, chemical plants and large fuel and chemical storage sites. MHF's are required to comply with the Australian National Standard, the aim of which is to prevent potential major accidents involving dangerous goods and to mitigate their effects on employees, the community and the environment. One of the main requirements of the Australian National Standard is the development of a Safety Case, the objective of which is to ensure the safe operation of the MHF. Reference to the Western Australia DOCEP website indicates the manufacturer's facility has an approved Safety Case.

The manufacturer's MHF requirements include a bi-annual external third party compliance audit, and copies of the 2004 and draft 2006 audits were sighted. A review of the draft 2006 audit report indicates that hazard identification, hazard control, maintenance, personnel training, security and external communications are considered within the MHF audit scope, consistent with the ICMI production audit protocol. The auditor credentials and experience for the 2006 MHF audit were sighted and are considered to meet the Code auditor criteria. In addition, the Lead Auditor recently completed a code transportation certification audit for the operations manufacturer/supplier/transporter, the scope of which included the emergency response capability the manufacturing facility.

The audit finding of Substantial Compliance for this Principle has been assigned as an interim measure only during the rollout and implementation phase of the Code, and is largely based upon the available external third party MHF compliance audits completed to date and in recognition of the "good faith effort" commitment by the manufacturer to complete a Code certification audit during the second half of 2007, consistent with the general intent of the Code.



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2. TRANSPORT: Protect communities and the environment during cyanide transport.

Standard of Practice 2.1: *Establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 2.1**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

A copy of the operations contract with the manufacturer, supplier and transporter was sighted during the audit, which specifically includes the requirements outlined within this Standard of Practice. The contract includes the supply and transport of liquid cyanide to the operation including transport contractors. The operations contract with the supplier/transporter includes the requirement to be certified as being in compliance with the Code. The operations manufacturer/supplier/transporter is a signatory to the Code.

Standard of Practice 2.2: *Require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 2.2**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

The operations manufacturer/supplier/transporter Australian Gold Reagents Pty Ltd (AGR) is a signatory to the Code. AGR's Western Australian transport operations (which includes SDGM) were audited in April 2006 and received full certification on September 26, 2006 (refer ICMI website for full certification details).



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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 and accepted engineering practice and quality control/quality assurance procedures, spill prevention and containment measures.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 3.1**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

A certificate of conformance confirming all aspects of the cyanide facility (tanks and piping work) was undertaken in accordance with American Petroleum Institute standard API 650 1998 (welded steel tanks) is available, together with a letter from the Project Manager of the day confirming construction was undertaken in accordance with the applicable jurisdictional works approval. The storage tanks have an approval marks identification plate attached indicating the date constructed, jurisdictional approval number and design standard.

The mine is situated immediately to the east of the hypersaline Lake Carey and is surrounded by numerous other small saline lakes (which are mostly dry, except after seasonal rains and cyclone events). The liquid cyanide storage and unloading facility is located within the process plant facility, away from people (other than SDGM personnel). The SDGM process risk (aspects and impacts) register includes a formal evaluation of the potential for releases to both surface water and/or human exposure and identifies the precautions (controls) implemented to minimise such potential.

This includes a "truck drive through" concrete unloading pad exists at the liquid cyanide facility, with any spillage directed toward the facility's secondary containment bund via a drainage pipeline. An electronic tank level indicator is available at the facility and the tanks are fitted with high and high high level alarms monitored by the operations process control system. The liquid cyanide storage facility is separately fenced and locked and is located within the main fenced process plant area. The operation advises that solid cyanide has not been transported to, stored, mixed or used at the operation since about 2001.

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.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 3.2**
 not in compliance with

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Basis for this Finding/Deficiencies Identified:

The operation has developed and can demonstrate liquid cyanide unloading procedures have been implemented, which include identification of the required PPE and spill response, specific checklists, and a permit to work for each delivery. Copies of completed unloading pre-start hazard checklists and permits to work were sighted during the audit.

The operations preventative maintenance program includes the liquid cyanide storage facility and a range of daily, weekly and quarterly workplace inspections are undertaken by the responsible SDGM process plant and management personnel.

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, practices and procedures designed to protect human health and the environment including contingency planning and inspection and preventive maintenance procedures.

in full compliance with

The operation is

in substantial compliance with **Standard of Practice 4.1**

not in compliance with

Basis for this Finding/Deficiencies Identified:

The operation has developed a comprehensive range of standard operating procedures including unloading, confined space entry, permits to work, preventative maintenance, first aid, spillage, inspections, HCN gas monitoring and excursions, etc. The operation undertakes a range of 12 hourly, daily, weekly, monthly, quarterly and annual inspections for the processing plant and related cyanide facilities. Deficiencies observed during the inspections are either rectified immediately, a work order placed within the preventative maintenance system or reported through the site SHE incident/hazard reporting database.

The operations "management of change" procedure has a checklist which considers potential changes or requirements relating to the required parts, standard operating procedures, permits, maintenance procedures, training, drawing updates, etc and the accompanying risk assessment considered potential release and safety scenarios. The operation employs the commercially available software SAP to monitor and track preventative maintenance aspects for the process plant including periodic inspections. The preventative maintenance program schedule includes a comprehensive range of cyanide related facility, including tanks, pipes, pumps, sensors, etc. A range of daily, weekly and quarterly workplace inspections undertaken by the responsible SDGM process plant and management personnel.

The operations CTD tailings storage facility manual includes specific details of the contingency procedures in the event of an upset in the water balance, when inspections and monitoring identify a deviation from design or standard operating procedures, or when a temporary closure or cessation of operations may be necessary.

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Standard of Practice 4.2: *Introduce management and operating systems to minimise cyanide use, thereby limiting concentrations of cyanide in mill tailing.*

in full compliance with

The operation is

in substantial compliance with **Standard of Practice 4.2**

not in compliance with

Basis for this Finding/Deficiencies Identified:

The operation undertakes daily bottles roll tests in the laboratory, the results of which are employed to establish the cyanide addition set points. pH buffer testwork is undertaken periodically to establish optimal lime (and hence gold recovery and cyanide) consumption due to the hyper-saline process water, which varies considerably during the wet and dry season (ie higher salinity from pit pond during summer).

The operation employs the "CITECT" control software for the process plant, which includes provision for cyanide dosage and lime addition set point control. Automatic cyanide addition equipment is available, however this is inoperable for extended periods, primarily due to the presence of the hyper-saline process water. The operation modified the circuit some 2 years ago to include a pre-oxidation tank to maximise gold recovery and minimise cyanide consumption. Similarly the slaked lime project helped reduce cyanide consumption.

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

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:

Water balance and management aspects are included within the Central Thickened Decant (CTD) tailings facility design and annual reviews. The CTD facility and associated decant/stormwater water pond is designed and approved to contain a 100 year, 72 hour rainfall event, whereupon an emergency spillway is provided to control the discharge of any excess water. The emergency spillway has not required to be operated since the CTD facility commenced operation in 1999.

The operations consultant has developed a probabilistic water balance model, the sensitivity results from which confirm the facility is capable of storing the design rainfall event, without requiring discharge via the emergency spillway. The probabilistic water balance model includes detailed consideration of each of the applicable items described within this standard of practice requirement.

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

The operation is

- in full compliance with
- in substantial compliance with Standard of Practice 4.4**
- not in compliance with

Basis for this Finding/Deficiencies Identified:

The combination of prevailing ore characteristics and hypersaline process makeup water (average 158,000 mg/L TDS, with higher concentrations experienced during the dry season), prevent the operation from limiting the tailings slurry WAD cyanide concentration to below 50 mg/L on a regular basis.

Available weekly monitoring results for the period from April 2004 to May 2006 indicate the WAD cyanide concentrations discharged to the CTD were in excess of 50 ppm on 72% of the sampled days, with a mean concentration at discharge of 62.4 ppm (up to 100 ppm). The WAD cyanide concentrations of supernatant pooling at the decant pipes of the CTD was highly variable during this time and exceeded 50 ppm WAD cyanide on 7 of the 113 sampling days. The WAD cyanide concentrations of the decant pond water were usually less than 20 ppm.


The operation has employed central thickened discharge (CTD) tailings disposal methods since 1999, which helps maximise evaporation and minimise surface ponded water in comparison to a conventional paddock style dam using sub-aerial methods. The process plant facility employs a tailings thickener to maximise water recovery at the plant and hence minimise the volume of process water reporting to the CTD.

The operation has also implemented measures to reduce the potential for local supernatant water ponding on the CTD tailings facility, by excavation of tailings material along the perimeter dyke wall to promote drainage, placement of rock armour along the perimeter walls and by provision of dedicated rock armoured pump sumps. The operation has redirected flows collected from the external perimeter cut off drains and seepage recovery bores from the CTD tailings facility (monitoring data for which indicates these have negligible cyanide concentrations) to reduce the overall cyanide concentrations of any ponded water on the CTD facility. The CTD tailings facility is fully enclosed with an electric fence to help prevent access by wildlife and stock.

AngloGold Ashanti helped establish and commission an independent third party scientific research project by recognised industry experts in late 2003, to investigate, document, understand, characterise and manage the risk of cyanide bearing tailings and solutions on wildlife and to develop a causal model in accordance with the principles and requirements of the Code. The project results for the SDGM operations are presented in a report dated November 2006.

The research project was undertaken by the Australian Centre for Minerals Extension and Research (ACMER - www.acmer.uq.edu.au/), which is part of the Sustainable Minerals Institute (SMI) at the University of Queensland, Australia. The research project was managed by the Australian National Research Centre for Environmental Toxicology (EnTox), which is a centre of excellence which undertakes national and international research into human environmental

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toxicology (www.entox.uq.edu.au/). The aim of the ACMER research project was to enable mining companies to adopt a proactive approach in designing and managing tailings storage facilities to significantly reduce, or preferably eliminate, the environmental risks of wildlife cyanosis in recognition of the gaps in knowledge associated with cyanide tailings and the requirements of the Code. The project was undertaken using an industry wide approach, with a total of 9 mining operations from Australia and Africa participating in the project, including the SDGM operations.

The ACMER research project scope included provision of cyanide and wildlife monitoring protocol/procedure development, SDGM personnel training, intensive wildlife monitoring campaigns for the CTD and an aquatic invertebrates study of the CTD supernatant and ground water intercept trenches. No wildlife cyanosis deaths were detected during routine monitoring (266 observations between April 2004 and May 2006) at the SDGM CTD.

ACMER developed a wildlife cyanide exposure model and causal relationship specific to the SDGM CTD. This includes consideration of absorption through epidermal exposure, inhalation, drinking and attempting to feed from the range of available SDGM CTD habitats. The ACMER project report demonstrated that protective mechanisms occur at the SDGM CTD (comprising reduced cyanide-bearing habitats, hypersalinity, lack of food provisions and minimal water) and the limitations of applying the 50 ppm WAD cyanide threshold for peripheral discharge freshwater tailings deposal systems to the SDGM CTD hypersaline system. The methodology used in the study has been implemented at other case studies as part of the project, where the findings relating to wildlife ecology and hence exposure have been reproduced.

ACMER provided 20 recommendations in the context of the relevant standards of practice specified in the Code, to address any perceived risks of wildlife cyanosis as the basis for a management plan at SDGM, some of which either reinforce or further expand/improve existing mitigation measures or procedures. Key recommendations include adopting a minimum tailings slurry salinity of 90,000 ppm TDS at the discharge spigot if the WAD cyanide discharge concentration is to exceed 50 ppm; Limiting the WAD cyanide concentration at the discharge spigot to a maximum of 70 ppm for 75% of the time, and not exceeding a discharge of 90 ppm WAD cyanide.

The ACMER project was overseen by an Advisory Committee consisting of eminent scientists from ACMER and EnTox, and industry environmental professionals to ensure the project was undertaken in a rigorous, scientific manner. A literature review paper associated with the ACMER project (Donato et al, 2006) has been subject to a formal peer review as part of the submission of research project papers to a recognised international journal (Environment International www.ees.elsevier.com/envint/).

AngloGold Ashanti Australia is to be commended for commissioning the ACMER study in late 2003 in anticipation of the Code requirements of the time and for the implementation of other initiatives to protect birds, other wildlife and livestock from the adverse effects of cyanide process solutions, which clearly represents a "good faith effort" in accordance with that described within the Code. Whilst the ACMER project study report has identified a causal relationship why a WAD cyanide concentration of >50 ppm is appropriate for the SDGM CTD, a

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finding of Substantial Compliance for this Standard of Practice has been assigned given that the studies have not been subject to an independent peer review and that not all of the ACMER report recommendations have been actioned or effectively implemented at the time of the audit report submission.

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

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 operation has no known direct or indirect discharges to surface water. As described in standard of practice item 4.3.1, the CTD facility and decant/stormwater water pond includes an approved emergency spillway for the controlled discharge of any water, in excess of the design storm event. The emergency spillway has not required to be operated since the CTD facility commenced operation in 1999.

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

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:

Formal hydrogeologic studies have been completed as part of the operations approval process and are reviewed annually as part of the licence conditions for the tailings storage facilities. The prevailing groundwater regime is classified as hyper-saline with the water quality ranging from some 50,000 to 400,000 mg/L TDS. Based upon this, no beneficial users, or jurisdictional designations are known to exist except for use by mining or other extractive industries. The CTD tailings storage facility includes a seepage interception trench part way round the facility, together with 3 recovery bores. These measures are directed toward mitigating the ground water levels outside the facility (from a hypersalinity vegetation impact perspective) and are not associated with any cyanide or beneficial use impacts.

The applicable licence for the CTD tailings facility includes the requirement for WAD cyanide monitoring, however no compliance criteria are nominated. Notwithstanding this the results of available groundwater monitoring for the CTD tailings facility during the period Feb 2005 to Jan 2006 (indicates the WAD cyanide concentration were negligible (<0.05mg/L) in all but 3 locations, the results of which ranged 0.1 to 0.26mg/L and were mostly associated with monitoring bores located closer to the CTD. No underground tailings backfill is employed or proposed at this time.

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

The operation is

- in full compliance with
- in substantial compliance with Standard of Practice 4.7**
- not in compliance with

Basis for this Finding/Deficiencies Identified:

Secondary concrete containment bunds are provided for the process plant (including the CIL, leach and tails thickener, etc), however these have been subject to considerable damage (likely due to the hypersaline water and possibly compounded by general operational/maintenance equipment traffic) resulting in it being somewhat ineffective.

The results of calculations by SDGM process personnel indicate the existing secondary containment (including the CIL, leach and tails thickener etc) does not have sufficient capacity greater than the largest tank (thickener). Any spillage outside the secondary containment would report to an unlined stormwater pond, which serves the process area and is used to contain wash down slurry from the crusher/grinding facilities. Specific procedures have been developed for process solution spills and clean up both inside and outside the secondary containment and for any spills during liquid cyanide unloading.

SDGM recognised this secondary containment deficiency prior to the audit, and has made provision in the 2006/07 budget for this as a capital improvement project. SDGM's adopted design includes upgrading the secondary containment sufficient to contain 110% of the volume of the largest tank. The upgrade also includes provision to provide secondary containment for the eluate pipeline from the CIL to the gold room.

The audit finding of Substantial Compliance for this Standard of Practice has been assigned based upon the auditors assessment this does not represent an immediate risk to the environment based upon the existing spill response and clean up procedures, existing inspection and preventative maintenance programs/procedures and past good performance of the primary containment, presence of the spill pond and presence of the albeit inadequate existing secondary containment, and in recognition of SDGM's "good faith effort" in identifying this aspect prior to the audit and commitment to complete the upgrade works by mid 2007.

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.*

The operation is

- in full compliance with**
- in substantial compliance with **Standard of Practice 4.8**
- not in compliance with



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Basis for this Finding/Deficiencies Identified:

The operation maintains records of the design, construction QA/QC and approvals for the process plant and a certificate of conformance for the cyanide liquid storage facility tanks and piping is available. Various records of the CTD tailings storage facility investigation, design, construction supervision and annual reviews (by external consultant/contractor) were sighted during the audit.

Standard of Practice 4.9: *Implement monitoring programs to evaluate the effects of cyanide use on wildlife and surface and ground water quality.*

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:

The operation has developed a range of monitoring procedures in relation to the sampling, handling and chain of custody for tailings slurry and water, for both operational control and environmental compliance purposes. The sampling requirements are specified in licence/permits conditions in accordance with recognised Australian standard test methods. Testing is undertaken at laboratories accredited with the National Australian Testing Authorities(NATA) for both sampling and analyses.

The SDGM environment department personnel previously undertook the compliance sampling, however an accredited contractor has been engaged to undertake future water sampling monitoring activities. The process department undertakes 12 hourly inspections of the CTD tailings facility, which includes identification of any wildlife mortalities. The environment department personnel undertake 2 daily surveys of wildlife, which is part of the overall ACMER study project as described in standard of practice 4.4.



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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 the cyanide facilities to protect human health, wildlife and livestock.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 5.1**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

The operation has developed a closure plan which describes the obligations, closure risks, objectives, improvement plan, implementation plan, decontamination plan, closure criteria concept for the operations cyanide related facilities (paddock tailings dam, CTD tailings dam processing plant (cyanide and other reagents).

The operation reviews and updates the closure plan annually, with the next review scheduled for August 2006. Key changes to the 2005 closure plan included cyanide related aspects such as the expansion of the CTD tailings storage facility and a revision in the cost assumption associated with decommissioning of the plant.

Standard of Practice 5.2: *Establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 5.2**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

The operations closure plan includes details of the cost estimate methodology and the estimated cost to fully fund the third party implementation of the cyanide related decommissioning activities. The financial mechanism, as required and approved by the Western Australian Department of Industry and Resources, comprises an unconditional performance bond for each tenement, guaranteed by a financial institution.

The unconditional performance bond is effectively a contract with the Minister for State Development, providing for the unconditional payment of an agreed sum following the failure of the tenement holder to meet the previously agreed environmental commitments. Copies of the tenement reports applicable to the Sunrise Dam Gold Mine operations include details of the approved unconditional performance bonds.

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6. WORKER SAFETY: Protect worker health and safety from exposure to cyanide.

Standard of Practice 6.1: *Identify potential exposure scenarios and take measures as necessary to eliminate, reduce or control them.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 6.1**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

The operation has undertaken a number of team based risk assessment and specific HAZOP studies for the cyanide facilities. The operation has developed and implemented a comprehensive range of standard operating procedures which describe how cyanide related tasks such as unloading, mixing, plant operations, isolation, confined space entry and maintenance should be conducted to minimise worker exposure. The operations "management of change" procedure has a checklist which considers potential changes or requirements relating to the required parts, standard operating procedures, permits, maintenance procedures, training, drawing updates, etc and the accompanying risk assessment considered potential release and safety scenarios.

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.*

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

Basis for this Finding/Deficiencies Identified:

The results of the periodic pH buffering testwork indicates the hyper-saline nature of the process makeup water (ranging from some 50,000 to 400,000 mg/L TDS) that limits the pH that is practically achievable. Based upon this, the target pH set point ranges from 8.8 to 9.5. The operation has identified the CIL tanks, trash screens and thickener areas where workers could be exposed to HCN gas in excess of this standard of practice item requirements. The HCN gas management strategy in these areas includes a combination of ambient monitors fitted with control room alarms, together with the requirement for all personnel entering these areas to carry a portable monitor and escape mask. Personnel are required to leave the area when a HCN gas reading of 5 ppm is observed by either the personnel or fixed monitor alarms.

Warning signs were observed across the operation during the audit, including the liquid cyanide storage and unloading facility, CIL tank area and the entrance gate to the CTD tailings storage facility. Low pressure eyewash showers and dry powder fire extinguishers are located strategically across the process plant, which are subject to a program of regular inspection and preventative maintenance.

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

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 6.3**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

The operation has developed and implemented emergency management plans and first aid procedures to respond to worker exposure to cyanide. A dedicated cyanide antidote kit and oxygen resuscitation equipment are available. The operation maintains an onsite First Aid medical clinic which is staffed by a full time Registered Nurse (on 24 hour call). Senior process personnel are provided with competency based training in the use of the cyanide antidote kit (for initial immediate response).

The operations emergency response resources include a dedicated ambulance and the local hospital and medical providers have been notified and periodically participate in emergency mock drills. A combination of fixed line and mobile telephones and radios (base station and portable hand held) are available onsite.

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.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 7.1**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

The operation has prepared and annually reviews a detailed Emergency Management Plan, which identifies a range of potential cyanide release scenarios for which specific duty cards and emergency flow charts exist. The Emergency Response Plan identifies 3 response levels with the highest level requiring activation of the company's Crisis Management Plan.

Controlled electronic and hard copies of the Emergency Response Plan and Crisis Management Plan are available onsite and the Local Emergency Management Committee (LEMC) have been provided with a controlled hard copy. The operations EMP makes specific reference to the supplier/transporter emergency response plan and that a copy is available within the incident control centre.

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Standard of Practice 7.2: *Involve site personnel and stakeholders in the planning process.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 7.2**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

The operations personnel are involved in the emergency planning process including participation in the formal annual Emergency Response Plan reviews and mock drill exercises. The operation engages external stakeholders in the planning process, primarily via the Local Emergency Management Committee (LEMC), which includes the local shire council, police, hospital, ambulance, fire brigade, other mining operations and the Fire and Emergency Services Authority of Western Australian (FESA).

Standard of Practice 7.3: *Designate appropriate personnel and commit necessary equipment and resources for emergency response.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 7.3**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

The operations Emergency Response Plan describes and identifies the roles, responsibilities and call out procedures, which are clearly shown within the emergency response control flow chart. The general manager or designate has overall authority and responsibility and the incident controller assumes control of all mine site resources for the duration of any declared emergency.

The operation maintains a comprehensive range of emergency equipment and resources, details of which are provided in the Emergency Response Plan. The operation has established mutual aid agreements with nearby mining operations and the local council and has access to the supplier/transporter emergency response capabilities for transport related incidents (which includes stocks of ferrous sulphate located strategically along the transport route).

Standard of Practice 7.4: *Develop procedures for internal and external emergency notification and reporting.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 7.4**
 not in compliance with

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Basis for this Finding/Deficiencies Identified:

The operations Emergency Response Plan describes the requirement and procedures to notify external emergency support services which includes notification of the surrounding communities. The Emergency Response Plan contains a list of the internal and external emergency contacts including details for offsite SDGM personnel, local and regional fire officers, police, hospitals, rescue, governmental agencies and departments and supplier/contractors. The operation produces a weekly emergency response roster/contact details sheet which identifies the key management and emergency response team members who are onsite (updated weekly to reflect fly in/out roster operation).

Standard of Practice 7.5: *Incorporate into response plans monitoring elements and remediation measures that account for the additional hazards of using cyanide treatment chemicals.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 7.5**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

The operations Emergency Response Plan identifies and describes the environmental considerations for a range of emergency scenarios including tailings release and cyanide spills. The Emergency Response Plan specifically describes the remediation actions, including material disposal, monitoring and reporting and clearly identifies the potential for adverse impacts if ferrous sulphate enters a waterway.

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

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

Basis for this Finding/Deficiencies Identified:

The operations Emergency Response Plan includes the requirement for an annual review and there is evidence that annual reviews and updates have been undertaken since 2001. The Emergency Response Plan describes the requirement to undertake at least one desktop and one emergency exercise annually, although mock drill exercises are undertaken on a more frequent basis, including specific cyanide scenarios within the processing plant.

Combined exercises are undertaken in conjunction with the Local Emergency Management Committee (LEMC), with the next combined exercise scheduled for later in 2006. The Emergency Response Plan includes a debriefing requirement for both actual emergencies and exercises and a number of debrief/review reports and action plans were sighted during the audit.

SUMMARY AUDIT REPORT

Auditor's Findings

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.*

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

Basis for this Finding/Deficiencies Identified:

All personnel receive the general induction which includes a section on cyanide awareness. The operation has developed a training needs matrix and schedule for the process plant and maintenance personnel which includes specific area inductions, cyanide awareness, hazard identification and risk assessment, basic emergency response and first aid training aspects.

A sample of the operations training records sighted during the audit included a theory based competency assessment. Informal interviews with SDGM personnel during the assessment indicated a high awareness and sound knowledge of cyanide aspects during the audit.

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.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 8.2**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

The operation has developed and maintains a training needs matrix and schedule for the process and maintenance personnel, including specific training modules/procedures for cyanide delivery and unloading, CIL and thickener operation, control room operation, water management, tailings management, pumps, unplanned shutdowns, permits to work, isolation and tagging, HCN monitoring and cyanide spills.

A sample of the training records sighted during the audit identified the individual employee, trainer, training module and theoretical assessments where applicable. Task observations are undertaken informally by the processing department's safety training coordinator who holds a recognised training accreditation.

SUMMARY AUDIT REPORT

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

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 8.3**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

The operation has developed and maintains a training needs matrix and schedule for the emergency response team, the weekly training sessions for which periodically include cyanide related scenarios. The emergency response team members receive specialist training from accredited external providers, participate in periodic mock drill exercises and mines rescue competitions.

A sample of individual personnel and weekly training records sighted during the audit identified the individual employee, trainer, training module and theoretical/practical assessments where applicable. The process plant personnel receive basic emergency response training and participate in periodic department specific mock drill exercises.

9. DIALOGUE: Engage in public consultation and disclosure.

Standard of Practice 9.1: *Provide stakeholders the opportunity to communicate issues of concern regarding the management of cyanide.*

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

Basis for this Finding/Deficiencies Identified:

The operation has developed a Stakeholder Engagement standard which includes the requirement to communicate with stakeholders, develop a stakeholder engagement plan and assess/address stakeholder issues.

The operation has established and maintains a stakeholder register and is able to demonstrate that a range of formal and informal mechanisms are available to provide the opportunity for stakeholders to communicate issues of concern regarding the management of cyanide. This includes local shire council and emergency response management committee meetings, the various landowner bodies, governmental regulatory personnel, stakeholder open days and site visits. The operation employs the site incident database to track, investigate and closeout community complaints.

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Standard of Practice 9.2: *Initiate dialogue describing cyanide management procedures and responsively address identified concerns.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 9.2**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

The operation has developed Communication and Stakeholder Engagement standards and is able to demonstrate that a range of formal and informal mechanisms are available to interact with stakeholders and provide them with information regarding cyanide management practices and procedures. This includes attendance at the local shire council and emergency response management committee meetings, the various landowner bodies, governmental regulatory personnel, stakeholder open days and site visits.

Standard of Practice 9.3: *Make appropriate operational and environmental information regarding cyanide available to stakeholders.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 9.3**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

The operation is able to demonstrate that appropriate information is publicly available to stakeholders, including details of operations cyanide management, cyanide consumption, mine closure and any major environmental or safety incidents. This includes annual social responsibility reports, annual environmental reports, informal communications with the various landowner bodies, presentations at open days and site visits, local shire council and emergency response management committee meetings.

CORRECTIVE ACTION PLAN

A summary of the findings and suggested corrective action plan guidance for each of verification protocol elements identified as Substantially Compliant are provided in the attached corrective action plan. To bring the operation into full compliance the corrective action plan must be fully implemented within one year of the date of this audit.

