



September 2011

INTERNATIONAL CYANIDE MANAGEMENT CODE CERTIFICATION AUDIT

PT Nusa Halmahera Minerals - Gosowong Gold Mine Certification Audit Summary Audit Report

Submitted to:

International Cyanide Management Institute
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Washington, DC 20006
UNITED STATES OF AMERICA

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REPORT



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SUMMARY AUDIT REPORT FOR OPERATIONAL GOLD MINES

Name of Mine:	Gosowong Gold Mine.
Name of Mine Owner:	PT. Nusa Halmahera Minerals
Name of Mine Operator:	PT .Nusa Halmahera Minerals
Name of Responsible Manager:	Dadang Prananta, Ore Treatment and Fixed Plant Manager
Address:	Gosowong Gold Mine PT. Nusa Halmahera Minerals Jl. Jendral Sudirman No. 109, 111 Manado 95123
State/Province:	North Sulawesi
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LOCATION DETAIL AND DESCRIPTION OF OPERATION:

Newcrest is Australia's largest gold producer and one of the world's top ten gold mining companies by production, reserves and market capitalisation. Headquartered in Melbourne, Australia, the Company has around 5 100 employees and long-term contractors.

The origins of Newcrest date back to 1966, when Newmont Mining Limited established an Australian subsidiary, Newmont Australia Limited. In 1990, Newmont Australia Limited acquired Australmin Holdings Ltd, and subsequently merged with BHP Gold Limited in late 1990, changing its name to Newcrest Mining Limited. The Company has been listed on the ASX since 1987 – initially as Newmont Australia Limited.

Newcrest owns and operates seven mines including Gosowong. Five of these are located in Australia. These include Cadia Valley (Hill and Ridgeway), New South Wales; Cracow in Central Queensland; Mt Rawdon in south-east Queensland and Telfer in the Pilbara region of Western Australia. Newcrest also has the Lihir and Hidden Valley Gold Operations in Papua New Guinea as well as the Bonikro operation in Côte d'Ivoire.

Newcrest's exploration is predominantly in Australia, however, internationally Newcrest are currently exploring in the USA and Peru.

PT. Nusa Halmahera Minerals (NHM) is the joint venture company formed to manage the Gosowong Gold Mine. NHM is owned 82.5% by Newcrest, with PT Aneka Tambang owning the remaining 17.5%. The Gosowong Gold Mine is located within the Gosowong gold province, which covers an area of approximately 30 000 ha. The mine is situated on Halmahera Island, in the North Maluku province, Indonesia and is 2 400 km north-east of the national capital, Jakarta.

Kencana is the third mine to be developed by Newcrest at the Gosowong site and the first underground mine. Kencana is located 1 km south of the original Gosowong pit. Underground development of the Kencana mine commenced in February 2005 with the first underground ore mined in March 2006.



The existing Gosowong processing plant is used to process Kencana ore. The processing plant comprises a primary jaw crusher followed by a SAG and ball mill ahead of a cyanide leach circuit. Gold and silver is recovered from the pregnant solution using the Merrill-Crowe (zinc precipitation) process before smelting to produce doré bars.

Materials required for the operation of the mine are imported through the port of Barnabas and trucked to the mine site. NHM own and manage the Port of Barnabas and vehicles used to transport products between the Port of Barnabas and the Gosowong mine site.

SUMMARY AUDIT REPORT

AUDITORS FINDINGS

The Gosowong Gold Mine is:

[X] in full compliance with

[] in substantial compliance with

[] not in compliance with

The International Cyanide Management Code

Audit Company: Golder Associates

Audit Team Leader: Edward Clerk, CEnvP (112), RABQSA (020778)

Email: eclerk@golder.com.au

Name and Signatures of Other Auditors:

Table with 4 columns: Name, Position, Signature, Date. Rows include Edward Clerk, Russell Beasley, and Rachel Beasley.

Dates of Audit:

The Certification audit site visit was conducted over three days (nine person-days) between 29 March 2011 and 31 March 2011.

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 (ICMI) 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's (ICMC or the Code) Gold Mining Operations Verification Protocol and using standard and accepted practices for health, safety and environmental audits.

Gosowong Gold Mine Name of Facility, Signature of Lead Auditor, Date 6 September 2011





PRINCIPLE 1 – PRODUCTION

Encourage Responsible Cyanide Manufacturing by Purchasing from Manufacturers that 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.

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 1.1

not in compliance with


Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 1.1, requiring the operation 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.

NHM purchases its sodium cyanide from Tongsuh Petrochemical Corp. Ltd. (Tongsuh) under a Purchasing Contract Agreement (Purchase Agreement). Tongsuh was recertified under the Code on 7 March 2011.

NHM has access to a copy of an audit of the cyanide production facility demonstrating that it implements programmes, practices and procedures consistent with ICMI's Cyanide Production Audit Protocol.

Gosowong Gold Mine
Name of Facility


Signature of Lead Auditor

6 September 2011
Date



PRINCIPLE 2 – TRANSPORTATION

Protect Communities and the Environment During Cyanide Transport

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

[X] in full compliance with

The operation is

[] in substantial compliance with

Standard of Practice 2.1

[] not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 2.1, requiring that the operation establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.

At the time of the audit, responsibilities for the transportation between the manufacturer (Tongsuh) were noted as being:

- Tongsuh – is responsible for the transportation of cyanide between its manufacturing facility and the Port of Ulsan.
■ NHM – is listed as a transporter under the Code with responsibility for the Gosowong Mine Supply Chain. The components of the Supply Chain includes:
- Port of Ulsan in South Korea.
- Shipping between the Port of Ulsan and the International Port at Surabaya, Indonesia. This is conducted by Wan Hai Lines Limited.
- PT Trans Continent’s (PTTC) Indonesia Supply Chain between International Port at Surabaya and the Port of Barnabas on the Island of Halmahera, Indonesia.
- The Port of Barnabas.
- Road transportation between the Port of Barnabas and the Gosowong Mine site.

NHM purchases its sodium cyanide from Tongsuh under a Purchase Agreement. A Contract Variation was appended to the Purchase Agreement in February 2011 to clarify cyanide transportation responsibilities for Tongsuh.

PTTC transports cyanide for NHM under Services Contract between NHM and PTTC.

A Certification Audit has been conducted on the PTTC Supply Chain and NHM Gosowong Mine Supply Chain by Golder. The audits concluded that the Supply Chains were fully compliant with the ICMC. The audits were submitted to the ICMI but a certification announcement is yet to be made.

The Certification Audits of the cyanide transport activities assures that the designation of responsibilities during transport has been adequately addressed.

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Name of Facility

[Signature]
Signature of Lead Auditor

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Date



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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 2.2

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 2.2, requiring that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.


The operation's contract with its respective transporters does not specifically require all cyanide transporters to be certified under the Code. Despite this, all transporters involved in the transportation of cyanide from the point of manufacture to the Gosowong Gold Mine are fully compliant with the Code.

SAM IK Logistics Company was certified as being fully compliant with the Code on 16 December 2010.

A Certification Audit has been conducted on the PTTC Supply Chain and NHM Gosowong Mine Supply Chain by Golder. The audits concluded that the Supply Chains were fully compliant with the ICMC. The audits were submitted to the ICMI but a certification announcement is yet to be made.

The operation has chain of custody records identifying all elements of the supply chain (producer and transporter) that handle the cyanide brought to its site.

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Date



PRINCIPLE 3 – HANDLING AND STORAGE

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

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

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 3.1, requiring that cyanide handling and storage facilities are designed and constructed consistent with sound, accepted engineering practices, quality assurance/quality quality (QA/QC) procedures, spill prevention and spill containment measures.

Facilities for unloading and storing cyanide have been designed and constructed in accordance with sound and accepted engineering practices for these facilities.

NHM commissioned an engineering company to conduct a Fit For Service Review Report that included the cyanide storage yard, cyanide covered store, and mixing and liquid cyanide storage area confirming that facilities for unloading and storing cyanide have been designed and constructed in accordance with sound and accepted engineering practices for these facilities.

Unloading and Storage Areas are located away from surface waters. The nearest surface water is located more than 200 m from the reagent cyanide area to the south-east.

A formal cyanide exposure risk assessment showed that existing separation distances between the cyanide unloading and storage areas and office environments did not warrant additional precautions outside of existing unloading procedures and emergency management measures.

The unloading, storing and mixing facilities at Gosowong consist of a secondary contained container storage yard, a covered box storage area, and a secondary contained cyanide mixing tank and storage tank. All pads and containment facilities are constructed of concrete that can minimise seepage to the subsurface as well as contain, recover and remediate cyanide spills.

NHM uses a level indicator and high-level alarm to prevent the overfilling of cyanide storage tanks. An overflow pipe is also present on the storage tank directing cyanide solution back to the mixing tank in the event of overfilling the storage tank.

Cyanide mixing and storage tanks are located on a concrete or other surface that can prevent seepage to the subsurface.

The cyanide storage and mixing tank are on sand filled concrete ring beams placed over a concrete floor. The concrete floor is part of a concrete containment facility. An inspection of the facility indicated that it would provide a competent barrier to leakage.

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Cyanide is stored:

- With adequate ventilation to prevent the build up of HCN gas. Cyanide boxes are stored within locked shipping containers that prevent contact with water. The cyanide mixing tank and storage tank are located within the same roofed facility which is open at the sides to allow ventilation.
- In a secure area where public access is prohibited as cyanide is stored within locked shipping containers. The mixing tank and storage tank are located within a fenced compound that is kept locked. This compound is located within the mill area, which is also fenced and has security controlled access.
- Separately from incompatible materials. This was confirmed in the *Minerals Gosowong Gold Plant Fit For Service Review Report Cyanide Storage and Handling Facilities* report commissioned by Gosowong.

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.

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 3.2

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 3.2 requiring that cyanide handling and storage facilities are operated using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

The *Mixes Sodium Cyanide Solution* procedure notes that all cyanide packaging material (boxes, plastic bags and liners) should not be re-used for any other purpose other than storage and disposal of cyanide. The procedure also notes that all packaging materials should be incinerated in according with environmental procedures.

The *Mixes Sodium Cyanide Solution* procedure notes that following cyanide mixing activities, plastic bags and liners are to be rinsed with water three times. The effluent is collected in the mixing tank containment sump and pumped to the leaching circuit. Rinsed bags are dried and placed back into the empty cyanide boxes for transportation to the Environmental Department Incinerator for disposal.


Two procedures have been developed covering the destuffing of the container and mixing and storing cyanide. The *Unloading Reagents from Containers* procedure details the steps necessary to safely and correctly destuff a cyanide container and transport cyanide boxes to the Reagent Mixing Area.

The mixing tank can only mix one box at a time and the storage tank cannot store multiple mix batches. Consequently only one cyanide box is removed from the container for each mix.

Cyanide boxes are staked two high within locked shipping containers. The Cyanide boxes were placed in the container by the cyanide supplier.

Section 8 of the *Mixes Sodium Cyanide Solution* competency assessment notes that the sump pump should be started immediately in the event that a spill occurs in the bund. The area is also hosed down upon completion of the job.

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GOSOWONG GOLD MINE ICMC CERTIFICATION

Section 1 of the *Mixes Sodium Cyanide Solution* competency assessment requires the mixing operation to be observed remotely. An initial check is made to ensure that CCTV is working and that an operator is available to observe the CCTV during the mixing operation.

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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

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 4.1, requiring that the operation implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventive maintenance procedures.

Written management and operating plans or procedures have been developed for cyanide facilities including unloading and storage facilities, leach plants and tailings impoundments.

The operation has plans and procedures that identify the assumptions and parameters on which the facility design was based and applicable regulatory requirements as necessary to prevent or control cyanide releases and exposures consistent with applicable requirements.

To comply with this question, NHM has developed an Ore Treatment Operating Guidelines procedure that provides operating guidelines to mill personnel at Gosowong Gold Metallurgical Plant. The procedure focuses on grind size, cyanide addition, cyanide destruction, and maintaining internal and external limits of WAD cyanide in the tailings discharge. The procedure references the assumptions and parameters on which the design or operating requirement was based. Personnel are trained in the procedure.

The operation has plans or procedures that describe the standard practices necessary for the safe and environmentally sound operation of the facility including the specific measures needed for compliance with the Code, such as inspections and preventative maintenance activities.

The procedures and manuals used for training include directions on specific requirements for implementing practices required including operational inspections in the reagent storage, leaching and tailings areas with focus on leaks from pumps and piping and readiness of secondary containments to handle such leaks. There are also specific standard operating procedures that support the safe and environmentally sound operation of the facility.

The operation has a procedure to identify when changes in processing or operating practices may increase the potential for the release of cyanide and to incorporate the necessary release prevention measures. The Change Management procedure outlines the principles and process for use within NHM to manage proposed temporary, permanent or emergency changes involving administrative, physical, operational or organisational modifications, alterations or substitutions to a system, a process, plant or equipment.

The operation has developed formal cyanide management documents that address contingency procedures for situations when inspections and monitoring identify a deviation from design or standard operating procedures.

The operation does inspect cyanide facilities on an established frequency sufficient to assure and document that they are functioning within design parameters.

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All process pumps, pipes, valves and tanks are registered within SAP. Specific maintenance tasks and associated frequencies have been assigned for each item. The tasks and frequencies were initially set by the Superintendent using the recommendations contained within the equipment manuals. The tasks and frequencies were later adjusted based on observations made when conducting the tasks as well as experience gained during work instructions raised from Job Notifications.

Evidence was available to demonstrate that the operation inspects all the required items at unloading, storage, mixing and process areas as follows:

- Tanks holding cyanide solutions for structural integrity and signs of corrosion and leakage. This includes non-destructive testing (NDT) annually and during shutdowns, plus biennial corrosion assessment surveys by external consultants.
- Secondary containments for their integrity, the presence of fluids and their available capacity, and to ensure that any drains are closed and, if necessary, locked, to prevent accidental releases to the environment.
- Pipelines (daily and annually), pumps (weekly) and valves (daily) for deterioration and leakage.
- Ponds and impoundments for the parameters identified in their design documents as critical to their containment of cyanide and solutions and maintenance of the water balance as available freeboard and integrity of surface water diversions.

The operation does not have or inspect leak detection and collection systems at ponds due to the low levels of WAD cyanide and the instrumentation is not required by the design documents.

Inspections conducted are documented, including the date of the inspection, the name of the inspector, and any observed deficiencies. The nature and date of corrective actions are also documented and records are maintained. All documentation reviewed contained the name of the inspector, the reviewer of the inspection form, and the date of the inspection.

Preventive maintenance programmes are implemented and activities documented to ensure that equipment and devices function as necessary for safe cyanide management. NHM has determined what equipment is critical in preventing releases and exposures.

SAP software is used to administer schedules, requirements and records of routine preventive maintenance activities. A review of preventative maintenance schedules of cyanide critical equipment and discussions with the Plant Superintendent and Maintenance Planner confirmed that preventative maintenance inspection reports had been developed and scheduled for all cyanide critical equipment.

The operation has emergency power resources to operate pumps and other equipment to prevent unintentional releases and exposures in the event its primary source of power is interrupted. The site has two power stations with redundant capacity. Generators are synchronised and in the event of a drop in generating capacity or an increase in demand, the standby generators are started automatically.

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

in full compliance with

The operation is in substantial compliance with

Standard of Practice 4.2

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

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NHM is in FULL COMPLIANCE with Standard of Practice 4.2, requiring that the operation limit the use of cyanide to that optimal for economic recovery of gold so that the waste tailings material has as low a cyanide concentration as practical.

NHM conducts a programme to determine appropriate cyanide addition rates in the mill and evaluate and adjust addition rates as necessary when ore types or processing practices change cyanide requirements.

The Gosowong Project commenced in 1997. In 2007, the Gosowong Extension Project began. This was commissioning in May 2009. Records for the leach test on different ore types were undertaken by two external metallurgical companies.

The operation has evaluated various control strategies for cyanide additions. NHM conducts monthly leach test work of the ore. This test work includes aeration and non-aeration.

NHM has implemented a strategy to control its cyanide addition. Strategies include:

- Metallurgical test work
- Leach test work
- Addition of lead nitrate
- Redirection of the overflow from CCD 6 to the pre-leach thickener
- Cyanide addition controls through Citect.

The Cyanide Code Champion stated that NHM is continuously looking for new strategies to control its cyanide addition.

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

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 4.3, requiring that the operation implement a comprehensive water management programme to protect against unintentional releases.

NHM has developed a water balance model to ensure compliance with the ICMC. The model considers water from the mill, rainfall, evaporation and seepage.

The water balance considers the deposition of the tailings into the Tailings Storage Facility (TSF), and considers the discharge of the decant pond from the TSF into the Polishing Ponds. The model is designed for facilities that contain process solutions including cyanide, and the worst case precipitation conditions are included in the predictive conditions.

The water balance is probabilistic, taking into account a 1 in 100 year, 24 hour storm event when calculating the required minimum freeboard. The decant pump is capable of dewatering the flood waters from floods up to a 1:100 year event.

The model uses data from the onsite rainfall and evaporation measurements, located at the TSF and mine site.

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The model considers surface run-on from around the site, with the watershed area being included in the model, along with percentage of run-on expected to reach the TSF.

Freezing and thawing are not considered as they are relevant to the climate of Indonesia.

Seepage loss from the TSF is considered by way of seepage factor.

NHM's operating procedures incorporate inspection and monitoring activities to implement the water balance. These inspections include monitoring the freeboard of the TSF daily. Seepage monitoring is conducted monthly. The polishing ponds do not have freeboards as they flow by gravity downstream, but are contained within the TSF and therefore do not need to consider freeboard.

Ponds and impoundments are designed and operated with adequate freeboard. The Water Management and Release Procedure states that the maximum freeboard of the TSF is 0.5 m. The TSF is operated with adequate freeboard, as the Daily Environmental Reports for December 2010 and 19 February 2011 show. These show that the level of the decant pond is over an RL of 45 m. During the site visit, the TSF was observed to be below the freeboard.

Storage levels of tailings and decant water within the TSF are managed to provide sufficient freeboard to the emergency spillway on the western side of the storage to maintain a probability of spillway discharge not exceeding 1% per annum. The spillway is designed for a 1:100 year event.

The operation measures onsite precipitation and evaporation from the mine site and TSF. The probabilistic water balance does consider the rainfall, and the manual states that the model is to be run every three months. Monitoring data updates will also be run every three months while calibration runs will be run two years after operation. Whenever a condition changes, the model should be also re-run.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 4.4

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 4.4, requiring that the operation implement measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions.

The operation does not have any open water bodies exceeding 50 mg/l WAD cyanide. Consequently the operation is not required to implement measures to restrict access by wildlife and livestock to open waters.

The TSF is monitored daily and Polishing Pond 1 (PP1) and Polishing Pond 3 (PP3) are sampled twice daily for WAD cyanide concentrations. Wildlife observation monitoring has shown that maintaining a WAD cyanide concentration of 50 mg/l or less in open water is effective in preventing significant wildlife mortality. The monitoring is conducted by the Environmental Department Sampling Crew.

The operation does not use a heap leach process.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 4.5

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 4.5, requiring that the operation implement measures to protect fish and wildlife from direct or indirect discharges of cyanide process solutions to surface water.

NHM has a direct discharge to surface water and it is not greater than 0.5 mg/l WAD cyanide. PP3 is monitored and results show that WAD cyanide levels are below 0.5 mg/l. PP3 discharges to a stream by gravity, however if WAD cyanide is above 0.5 mg/l, water is pumped back to PP1 1.

A mixing zone has been established by NHM and endorsed by government. Monitoring results are provided to the Government via quarterly environmental performance reports (known as an AMDAL report) and results at the mixing zone compliance point show concentrations of free cyanide are less than 0.022 mg/L.

NHM does not have an indirect discharge to surface water. Monitoring data provided, both for groundwater bores and surface water indicate that there is no indirect discharge to surface water. This was also established through interviews with NHM environmental personnel and confirmed through monitoring photographs and site observations.

NHM does not have indirect discharges to surface water.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 4.6

not in compliance with


Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 4.6, requiring the operation implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of groundwater

NHM has implemented preventative maintenance and monitoring measures to manage seepage to protect the beneficial uses of the groundwater beneath and/or immediately downgradient of the operation.

Based on evidence observed and interviews conducted, the Auditor could not identify whether a beneficial use had been defined by a regulatory body. It was thought, but not confirmed, by the Environmental Superintendent that villages nearby extract and utilise the groundwater for drinking. Therefore, the auditor has assumed that the beneficial use is potable water.

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The Cyanide Code Champion stated that specific water management or other measures to manage seepage to protect the identified beneficial use are:

- TSF has an impermeable clay layer to stop seepage.
- The polishing ponds have an impermeable clay layer.

Free cyanide (at levels established by the applicable jurisdiction) in groundwater are at compliance point below or downgradient of the facility at or below levels that are protective of identified beneficial uses of groundwater.

A beneficial use has not been defined by a regulatory body. However, through the submittal of the monitoring results from groundwater bores to the Government via the AMDAL reports, and the Government's acceptance of those reports, it is understood that the monitoring bores are deemed to be compliance points.

The compliance groundwater bores are monitored for free cyanide, not WAD. The Indonesian standard for cyanide levels in surface and groundwater is 0.02 mg/L free cyanide. Monitoring results indicate that free cyanide levels have not exceeded 0.01 mg/l. NHM does not use mill tailings as underground backfill.

Seepage from the operation has not caused cyanide concentrations of groundwater to rise above levels protective of beneficial use.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 4.7

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 4.7 requiring that the operation provide spill prevention or containment measures for process tanks and pipelines.

Spill prevention or containment measures are provided for all cyanide unloading, storage, mixing and process solution tanks.

With the exception of three process solution tanks (leach tanks), all cyanide unloading, storage, mixing and process solution tanks are located within competent secondary containment. The remaining three leach tanks were identified and confirmed as having ring beam foundations. NHM opted to implement the provision of the Code that allows the operation the option to manage the risk of loss of containment by a combination of risk based inspection (RBI) in accordance with a recognised standard together with a programme of groundwater monitoring targeted to detect any contamination that may result from such loss.

NHM engaged a third party in September 2010 to conduct a RBI assessment on ring beam tanks at Gosowong and recommend an inspection programme as practiced and recognised by API 580 and API 653. The third party adopted an RBI Method that was developed by Meridium Inc and the analysis was conducted and run using Meridium Software Version 3.3.2 SP2.

Since the RBI report was compiled, it has been shown that the reagent cyanide mixing and storage tanks are installed on ring beams that are covered by sealed concrete slabs. This prevents any leakage of cyanide to the environment. Consequently, the use of RBI to prevent leakage to the environment is not necessary required for these tanks. Despite this, NHM have advised that the preventative maintenance inspections recommended by the third party continue to be applied to these tanks.

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The tank inspection programme has covered all the areas required in the RBI report, with all other tanks scheduled for inspection over the next five years as specified in the report.

Secondary containments for cyanide unloading, storage, mixing and process tanks are sized to hold a volume greater than that of the largest tank within the containment and any piping draining back to the tank, and with additional capacity for the design storm event.

Significant containment improvements works were conducted during 2010 to ensure compliance with this standard of practice. The containment facilities, drainage channels and Process Water Pond have been designed to a 1:25 year storm event and evidence justifying the selection of the design storm event was observed.

Procedures are not required to prevent discharge to the environment of any cyanide solution or cyanide-contaminated water that is collected in the secondary containment areas.

The operation does not have cyanide process tanks without secondary containment.

Spill prevention or containment measures are provided for all cyanide process solution pipelines to collect leaks and prevent releases to the environment.

All pipelines carrying cyanide solutions within the process plant area are contained within:


- Secondary containment areas
- Designated pipe containments draining to secondary containment areas
- Pipe in pipe for lines that are buried beneath road ways.
- Catchment area for the Process Water Pond. Small Sections of cyanide solution pipelines extending outside of containment areas within the plant transverse sealed areas that drain to the Process Water Pond.

Tailings are transferred to the TSF via three tailings lines that run along an elevated berm adjacent the main access road. The elevated berm has a smaller berm running along the outside of the pipe to direct any release from the line towards the roadway. Culverts are present within the berm to manage stormwater collected on the road. Drainage from the road flows down the perimeter drainage channel before exiting the road through the berm via culverts. This stormwater generally flows into creek systems. In the event of a tailings line failure, cyanide solution would potentially follow the same route.

Areas where cyanide pipelines present a risk to surface water been evaluated for special protection needs. The Cyanide Code Champion advised that a bow-tie analysis was initially conducted for the TSF pipeline. The operation then used a modified Preliminary Hazard Analysis (PHA) approach for the preferred TSF pipeline option, with a focus on identifying sensitive receptors along the corridor. The PHA and its outcomes were not provided for review.

Cyanide tanks and pipelines appear to be constructed of materials compatible with cyanide and high pH conditions. The Cyanide Code Champion advised that all material and fittings used in the Gosowong Extension Project were required to be new and conform to the Project Pipe Material Specification as well as other detailed design specification documents. No deviation was permitted without the written approval from the Engineering Superintendent.

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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.

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 4.8

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

Quality control and quality assurance programmes have been implemented to varying to varying degrees during construction of new cyanide facilities and modifications to existing facilities, including cyanide unloading, storage, mixing facilities and other cyanide facilities.

Evidence was not made available to enable a finding to be made through answering 4.8.1 - 4.8.4. Where there is no available quality control and quality assurance documentation or as-built certification for cyanide facility construction, the Auditor Guidance allows for an appropriately qualified person to inspect those elements of the facility involving cyanide and issue a report concluding that its continued operation within established parameters will protect against cyanide exposures and releases.

NHM commissioned an engineering company to conduct a Fit For Service Review Report for the operation's cyanide facilities and the report concluded that their continued operation within established parameters will protect against cyanide exposures and releases.


The following cyanide facilities were observed during the audit that were not considered within the report:

- TSF
- Waste handling and incinerator facility
- Cyanide container storage pad

With regard to the QA/QC for the TSF and waste handling and incinerator facility, The Indonesian Government requires that operations implement QA/QC programmes. The Indonesian Government have approved the above facilities through providing licences for them.

With regard to the cyanide container storage pad and process plant containment works, as-built drawings approved by an engineer were observed.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 4.9

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 4.9 requiring that operations implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and groundwater quality.

The operation has written standard procedures for monitoring activities for wildlife, surface and groundwater quality, which were prepared by appropriately qualified persons within the operation’s Environment Department. The procedures contain information on how and where samples should be taken, sample preservation techniques, chain of custody procedures, shipping instructions and cyanide species to be analysed.

Space is provided on the field datasheets for wildlife, surface and groundwater monitoring to record sampling conditions (e.g. weather, livestock/wildlife activity, anthropogenic influences, etc).

The operation does have a direct discharge to surface water, from PP3 to a creek. NHM does monitor for cyanide in discharges of process water to surface water as the process pond is monitored, along with the TSF and polishing ponds. There are also a number of monitoring locations in different water systems surrounding the site.

The operation inspects for and records wildlife mortalities related to contact with and ingestion of cyanide on a daily basis, as required in the TSF Environmental Monitoring Procedure. A review of the Daily Environmental Report and photographs from the weekly wildlife monitoring indicated that the stipulate monitoring was being conducted.

Monitoring is undertaken at frequencies adequate to characterise the medium being monitored and to identify changes in a timely manner. The polishing ponds are monitored three times a day, with the TSF and wildlife monitoring twice a day. River water is monitored monthly, and groundwater quarterly.

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PRINCIPLE 5 – DECOMMISSIONING

Manage Cyanide Process Solutions and Waste Streams to Protect Human Health and the Environment

Standard of Practice 5.1: Plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.

[X] in full compliance with

The operation is

[] in substantial compliance with

Standard of Practice 5.1

[] not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 5.1, requiring that a decommissioning plan is developed and implemented for effective closure of cyanide facilities to protect human health, wildlife and livestock,.

NHM has developed a Cyanide Facility Decommissioning Plan for Gosowong. The plan is to be read in conjunction with NHM Mine Closure Plan.

The Cyanide Facility Decommissioning Plan does include an implementation schedule in Appendix 1, and states that decommissioning will commence 6 months prior to the cessation of gold production.

The Cyanide Facility Decommissioning Plan will be reviewed annually. The plan was written less than a year before the audit, therefore no reviews have occurred.

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

[X] in full compliance with

The operation is

[] in substantial compliance with

Standard of Practice 5.2

[] not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 5.2, requiring that operation establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.

NHM does have a Cyanide Facility Decommissioning Plan, which includes decommissioning costs.

As the costs are based on NHM labour rates, NHM has had the budget reviewed by a third party contractor, which confirms the budget estimated would cover the cost for a third party contractor to undertake the decommissioning work. The plan states that it will be reviewed annually, including the cost estimates.

The Indonesian government does have a bond system established. Despite this, the operation has established self-insurance or self-guarantee as a financial assurance mechanism.

NHM engaged an independent auditor to show the operation has sufficient financial strength to fulfil it closure obligations. The audit was conducted by a third party accounting firm in 2010 in accordance with auditing standards established by the Indonesian Institute of Certified Public Accountants.

The report noted that NHM is of sufficient financial strength to cover the operations estimated closure costs.

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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 and control them.

[X] in full compliance with

The operation is

[] in substantial compliance with

Standard of Practice 6.1

[] not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 6.1 requiring an operation to identify potential cyanide exposure scenarios and take measures as necessary to eliminate, reduce and control them.

The operation has developed procedures describing how cyanide-related tasks such unloading, mixing, plant operations, entry into confined spaces, and equipment decontamination prior to maintenance should be conducted to minimise worker exposure. The procedures identify the hazards associated with each task and the steps required to complete it safely. These procedures are provided to relevant personnel, who are required to be assessed competent against each procedure before they can undertake them unsupervised.

The operation has procedures to review proposed process and operational changes and modifications for their potential impacts on worker health and safety, and incorporate the necessary worker protection measures. The Change Management procedure outlines the principles and process for use within NHM to manage proposed temporary, permanent or emergency changes involving administrative, physical, operational or organisational modifications, alterations or substitutions to a system, a process, plant or equipment.

The operation does solicit and actively considers worker input in developing and evaluating health and safety procedures.

The Cyanide Code Champion informed the auditor that the procedures were developed following a site wide risk assessment, which identified areas and activities that required operating procedures to reduce risks to workers and the environment. This risk assessment involved senior representatives from each department. Evidence of this risk assessment could not be provided. The Cyanide Code Champion also stated that Newcrest have a policy of encouraging their workforce to comment and provide feedback on their systems, policies, procedures and work environment. This is achieved at Gosowong through daily toolbox meetings, monthly safety committee meetings and daily maintenance, mill and supply meetings.

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

[X] in full compliance with

The operation is

[] in substantial compliance with

Standard of Practice 6.2

[] not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 6.2 requiring the operation operate and monitor cyanide facilities to protect worker health and safety and periodically evaluates the effectiveness of health and safety measures.

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NHM has determined that a pH of 10.5 is appropriate for limiting the evolution of HCN gas during mixing and production activities.

pH levels are monitored by an automated online monitor, controlled by NHM's mill control software package (Citect). The pH limits are set within this software package and if the system detects a drop in pH, the solution is automatically dosed with lime. The Cyanide Code Champion and Senior Metallurgist stated that due to the alkaline nature of the ore, very little lime addition is required.

Where the potential exists for significant cyanide exposure, the operation uses both fixed and personal monitoring devices to confirm that controls are adequate to limit worker exposure to HCN gas. Due to the alkaline nature of the ore, the likelihood of cyanide bearing water dropping to pH levels that may result in the evolution of HCN gas is low. However, in order to further reduce the risk of worker exposure to HCN gas, NHM has installed fixed HCN monitors.

NHM has identified activities where the exposure to harmful concentrations of cyanide is possible. For such activities, NHM has operating procedures in place that state the PPE requirements. These identified activities include:

- Sodium cyanide mixing
- Maintenance work in the reagent area
- Replacing the cyanide pump.

These activities require the following PPE:

- Portable HCN monitor
- Full length chemical resistant suit with hood
- Full face mask with canister
- Elbow length rubber gloves
- Gumboots.


Portable and fixed HCN monitors are maintained, tested and calibrated as per manufacturer requirements. All fixed monitors are calibrated annually by an external provider to the manufacturer's Service Manuals, Calibration Procedures and Quality Procedures Manual. One year's worth of calibration certificates was sighted by the Auditor.

Warning signs in English and Bahasa have been placed where cyanide is used, advising workers that cyanide is present and the necessary suitable PPE that must be worn. No smoking signs are posted throughout the mill area. In addition, the Mill Plant Induction, which is given to all personnel required to work unescorted in the area, states the requirements.

Showers, low-pressure eyewash stations and dry-powder fire extinguishers are strategically located throughout the operation in the cyanide areas. The fire extinguishers are inspected monthly and the showers weekly. Records of fire extinguisher inspections are maintained by the Emergency Response Team (ERT). The Process Department inspect the showers. Inspection records, as per the nominated frequencies, were sighted by the Auditor.

NHM's Pipe Labelling Procedure states that the following means to alert workers to the content of cyanide bearing tanks and pipes are used on-site:

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- Labelling of all cyanide tanks and lines (10%-30% NaCN) with lilac labels, indicating the direction of flow (as per Australian Standard 1345 Identification of the contents of piping, conduits and ducts).
- Signs (in English and Bahasa) stating "Cyanide Present, Please treat all vessels and lines as though they may contain cyanide" installed in various areas throughout the mill.
- Mill Plant Induction training highlighting to inductees that:

"All slurry materials and water from the grinding circuit to the detoxification and Gold room contains a certain amount of cyanide."

MSDS', first aid procedures and informational materials on cyanide safety were available in the language of the workforce in areas where cyanide is managed. MSDS' are located in the mill control room, mixing area, inside the front gate and outside the crib room.

Procedures are in place to investigate and evaluate cyanide exposure incidents to determine if the operations programmes and procedures to protect worker health and safety, and to respond to cyanide exposures, are adequate or need revising. NHM has an incident reporting and investigation procedure used for all incidents resulting in:

- Injury or illness
- Environmental impact
- Community impact
- Equipment damage/process loss
- A near miss.

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

in full compliance with

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

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:


NHM is in FULL COMPLIANCE with Standard of Practice 6.3 requiring an operation develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

NHM has the necessary response and communication equipment readily available for use at cyanide unloading, storage and mixing locations.

NHM has the following response equipment available to respond to worker exposures:

- Oxygen – located in the mill control room, site clinic, ERT kit and at the security gate
- Cyanokit – located in the site clinic
- Two ambulances
- Three fire engines

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- Responder bags.

Safety showers are located throughout the mill.

Evidence was observed to show that NHM does inspect its first aid equipment regularly to ensure that it is available when needed, and materials are stored and/or tested as directed by their manufacturer.

NHM has six cyanokits:

- One in the emergency trolley
- One in the portable cyanide exposure bag
- Four in storage.

Medical staff in the clinic inspect the cyanokits on the following frequencies:

- Daily for the emergency trolley
- Weekly for the portable cyanide exposure bag
- Monthly as part of a stock take for those kits in storage.

The operation has developed specific written emergency response plans or procedures to respond to cyanide exposures.

The *Cyanide Emergency Response Plan* (CERP) has the following response information regarding exposures, which is utilised by the ERT:

- PPE requirements
- Cyanide Poisoning Procedure
- Decontamination.


The operation does have its own on-site capability to provide first aid or medical assistance to workers exposed to cyanide.

NHM has contracted ISOS to provide 24/7 medical coverage on site at the site clinic. The clinic is staffed with professional nurses and paramedic staff as well as a full time doctor. Equipment and capabilities at the clinic includes a basic medical laboratory, x-ray machine, audiometer, and spirometer machine, defibrillator, oxygen, cyanokits and two ambulances.

NHM has on-site capabilities to treat all cyanide exposures. As such, patients are unlikely to require transfer off site to other medical facilities. However, in the event that this is required, it is coordinated by ISOS.

NHM conducted a cyanide exposure drill as part of its emergency response plan evaluation process in November 2010. This drill involved the ERT responding to an exposure at the mill and removal of the patient to the clinic for treatment. A consulting doctor supervised the drill and debriefed those involved following completion of the drill. In addition, mock drills were conducted as part of CERP training provided by a training consultant in October 2010 and February 2011. These drills involved response to a cyanide spill and desktop emergency management.

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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.

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 7.1

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 7.1 requiring an operation develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

NHM has developed a CERP that addresses potential accidental releases of cyanide.

This plan is dedicated to responding to cyanide emergencies. The CERP sits beneath the overarching *Emergency Management Plan (EMP)*, which regulates the management of all emergencies involving the site at Gosowong, Manado office and Jakarta office and where NHM has legal, ethical or community responsibilities.


The NHM CERP does consider the potential cyanide failure scenarios appropriate for its site-specific environmental and operating circumstances. The CERP outlines general responses to cyanide releases and also has specific response information, including flow diagrams for different scenarios.

The NHM CERP considers both on-site and off-site transportation (Barnabas Port to site boundary) emergencies. The information provided details the response actions of ERT personnel. Gosowong is only required to provide emergency response once it takes custody of the cyanide. This occurs at the Barnabas Port, where it is transported by road some 15.2 km to the site boundary.

The NHM CERP does describe specific response actions (as appropriate for the anticipated emergency situations) such as clearing site personnel and potentially affected communities from the area of exposure, use of cyanide antidotes and first aid measures.

Appendix A of the CERP outlines how the alarm for a cyanide emergency is raised internally. Appendix A then refers to the Evacuation Procedure for the evacuation of site personnel. For communication with the local community, the CERP directs the reader to Appendix B Cyanide Events Stakeholder Notification and Communication.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 7.2

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 7.2 requiring an operation develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

NHM has issued a newsletter (in English and Bahasa) to the workforce, local communities and government representatives that describes what cyanide is, what the Code is, what emergency response training has been undertaken and what NHM is doing to prevent incidents. The flyer contains contact information for various personnel working on Cyanide Management and encourages the reader to contact them if they have an issue or question regarding cyanide use at Gosowong.

NHM has the only emergency response capabilities on the island. As such, there are no outside responders (e.g. fire brigades) to consult in the cyanide emergency planning and response process.

There are no external stakeholders with a designated role in the CERP. As such, there is no need for consultation or communication outside of the operation.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 7.3

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 7.3 requiring an operation develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

The elements of the CERP and procedures do:

- Designate primary and alternate emergency response coordinators who have explicit authority to commit the resources necessary to implement the plan. The EMP designates the General Manager (GM) as the Emergency Management Team (EMT) Leader or a suitable/appointed Department Head as an alternate if the GM is unavailable.
- Identify emergency response teams. The Safety Superintendent maintains a list of the three nine man ERT teams
- Require appropriate training for emergency responders. Section 3.2 of the CERP details the training requirements for medical personnel and EMT and ERT members.
- Include call-out procedures and 24-hour contact information for the coordinators and response team members. The CERP and EMP include emergency call-out procedures and contact information.

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- Specify the duties and responsibilities of the coordinators and team members. Duties and responsibilities are outlined in Section 4.0 of the EMP for all EMT members and Section 1.4 of the CERP for the ERT members and ERT Captain.
- List emergency response equipment, including personal protection gear, available along transportation routes and/or on site. Section 3.3 of the CERP lists the equipment that should be available for emergency response
- Include procedures to inspect emergency response equipment to ensure its availability. ERT equipment inspection frequencies have been entered into the site’s event management software (Cintellate).
- Describe the role of outside responders, medical facilities and communities in the emergency response procedures. Due to the lack of facilities and equipment on the island external to Gosowong, NHM has not designated any role for outside responders or communities in the event of an emergency.

Local outside responders and communities have not been allocated a role in the event of an emergency at Gosowong. All responses to incidents on site are handled internally.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 7.4

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 7.4 requiring an operation develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

NHM’s emergency documentation includes procedures and contact information for notifying management, regulatory agencies, outside response providers and medical facilities of the cyanide emergency.

In the event of an emergency, personnel are instructed to raise the alarm via the emergency radio channel or the emergency phone number. These contact points are manned 24 hours a day by ERT members, who assess what facets of emergency response are required. The ERT Captain is then required to contact the Duty Safety Officer, who will in turn contact the EMT Leader (GM or appointed Department Head). A decision will then be made on whether the EMT requires activation. The EMT has personnel responsible for internal and external communication.

For communication with the local community, the CERP directs the reader to Appendix B Cyanide Events Stakeholder Notification and Communication. This document lists contact information for off-site stakeholders, such as village elders and key public servants.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 7.5

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 7.5 requiring an operation develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

The NHM emergency response documentation does describe specific remediation measures for:

- Recovery or neutralisation of solutions and solids
Decontamination of soils and other contaminated media
Management and/or disposal of spill clean-up debris
Provision of an alternate drinking water supply.

The CERP prohibits the use of chemicals to treat cyanide that has been released into surface water. Section 4.5 of the CERP states:

“Treatment of any spill of cyanide, whether in pellet form or in solution, to flowing water sources other than water which is contained within the metallurgical water circuit should not be attempted. Such interventions are generally ineffective due to the inability to ensure effective mixing or treatment chemicals with contaminated water [sic]. Treatment chemicals themselves are also harmful to aquatic fauna and water users. Emergency response efforts should in such cases be aimed at emergency management measures to limit the effects of the spill on humans and biota.”

The CERP allows the use of sodium hypochlorite to neutralise spills to soil. However, it prohibits the use of this chemical or other neutralising agents in surface drainage areas.

The CERP addresses the potential need for environmental monitoring to identify the extent and effects of a cyanide release. Section 6 of the CERP states that:

“Reactive environmental monitoring is performed to determine the extent and severity of contamination, where a release to the environment has occurred due to an emergency situation.”

All soil sampling is undertaken by personnel from an external laboratory accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 7.6

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:


NHM is in FULL COMPLIANCE with Standard of Practice 7.6 requiring an operation develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

A passage in the CERP requires it to be reviewed on an annual basis. The document is yet to come up for annual review. However, NHM have revised it several times as part of the fine tuning process.

NHM conducted a cyanide exposure drill as part of its emergency response plan evaluation process in November 2010. This drill involved the ERT responding to an exposure at the mill and removal of the patient to the clinic for treatment. A consulting doctor supervised the drill and debriefed those involved following completion of the drill. No minutes of this debriefing session were kept.

The CERP has a requirement for review following its activation for a cyanide related emergency. The CERP was activated in February 2011 in response to a tailings pipeline burst and was reviewed as a consequence.

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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

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 8.1 requiring an operation develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

NHM does train all personnel who may encounter cyanide in cyanide hazard recognition. The site has elected to give all permanent employees Sodium Cyanide Safe Handling training. The training material covers cyanide topics.

According to the Cyanide Code Champion, all members of the various departments have received this training. The Auditor saw several hundred cyanide safe handling certificates, but was unable to verify if everyone has received this training. At the time of audit, these training records were being transferred to an electronic database. Short term visitors do not receive Cyanide Awareness Training. However, they cannot enter cyanide areas, such as the mill, unescorted.

The Sodium Cyanide Safe Handling Guideline training was recently rolled out. As such, no refresher training has been undertaken to date. The Cyanide Code Champion has stated that refresher training will be conducted annually.

Training records have been retained. The Auditor viewed certificates and attendance records.

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

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 8.2 requiring an operation develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

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At the time of audit, NHM was implementing a new documented training system. Previously, all personnel learnt on the job from experienced operators, but were not formally assessed for competence. According to the Cyanide Code Champion and Mill Manager, the new training system requires all mill and maintenance department new starters to be provided with the procedures relevant to their job and paired with experienced, trained personnel for a three month period, where they learn on the job. The procedures contain step by step instructions on how to perform each task, as well as pertinent health, safety and environment information. After three months, Shift Supervisors, who are qualified trainers, will run them through each task, before assessing their competence. In the future, new starters will not be permitted to work unaccompanied until the Shift Supervisor and Area Supervisor have deemed them competent.

The training elements necessary for each job involving cyanide are identified in training material.

Along with step by step task information contained within each procedure, each procedure has a corresponding assessment that lists the key training elements that each worker must be found competent in. Shift Supervisors, who are qualified trainers, use this list to mark off competence before signing off that the worker can complete that task unaccompanied.

According to the Cyanide Code Champion, new starters are teamed with experienced operators for three months to learn on the job. At the completion of the three month period, the new starters are taken through the relevant procedures by the Shift Supervisor, before being assessed for competency.


All Shift Supervisors have undergone Training for Trainers at a certified external training establishment.

All NHM personnel undergo Sodium Cyanide Safe Handling Guideline training prior to the commencement of work. They are required to undergo refresher training annually. As this training has only been given within the last 6 months, no personnel have been required to undergo refresher training.

NHM's new training system does require the evaluation of cyanide training effectiveness by testing and observation. As mentioned in 8.3.1, following a three month on the job training period with an experienced operator, new starters are assessed and observed against each relevant procedure by the Shift Supervisor. If deemed competent in a procedure by the Shift Supervisor, new starters can then work unaccompanied on that task.

NHM has begun to retain records throughout an individual's employment documenting the training they receive. Prior to the implementation of the new training system, record keeping for training was haphazard. NHM has begun to formally assess competence for activities in the mill for task training (milling and maintenance related) and is working through the backlog of existing operators who have not been formally assessed. These assessments involve a documented sign-off on competence.

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

in full compliance with

The operation is in substantial compliance with

Standard of Practice 8.3

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 8.3 requiring an operation develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

Non-ERT members are not required to respond to cyanide incidents other than through raising of the alarm. The process for raising the alarm is covered in site wide and mill induction material, as well as being posted in the mill control room.

A training consultant has been engaged to provide training in cyanide emergency response. This training is ongoing and is targeting ERT members and selected personnel.

As describe in 8.3.1, a training consultant has been engaged to provide regular six monthly training in cyanide emergency response to ERT members and other selected site personnel. This training includes use of emergency equipment, first aid and mock drills using the procedures detailed within the CERP. Twenty-five out of the 27 ERT personnel have undergone this training since the programme roll out in October 2010.

In addition, Newcrest mine rescue personnel from Australia visit NHM on an annual basis to provide basic ERT training. The last visit was in December 2010.

25 out of 27 ERT members have undergone training in the procedures within the CERP. This training also included the use of equipment to safely conduct the procedures and mock drills.

The sites emergency response capability includes three, nine man teams. The two ERT members that are yet to undergo the CERP training are from the same team (Team B). However, after discussions with the Safety Coordinator, the auditor is satisfied that if Team B was called out to respond to a cyanide emergency, seven trained members would be sufficient to respond appropriately. In addition, there are other personnel on site from other departments that have received the training and could assist if needed.


No outside entities have been given a role in the CERP.

ERT members receive periodic training in cyanide emergency response. A training consultant has being contracted to deliver this training every six months. This training is captured in the ERT drill schedule for 2011, with training completed in February and further training scheduled for August. Given the ERT rotation schedule, it takes twelve months to capture all of the teams.

The cyanide emergency drills that have been conducted by NHM, as part of the six monthly training, were evaluated from a training perspective. After each drill, the team was requested to, on a white board, account for the procedure "step-by-step" and give criticism on their performance. At the end of each day, the trainer would revise the basic guidelines of cyanide response.

ERT training attendance sheets, documenting the training, name of trainer and trainee, the date, topics covered and the how an understanding was demonstrated have been kept for review by the Auditor.

Gosowong Gold Mine
Name of Facility


Signature of Lead Auditor

6 September 2011
Date



PRINCIPLE 9 – DIALOGUE

Engage in Public Consultation and Disclosure

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

[X] in full compliance with

The operation is [] in substantial compliance with

Standard of Practice 9.1

[] not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 9.1 requiring an operation to provide opportunity for stakeholders to communicate issues of concern regarding the management of cyanide.

The operation does provide the opportunity for stakeholders to communicate issues of concern regarding the management of cyanide.

NHM provides the phone number for the Operation, advertised in a newsletter that is sent to local communities, sub-districts, local government and provincial government. This phone number is also available on the NHM intranet. This phone number is for the Corporate Social Responsibility (CSR) Manager.

Whilst local communities appear remote, mobile phone usage was witnessed within these communities.

NHM has held a community presentation about cyanide for the local villages during which they could ask questions and raise concerns.

NHM has also held a presentation on cyanide awareness for the employees of Gosowong Gold Mine.

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

[X] in full compliance with

The operation is [] in substantial compliance with

Standard of Practice 9.2

[] not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 9.2 requiring an operation to initiate dialogue describing cyanide management procedures and responsively addressing identified concerns.

NHM utilises cyanide awareness training and the distribution of newsletters to create opportunities for the operation to communicate with the workforce and provide them with information regarding cyanide management practices and procedures.

With respect to the local community, NHM representatives have met with village leaders at Community Consultation Meetings. Local high schools have also received presentations regarding cyanide management.

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NHM distributes a newsletter to local communities, sub-districts, local government and provincial government, for which the May 2010 issue was about cyanide awareness. The January 2011 issue provided information on how the operation uses cyanide, how NHM reduces the risk of cyanide and the cyanide code. The newsletter is in both English and Bahasa.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 9.3

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

NHM is in FULL COMPLIANCE with Standard of Practice 9.3 requiring an operation make appropriate operational and environmental information regarding cyanide to stakeholders.

NHM has provided written descriptions of how their activities are conducted and how cyanide is managed through a newsletter distributed to a wide audience.

Verbal dissemination of material is conducted, and NHM gave a presentation on cyanide to local village elders in December 2010. The villages include those close to the mine and those along the transport route between Gosowong’s port and the mine gate. A governmental Mines Inspector conducted these presentations as NHM chose someone who was independent and held with regard in the local community.

The operation has some mechanisms to make information publicly available on the cyanide release or exposure incidents, where applicable.

NHM is required by the Indonesian Government to report spills and incidents to the Mines Inspector. Information has to be approved by the Director of Operations at the Indonesian Mines Department before it is released.

Newcrest produces sustainability reports and this includes spills and incidents that occur at NHM. The Sustainability Report for Newcrest lists all company wide incidents as a total figure. This report is available on the Newcrest website.

LIMITATIONS

Your attention is drawn to the document – “Limitations”, which is included in Appendix A **Error! Reference source not found.** of this report. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be. The document is not intended to reduce the level of responsibility accepted by Golder, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

Gosowong Gold Mine
Name of Facility

Signature of Lead Auditor

6 September 2011
Date



Report Signature Page

GOLDER ASSOCIATES PTY LTD

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APPENDIX A

Limitations



LIMITATIONS

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