



Consulting & Training

International Cyanide Management Code Recertification Audit

**Pt Nusa Halmahera Minerals – Gosowong Gold Mine
Recertification Audit
Summary Audit Report – Supply Chain**

October 2018

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1. SUMMARY AUDIT REPORT FOR TRANSPORT OF CYANIDE

Name of Supply Chain:	PT Nusa Halmahera Gosowong Mine Supply Chain
Name of Mine Owner:	Newcrest Mining Limited
Name of Mine Operator:	PT Nusa Halmahera Minerals
Name of Responsible Manager:	Tommy Octaviantana – Manager, Ore Treatment
Address:	PT Halmahera Minerals Gosowong Gold Mine Halmahera Island
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2. DESCRIPTION OF TRANSPORT SUPPLY CHAIN

The scope of the Recertification Audit for the transport of cyanide was the Gosowong Supply Chain. This supply chain comprises the following transport sections:

- Transport from the Orica cyanide production facility in Yarwun (Queensland, Australia) to the Port of Brisbane (Orica Australia Supply Chain – recertified 20th August 2018)
- Transport by ship from the Port of Brisbane to the Port of Surabaya, Indonesia via various shipping companies, operating under the Orica Australia Supply Chain (recertified 20th August 2018)
- Transport between the International and Domestic Ports of Surabaya by road (Trans Continent Supply Chain – recertified 29th January 2018)
- Transport by ship to the Port of Barnabas using the ICMI Certified Supply Chain – Pt Trans Continent (recertified 29th January 2018)
- Off-loading and loading activities at the Port of Barnabas (owned and operated by NHM) (no interim storage)
- Transport between the Port of Barnabas and the Gosowong Gold Mine, operating under the ICMI Certified Supply Chain - NHM using NHM trucks (Nusa Halmahera Minerals Supply Chain – recertified 26th October 2016)

An Audit Protocol was used during the audit for guidance and recording of findings based on evidence obtained (hard copy and electronic) and discussions with on-site personnel. The Protocol reflected the Code's Principles and Standards of Practice related to transport of cyanide.



3. OPERATIONS

Newcrest Mining Limited (Newcrest) is an Australian-based corporation based in Melbourne. The company engages in gold exploration, mining, processing and in the sale of gold and gold-copper concentrate.

Newcrest’s primary gold and copper production in Australia is at Ridgeway - Cadia Valley Operations. Another Australian operation is at the Telfer Mine in the Pilbara region of Western Australia. Newcrest also operates two mines in Papua New Guinea (Lihir and Hidden Valley) and one each in Ivory Coast (Bonikro) and Indonesia (Gosowong). In August 2010, Newcrest merged with Lihir Gold, to become the world's fifth-largest gold producer.

PT Nusa Halmahera Minerals (NHM) is the joint venture Indonesian company formed to manage the Gosowong Gold Mine. The mine is owned and operated 75% by Newcrest, with PT. Aneka Tambang owning the remaining 25%. It is located within the Gosowong Gold Province on Halmahera Island in the North Maluku Province of Indonesia, approximately 2,450 kilometres north east of the national capital Jakarta. The Gosowong Mining Permit, called a Contract of Work (CoW), continues until at least 2029.

4. SUMMARY AUDIT REPORT

4.1 Auditors Findings

PT Nusa Halmahera Minerals Gosowong Supply Chain is in substantial compliance with the International Cyanide Management Code (ICMC). The Corrective Action Plan to bring the operation from substantial compliance to full compliance is enclosed with this summary report.

Audit Company: Ashton Safety Health and Environment

Audit Team Leader: Phil Ashton, Lead Auditor

Email: phil@ashtonshe.com.au

Signed:  (Phil Ashton – Lead Auditor)
Signed  (Michael Waite – Auditor)

4.2 Name of Other Auditors

The Recertification Audit Team comprised:

Mr Phil Ashton (ICMI pre-certified Lead Auditor and Technical Specialist for mining, production and transport)

Mr Mike Waite (ICMI pre-certified Technical Specialist for mining, production and transport).





4.3 Dates of Audit

The on-site Re-certification Audit was undertaken 27th October 2018 and 29th October 2018 inclusive.

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 Cyanide Transport and using standard and accepted practices for health, safety and environmental audits.

Name of Facility: PT Nusa Halmahera Minerals Gosowong Gold Mine – Gosowong Supply Chain

Signature of Lead Auditor: 

Date: 05/04/2019

4.4 Summary Findings

Principle 1 – Operations - Transport Cyanide in a manner that minimises the potential for accidents and releases.

Standard of Practice 1.1

Select cyanide transport routes to minimise the potential for accidents and releases

The operation is in Full compliance ✓ Substantial Compliance Non-compliance

Basis for this Finding/Deficiencies Identified:

The transport route in question is the only route available and was noted to be in good condition from visual assessment by the auditor. Roads are bitumenised and are well maintained. Risks associated with the route have been adequately assessed and specific procedures developed to mitigate these risks. The risk assessment has included consideration of population density, bridges, proximity to water bodies, blind spots, bends and road design/condition. The route is short and used by a number of PT Nusa Halmahera Minerals (NHM) personnel to travel to and from mine, inclusive of supply personnel who have a role in the transport of cyanide. Approvals have been obtained for the transport route.

There are no unusual, specific security or safety concerns associated with the route. The cyanide is escorted by Emergency Response Team (ERT) members (at the rear) and the Police (in front). Flashing





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lights and sirens are used throughout the trip and speed restrictions apply. All drivers in the convoy are licensed and trained to an appropriate/required level in cyanide hazards and response.

Communication equipment is provided in all vehicles and there are procedures for communication black-out areas.

All emergency response activities are carried out by the trained Emergency Response Team (ERT). There is no requirement for external assistance. 24/7 medical assistance is provided at the mine in the event of any injury and/or cyanide exposure.

All drivers are required to advise the Transport Supervisor on any changes en-route which present a hazard.

There is a requirement to periodically inspect the supply route and conduct an inspection 2-3 days before transport. While it is understood that this activity is undertaken, there are no records maintained for audit purposes (verification). However, it is noted that the route is travelled on a regular basis by employees from the Supply and other NHM Departments.

NHM do not use sub-contractors for the route Barnabas Port to Site. Orica and Pt Trans Continent, both International Cyanide Management Code (ICMC) certified, are bound by contract to ensure sub-contractors comply with ICMC requirements through specific contract clauses.

There has been past communication with the community and other stakeholders in relation to transport of cyanide along the selected route. Cyanide transportation has been discussed with the community at various forums (refer listing). The Procedure – Transport Route Selection and Transportation Cyanide requires the NHM Local Community Department to conduct annual meetings with all village elders. These heads of district have attended selected sessions as listed. It is noted that since the on-site audit, a program has been developed for 2019.

Standard of Practice 1.2

Ensure that personnel operating cyanide handling and transport equipment can perform their jobs with minimum risk to communities and the environment

The operation is in Full compliance ✓ **Substantial Compliance** **Non-compliance**

Basis for this Finding/Deficiencies Identified:

All drivers and operators of mobile equipment for handling and transport of cyanide hold the required external licences, as listed on a specific register, which is tracked in relation to expiry dates. Drivers of cyanide transport vehicles hold B2 licences as required and a licence issued by NHM after verification of competency.

Specific procedures have been developed for unloading and transport of cyanide, and training has been provided against these procedures and general cyanide hazard and risk mitigation measures.



Standard of Practice 1.3

Ensure that personnel operating cyanide handling and transport equipment can perform their jobs with minimum risk to communities and the environment

The operation is in Full compliance ✓ Substantial Compliance Non-compliance

Basis for this Finding/Deficiencies Identified:

Robust procedures have been developed related to loading and unloading cyanide and its transportation. Emergency procedures have also been developed to ensure there is an efficient response in the unlikely event of a cyanide-related incident.

Trailers are designed to only hold one seatainer and have been verified to be load rated for the consistent weight of one seatainer. Similarly, the crane and lifter are also rated to lift the load required.

Equipment used to handle cyanide loads is rated for the weight to be lifted and is used on a regular basis for handling of cyanide loads, the weight of which remains consistent from delivery to delivery.

Maintenance on vehicles and cranes is carried out via the schedule in (Systems Application and Products System (SAP). All equipment is maintained in line with a fixed schedule and pre-start checks are carried out, including visual checks for signs of damage. Rigging is also inspected on a regular basis and a Rigging Register maintained.

Standard of Practice 1.4

Develop and implement a safety program for transport of cyanide

The operation is in Full compliance ✓ Substantial Compliance Non-compliance

Basis for this Finding/Deficiencies Identified:

The transport route is the only route available for transport from the Port to Site and is relatively short in distance (15kms) so that special fatigue management provisions over and above those used in general at NHM are not required.

All vehicles are subject to formal pre-start checks prior to departure. Drivers are limited to 13hrs work/day to prevent fatigue. Maintenance of all vehicles is addressed via SAP.

It is noted that drug abuse is not a recognised issue in NHM and the local area of operations. Regular random checks are however undertaken for alcohol as witnessed.

Records are maintained (refer previous) of hours, random alcohol testing and maintenance.

Packages holding the solid cyanide are robust and, because double containment is used, adequate protection is provided for packaging in the unlikely event of an incident at the Port and en-route. There is very little potential for the loads to shift during transport as seatainers are secured with twist locks and bulk of space in the seatainer is taken up with bulki-boxes.



All equipment used for unloading, loading and transport is fit-for-purpose, well maintained through SAP and able to handle the load associated with a single seatainer. Pre-start checks are carried out on all equipment.

It is a procedural requirement to inspect the seatainers for damage and leakage when being loaded onto trucks. A special facility is provided at the Port for secure storage of seatainers in the unlikely event of leakage. The facility is sealed to enable efficient clean-up of any spillage and re-bagging by the Emergency Response Team if required.

There are fatigue guidelines to be followed and there is no requirement for rest breaks as the route is short.

It is a procedural requirement that transport can be suspended in the event of poor weather conditions, road hazards (changes to work practices), equipment and personnel. It is also a requirement to ensure that transport does not take place if an escort is not available (refer Procedure for Escort of material from Port to Site).

Transport must be suspended in the event of civil unrest and poor weather (refer Procedure Transport Route Selection and Transportation of Cyanide)

Standard of Practice 1.5

Follow international standards for transportation of cyanide by sea and air

The operation is in Full compliance ✓ Substantial Compliance Non-compliance

Basis for this Finding/Deficiencies Identified:

NHM is in full compliance with Transport Practice 1.5 requiring international standards to be followed for the transportation of cyanide by sea and air. By contract, all sub-contractors used by Orica and Pt Trans Continent for marine transport must comply with ICMC requirements. Orica and Pt Trans Continent are ICMC certified and, as such, must ensure that its sub-contractors act in compliance with the ICMC.

There is no transport of cyanide by air.

Standard of Practice 1.6

Track cyanide shipments to prevent losses during transport

The operation is in Full compliance ✓ Substantial Compliance Non-compliance

Basis for this Finding/Deficiencies Identified:



Two-way radios and mobile phones are used to track progress from the Port of Barnabas to the Gosowong Gold Mine, with initial communication provided before the convoy departs from the Port. Cyanide is transported in convoy, with escort vehicles at the front and rear. Radio communication is provided in all vehicles. These radios are in continual use. Communication blackout areas have been identified and communication is carried out before entry into these areas and when the convoy leaves these areas.

Shipments to the Port are tracked via GPS for safety and operational reasons. It is noted that vessels must also report their positions to the relevant Port Authority.

Chain of custody records are maintained at each stage of the cyanide supply journey.

Both Orica and Pt Trans Continent are ICMC certified and, as such, required to also comply with Standard of Practice 1.6 in accordance with the Code and contractual requirements imposed by NHM. This includes ensuring that any sub-contractors also comply with ICMC requirements.

Principle 2. Interim Storage – Design, construct and operate cyanide trans- shipping depots and interim storage sites to prevent releases and exposures

Standard of Practice 2.1

Store cyanide in a manner that minimises the potential accidental releases

The operation is in **Full compliance** ✓ **Substantial Compliance** **Non-compliance**

Basis for this Finding/Deficiencies Identified:

There is no requirement for interim storage of cyanide at the Port of Barnabas, as the seaintainers are loaded directly from ship to truck. In the unlikely event of damage resulting in spillage, there is a purpose built, concrete containment area, and emergency procedures would be implemented.

The Port of Barnabas is secure, with a robust security fence and controlled access to authorised personnel only. Warning signs are also provided at the entry to the Port. Seaintainers are locked and are not opened until they arrive on site.

Signs include those related to PPE, smoking and food consumption. It is recognised that there is low risk of exposure to cyanide under normal operations.

Seaintainers are always handled in the open air and, as such, there is very low risk of exposure to hydrogen cyanide.



Principle 3 - Emergency Response – Protect communities and the environment through development of emergency response strategies and capabilities

Standard of Practice 3.1

Prepare detailed Emergency Response Plans for potential cyanide releases

The operation is in Full compliance ✓ Substantial Compliance Non-compliance

Basis for this Finding/Deficiencies Identified:

NHM is in full compliance with Standard of Practice 3.1 requiring preparation of detailed Emergency Response Plans for potential cyanide releases.

A number of plans and procedures developed, address response to emergencies at the Port of Barnabas and along the route from the Port to the Gosowong Gold Mine.

The Cyanide Emergency Response Plan (CERP) is the key document related to cyanide response. The Plan, which links to the general Emergency Response Plan, addresses credible cyanide-related emergency events and required response to these events. Specifically, the CERP addresses events associated with loss of containment of solid cyanide and wet cyanide and control of potential impacts on people and the environment.

Other relevant documents provide detail related to cyanide response as relevant. For example, cyanide response information is provided in the Cyanide Transport Route Selection and Off-site Emergency Management Plan, and Transport Route Selection and Transport Cyanide Procedure.

Responsibilities and actions are stated in all documents. There is no requirement for use of external support. Because of the remote location of the mine, NHM is required to be and is self-sufficient with a fully trained Emergency Response Team, equipment and fully equipped clinic.

The CERP considers the method of transport use and, as road transport is the only available option, the CERP and supporting plans and procedures focus on this mode of travel. For example, the CERP includes detail related to:

- Solid sodium cyanide spill to water
- Off-site transport emergency

The CERP addresses response to various cyanide emergency scenarios associated with the above which have potential to impact on infrastructure. The Cyanide Transport Route Selection and Off-site Emergency Management Plan also address relevant credible emergency event scenarios. Specific scenarios are provided at specific areas en-route, with consideration of wind direction. There is a separate section in this plan for road transportation.

The CERP provides response requirements for each credible emergency event. Responsibilities, supported by duty cards, are also detailed. Credible emergency events include those associated with on and off-site emergency scenarios, inclusive of Off-site Transport Emergency, including:

- Cyanide (CN) Poisoning Procedure (First aid for various scenarios)



- Detoxification of soils
- Spill to water
- Uncontained spills (wet and dry conditions)
- Contained spills (wet and dry conditions)
- Fire
- Hydrogen cyanid (HCN) release
- Transport on and off site
- Pipe, valve and tank ruptures
- Overtopping of ponds
- Power outages and pump failure
- Uncontrolled seepages
- Unloading and mixing
- Tailings Storage Facility (TSF) Failure

User-friendly flow diagrams are also provided for each scenario.

All transport of solid sodium cyanide is carried out using double protection (Australian Dangerous Goods Code approved bulk containers inside a robust seatainer). Containers are loaded and unloaded in compliance with procedural requirements and with suitable load rated equipment.

The Cyanide Transport Route Selection and Offsite Emergency Response Plan addresses spills at the Port, during transport, during unloading and from fires.

Standard of Practice 3.2

Designate appropriate response personnel and commit necessary resources for emergency response

The operation is in Full compliance ✓ **Substantial Compliance** **Non-compliance**

Basis for this Finding/Deficiencies Identified:

All emergencies are responded to by the on-site Emergency Response Team (ERT).

All emergencies are responded to by the on-site ERT.

The Cyanide Emergency Response Plan provides detail of resources for emergency response in respect of human and physical factors and requirements. All emergencies associated with cyanide transport are responded to by trained and competent members of the Emergency Response Team, headed by the General Manager who has overall control of any cyanide emergency event. All emergency events are responded to by NHM emergency responders using NHM supplied equipment. Escort vehicles carry PPE to enable first response to any cyanide emergency event. Specialist equipment is rapidly available from the Mine via the Emergency Response Team (ERT).



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There is a wide variety of resources available for effective response including vehicles, ambulances, communication equipment and a variety of personal protective equipment.

All emergency response equipment is inspected and maintained on a scheduled basis, with records maintained as sighted.

Consumables at the clinic are checked via regular stocktakes and inspections. Inspections are carried out weekly and/or monthly.

Training has been carried out in the Emergency Response Plan (Cyanide Emergency Response). A variety of other training is carried out at reference. Records are maintained by the Training Department.

Each convoy includes and ERT escort vehicle that is responsible for responding to all transport emergency incidents, including those related to cyanide. Non-ERT members, such as drivers and Port employees, are not required to respond the cyanide incidents if they are not trained and competent.

Drivers receive training on communication/evacuation requirements in induction training and cyanide awareness. The induction must be refreshed every year and cyanide awareness training refreshed every 2 years.

Standard of Practice 3.3

Develop procedures for internal and external emergency notification and reporting

The operation is in Full compliance ✓ **Substantial Compliance** **Non-compliance**

Basis for this Finding/Deficiencies Identified:

There is an established system for communication of emergency events throughout the NHM organisational structure and the external parties, inclusive of relevant regulators and the community. An external contacts list is maintained.

The flow diagrams in the CERP signify when the community and stakeholders need to be advised of an emergency incident.

All employees and contractors know the process for initial emergency communication and this is reinforced at the site induction. Emergencies are reported to the Emergency Response Team and hence through the chain of command. For major emergency events, the Crisis Management Team at NHM head office are advised and activated.

The Cyanide Emergency Response Plan is updated at least on an annual basis to ensure continual improvement in the process. The last revision of the Plan was dated 2018.

Standard of Practice 3.4

Develop procedures for remediation of releases that recognise the additional hazards of cyanide treatment chemicals.

The operation is in Full compliance ✓ **Substantial Compliance** **Non-compliance**



Basis for this Finding/Deficiencies Identified:

Requirements for decontamination of all potentially contaminated equipment are addressed. A designated area must be set up for equipment decontamination. Procedures are provided in the Cyanide Management Plan. The Plan also includes requirements for soil decontamination. Use of treatment chemicals, such as sodium hypochlorite is not authorised where there is a risk of run-off into surface water bodies. Decontamination of soils must achieve a target of less than 0.5ppm WAD cyanide.

Standard of Practice 3.5

Periodically evaluate response procedures and capabilities and revise them as needed

The operation is in Full compliance Substantial Compliance ✓ Non-compliance

Basis for this Finding/Deficiencies Identified:

Revisions to the Cyanide Emergency Response Plan have added, with the latest revision 2018. The Cyanide Emergency Response Plan requires a liquid cyanide spill exercise during 2016, a cyanide truck incident during 2016 and a fire incident mock exercise during 2016 and 2018.

There has been substantial improvement in mock exercises during the certification period. Numerous on site and port exercises have been undertaken, but some scenarios have not been specifically addressed, although it is recognised that many components of other exercises are relevant.

A rating of substantial compliance has been provided on the basis that numerous mock exercises have been conducted in comparison to the previous re-certification period and de-briefs undertaken and recorded. Following the on-site assessment by the audit team, a road transport exercise was also conducted on 27th December 2018. This exercise was fully recorded in the relevant report with several photographs provided for verification.

**Phil Ashton
Lead ICMI Auditor
5th April 2019**

List of acronyms and abbreviations:

ASHE	Ashton Safety Health Environment
COW	Contract of Works
CERP	Cyanide Emergency Response Plan
ERP	Emergency Response Plan
ERT	Emergency Response Team
HCN	Hydrogen Cyanide
ICMC	International Cyanide Management Code
ICMI	International Cyanide Institute
NHM	Pt Nusa Halamhera Minerals
SAP	Systems Applications and Products
TSF	Tailings Storage Facility