



October 2012

## INTERNATIONAL CYANIDE MANAGEMENT CODE RECERTIFICATION AUDIT

# Newmont Tanami Operations (Granites Gold Mine) International Cyanide Management Code Recertification Audit Summary Audit Report

**Submitted to:**

International Cyanide Management Institute (ICMI)  
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REPORT

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**Distribution:**

- 1 Electronic and 1 Hard Copy - ICMI
- 1 Electronic Copy - Newmont Tanami Operations
- 1 Electronic Copy - Golder Associates Pty Ltd



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## **SUMMARY AUDIT REPORT FOR OPERATIONAL GOLD MINES**

**Name of Mine:** Granites Gold Mine  
**Name of Mine Owner:** Newmont Asia Pacific  
**Name of Mine Operator:** Newmont Tanami Operations Pty Ltd  
**Name of Responsible Manager:** Bill MacNevin, General Manager Operations  
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### **LOCATION DETAIL AND DESCRIPTION OF OPERATION:**

Newmont Mining Corporation is primarily a gold producer, with significant assets or operations in the United States, Australia, Peru, Indonesia, Ghana, Canada, New Zealand and Mexico. Founded in 1921 and publicly traded since 1925, Newmont is one of the world's largest gold producers and is the only gold company included in the S&P 500 Index and Fortune 500. Headquartered near Denver, Colorado, the company has over 34 000 employees and contractors worldwide.

In 2007, Newmont became the first gold company selected to be part of the Dow Jones Sustainability World Index. Newmont's industry leading performance is reflected through high standards in environmental management, health and safety for its employees and by creating value and opportunity for host communities and shareholders.

Newmont Tanami Operations Pty Ltd (NTO) is situated in the Tanami Desert of the Northern Territory and includes a processing plant at the Granites, located 531 km north-west of Alice Springs, and an underground mine at Dead Bullock Soak, approximately 39 km west of the Granites.

NTO manages the Granites Gold Mine for Newmont Australia Limited. Cyanide is only used at the Granites processing plant.

Newmont Granites Gold Mine  
Name of Facility

  
Signature of Lead Auditor

18 October 2012  
Date



**SUMMARY AUDIT REPORT  
AUDITORS FINDINGS**

The Newmont Granites Gold Mine is:

in full compliance with

in substantial compliance with

not in compliance with

**The International  
Cyanide Management  
Code**

No significant cyanide incidents or cyanide exposures and releases were noted as occurring during the audit period.

**Audit Company:** Golder Associates Pty Ltd

**Audit Team Leader:** Russell Beazley, RABQSA International (109258)

**Email:** rbeazley@golder.com.au

**Name and Signatures of Other Auditors:**

Name	Position	Signature	Date
Russell Beazley	Lead Auditor		18 October 2012
Ed Clerk	Technical Specialist		18 October 2012
Mike Woods	Auditor		18 October 2012

**Dates of Audit:**

The Recertification Audit was undertaken over three days (nine person-days) between 21 and 23 February 2012.

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

Newmont Granites Gold Mine  
Name of Facility

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18 October 2012  
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## **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:**

NTO 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.

NTO purchases its cyanide from a Code certified producer under a Sodium Cyanide Contract. The Contract requires that cyanide be produced at a facility that has been certified as being in compliance with the Code.

The production facility was recertified in November 2012. Shipping documents reviewed indicate that the cyanide supplied to NTO during the recertification period was only purchased from this production facility.

Newmont Tanami Gold Mine  
Name of Facility

R. Benzley  
Signature of Lead Auditor

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**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.

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:**

NTO is in FULL COMPLIANCE with Standard of Practice 2.1. The text of the agreement does not specifically detail all of the transportation responsibilities listed in Standard of Practice 2.1.

NTO purchases cyanide from a producer and consignor under contract. The Contract requires that the provisions of the International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold to the extent that those provisions are relevant to contractor’s manufacturing, handling, storage and transport to the site of the product.

The text of the Contract does not specifically document all of the transportation responsibilities (a to l) listed in Standard of Practice 2.1 (question 1) in the Gold Mining Verification Protocol, however the specific reference to Code compliance implies that all of the transportation responsibilities (listed a to l) must be complied with. In addition to this, the Australian Supply Chain of Orica, the cyanide transporter, was certified under the Code on 5 October 2010.

The Contract designates that responsibilities extend to any subcontractors used by the producer, distributor, transporter or the operation for transportation-related activities. No subcontracting of services can occur without the prior written consent of NTO.

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# NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

**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:**

NTO 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 text of the Contract requires that the provisions of the International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold to the extent that those provisions are relevant to contractor’s manufacturing, handling, storage and transport to the site of the product. By specific reference to the Code and to the ICMI Cyanide Transportation Audit Protocol the requirements of this Standard are addressed.

The cyanide transporter was certified under the Code on 5 October 2010.

The operation maintains chain of custody records for all elements of the supply chain that handle the cyanide brought to site.

The Cyanide Deliveries Folder held in the Mill Production Office contains the Delivery Chain of Custody Documentation. The records identify that the cyanide originates from Orica’s Yarwun facility and is despatched from Mt Miller, near Gladstone, by rail and arrives in Mt Isa approximately 2 days later and is then despatched by truck to the NTO site. The cyanide is not placed in any interim storage during transport and remains under the control of Orica throughout the journey from producer to the NTO site.

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**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.

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:**

NTO 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 control (QA/QC) procedures, spill prevention and spill containment measures.

Facilities for unloading, storing and mixing cyanide have been designed and constructed in accordance with cyanide producers' guidelines, applicable jurisdictional rules and/or other sound and accepted engineering practices for these facilities. The design and construction of the sparge unloading and storage facility has been completed in accordance with accepted engineering practices. The Plant Metallurgist advised that all relevant data have been retained by the cyanide producer (the owner of the facility) and copies have been issued to NTO. These documents were reviewed on-site during the 2009 Certification Audit. There have not been any changes to the cyanide storage facilities since 2009.

An engineering firm was engaged by NTO and conducted an inspection of site cyanide facilities in February 2011, including the cyanide storage facilities. The report concluded that:

*"...the processing plant generally appeared to be in reasonable to sound condition...our visual structural inspection did not identify any items that would preclude the processing plant from continuing to function as currently operated."*

The report made a number of recommendations regarding refurbishment/repair of the cyanide storage area, but did not indicate a maintenance priority or suggested date for repair. Another second engineering firm was engaged in May 2012 by NTO to undertake a site visit and review the first engineering report in order to prioritise the remaining structural repairs/refurbishment work and give recommended due dates. The resultant report noted that:

*"...all critical repair/refurbishment items with a High or Medium-High priority have been completed."*

The Auditor notes that the suggested due dates for completion of the remaining works are all greater than 12 months from the date of this audit report. These remaining works were deemed by McCamley & Hard Pty Ltd to be of a low to medium priority and not representing any significant risk to health, safety or the environment. As such, the repairs will be taken care of as part of normal maintenance scheduling.

The second engineering report concluded that the structural refurbishment/repair review:

*"...did not identify any items that would preclude the processing plant from continuing to function as currently operated."*

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## NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

Unloading and storage areas for cyanide are located away from people and surface waters.

The unloading and storage areas are located approximately 40 m from the store and maintenance shed, while the administration office and medical centre are approximately 70 m from the area. These are the nearest areas usually occupied by people. The nearest surface water body is an ephemeral lake system approximately 30 km to the south-west of the lease.

Liquid sodium cyanide is not delivered to the site.

The cyanide unloading area is designed and constructed to contain and recover any leakage from the unloading tanks, by being of sufficient capacity to contain the volume of one sparge trailer load of cyanide within the concrete paved and bunded unloading area, and by directing hose spillage to a concrete lined sump equipped with a pump to transfer spillages to either of the cyanide storage tank or process water tank.

The Cyanide Storage Tanks have ultrasonic high level indicators and conductivity probe high-high level alarms. Both the ultrasonic high level indicator and a conductivity probe high-high level indicators are scheduled for three monthly preventative maintenance checks within ELIPSE (maintenance scheduling software). The level signals and alarms report to the mill control room, and the local control room used by spotters and truck drivers whilst the cyanide unloading process is being conducted.

Cyanide mixing and storage tanks are located on a concrete paved and bunded pad that can prevent seepage to the subsurface.

Secondary containment for cyanide storage and mixing tanks are constructed with concrete material, which is a competent barrier to leakage.

Sparge-solid cyanide and Intermediate Bulk Container (IBC)-solid cyanide is delivered to NTO. Boxed cyanide is stored in sea containers, in an open area with adequate natural ventilation. Both sparge and boxed cyanide can be mixed and delivered to liquid sodium cyanide storage tanks. The storage tanks are installed in the open and are vented to the atmosphere.

Solid sodium cyanide packaged within IBCs is delivered to site in sea containers. The containers remain unopened until use of the boxed cyanide is deemed necessary due to scheduling problems with sparge cyanide due to weather. The closed and sealed containers are stored separately in a remote, built-up and locked store yard. Each container is resting on spacer blocks, which keep the containers above ground level. The area is not roofed, although the containers provide an effective seal from wet weather.

The mine site is fenced and access is restricted by a security guard and boom gate at the gate-house. The closed and sealed containers are stored separately in a remote, built-up and locked store yard adjacent to the liquid cyanide storage tank compound.

Incompatible materials such as sulfuric acid, hydrogen peroxide and diesel are stored in bulk separately from the bulk cyanide storage bund.

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# NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

**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:**

NTO 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.

Bulk solid sodium cyanide is delivered to the site in isotainers and boxed solid cyanide is delivered in sea containers. Cyanide in isotainers is sparged from the vessel using water which dissolves the cyanide. The reagent solution is then transferred to the storage tanks and returned to the producer. The isotainer and trailer is washed down in the bunded area before leaving the unloading bay.

Boxed cyanide is mixed on a needs basis, generally when road transport cannot deliver isotainers due to road closures associated with wet weather or when the stored boxed cyanide is reaching the end of its storage life.

All empty boxes and packaging are taken immediately to the burn pit. The burn pit is surrounded by a locked security fence with access restricted to nominated personnel. The empty boxes are burnt during the night shift when the area is clear of personnel.

Plastic bags and boxes are not hosed after the mixing process. Bags are gathered and placed in the boxes and disposed in an environmentally sound manner by delivering the combination to the burn pit where they are burnt. The burning of the boxes has received regulatory authorisation.

The operation has developed and implemented procedures for the unloading of isotainers and mixing of boxed cyanide. These include step by step explanations of the operation of all valves, pumps and couplings.

The boxed cyanide and unloading procedure provides detail on the unloading sequence from the containers. All forklift operators are trained and qualified. These requirements are intended to prevent rupturing and puncturing.

Boxes are stacked two high, as loaded in containers by the producer. They remain in the containers until removed for cyanide mixing.

The unloading and mixing procedures detail the hosing down of the bunded area and equipment used on completion of the task. Cyanide spill procedures provide detail on the response requirements for minor and major spill events.

Procedures for all cyanide unloading events require a spotter to be present for the entire cyanide unloading, mixing and storage process and detail the personal protective equipment (PPE) requirements.

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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.**

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:**

NTO 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 and implemented for areas that involve cyanide solutions greater than 0.5 mg/L weak acid dissociable (WAD) cyanide. The site maintains an integrated management system that includes other procedures that impact on cyanide safety and environmental issues, such as inspections, JHA and an over-riding Permit to Work requirement, without which maintenance tasks cannot be undertaken.

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.

The assumptions and parameters on which the facility design was based and any applicable regulatory requirements are documented in the documented change management procedures for new works.

Plans and procedures 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 inspection of cyanide facilities includes all of the following:

- Checks of signage; access; security fencing; housekeeping; bund conditions; truck bay and pad; platforms; stairs; gantry; bund leaks; bund debris; bund sump pump; bund sump pump delivery status; spare bund pump status
- Individual tank inspection (applies to all tanks) - condition of tank for leaks; corrosion; structural deterioration; level indicator; level indicator tested six monthly; high alarm tested six monthly; vent installed; overflow installed; is overflow pipe immersed in water; does tank have product labelling; warning signs; emergency information; and any evidence of leakage from any tank valves
- Pipework and fittings - check labelling is unambiguous and clear; valves and handles in good repair and no leaks; hoses tested regularly; pipe gaskets in good condition; pipes and fittings supported; and valves locked where necessary

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Preventative maintenance is conducted on all plant and equipment. The ELIPSE Preventative Maintenance System produces daily work requirements and checks. No work can be conducted without a Permit to Work being completed.

The operation has a procedure to identify when changes in the site's processes or operating practices may increase the potential for the release of cyanide and to incorporate the necessary release prevention measures. Change Management is required to identify and control health, hygiene, safety, environmental and community relations risks associated with change to the facility, equipment, materials and operating procedures in use at the site. This procedure also applies to new projects prior to implementation to ensure appropriate controls and systems are in place.

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 procedures address the following:

- Spills in plant areas
- High HCN gas concentrations
- Tailings overflows
- Emergency response and evacuation
- Emergency first in response.

The operation inspects cyanide facilities on an established frequency sufficient to assure and document that they are functioning within design parameters. Inspections are conducted by both operations and maintenance personnel. The procedure titled *Conducting Tailings System Inspections* includes inspections to prevent process slurry losses and to ensure no harm to wildlife. The checks must be performed by Process Shift Supervisors or Process Plant Technicians involved with operating any of the aspects of the tailings system, including the Tailings Storage Facilities (TSFs), tails return water and process water pond (PVC Pond). *Conducting Tailings System Inspections* includes inspections seepage collection systems. Pipelines, pumps and valves are inspected for deterioration and leakage as part of area inspections. Important parameters are documented in the TSF Operating Manual. Tailings dam inspections are conducted every three hours, or as soon as possible after a major storm event

The operation inspects the following at unloading, storage, mixing and process areas, as applicable to the site:

- Individual tank inspections (applies to all process tanks) are carried out regularly.
- Secondary containment areas are inspected as part of the monthly *APAC IMS Workplace Inspection*.
- Secondary containment trays for cyanide reagent lines are inspected weekly.
- Design documents for cyanide facilities have not specified the requirements for leak detection systems.

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Inspections 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 documented. Records are maintained. Inspections by shift operations personnel are documented on log sheets to confirm that the required inspection items have been addressed. The checklists show the name of the inspector, the date and the time.

Preventive maintenance programmes are implemented and activities documented to ensure that equipment and devices function as necessary for safe cyanide management. Work Orders are raised in the ELIPSE system for maintenance works required as a result of the inspections. The Work Orders include details of the works required for that item of plant and sign-off by the person carrying out the works and their supervisor confirming that the works have been implemented.

All power is generated on-site. In circumstances of a power outage, a generator automatically starts to provide power to the fire water main and potable water main for safety shower availability. The site also has 47 mobile generators with capacities of between 5 and 250 kW, with a back-up capacity of approximately 0.5 MW. The largest pump on the site uses 90 kW. The site maintains a spare roll of power cable. All generators are subject to two weekly (in use) or four weekly (back-up) inspection and maintenance schedules.

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Date



# NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

**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:**

NTO 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.

The operations does conduct 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. On-site, laboratory bottle roll tests are done daily (two, six, 24 hourly tests) to assess the optimum residence time in the leach tanks. A monthly diagnostic leach test is conducted on-site to assess a number of parameters, including cyanide. Changes are made to process parameters depending on recovery results; daily plant tailings re-leach (bottle roll) results and plant cyanide and pH conditions. A further control parameter is a target of <40 ppm CN following cyanide destruction by the Caro's Acid system.

The operation has evaluated various control strategies for cyanide additions. The cyanide feed rate is set according to operating data which is reviewed daily. The aim is for the feed rate to be as low as possible depending on leach recovery conditions. Cyanide is monitored in the in the final CIL Tank A6 with adjustments made if the cyanide concentration is greater than 100 ppm free cyanide. The feed rate is generally around 230 ppm free cyanide. Cyanide may also be adjusted depending on recovery results or the daily bottle roll testing results. Cyanide addition is conducted and controlled by the Cyantific On-line Analyser which samples leach feed tank 1 every one to two minutes and adjusts cyanide according to a nominated set point.

The operation has evaluated various control strategies for cyanide consumption. A combination of manual and automated systems is used. Once optimum cyanide concentrations have been established, cyanide addition rates are controlled through using on-line cyanide analysers and cross checking with manual titrations. NTO does a full cyanide profile in each leach and adsorption tank (gold, pH and cyanide) to obtain an indication of cyanide degradation through the tanks.

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# NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

**Standard of Practice 4.3: Implement a comprehensive water management programme 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:**

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

NTO has developed a comprehensive, probabilistic water balance for parts of its operation that are cyanide facilities (i.e. the paddock style TSF, process water dam and three in-pit TSFs). The model addresses all the elements detailed within the ICMI Auditor Guidance Notes.

NTO uses probabilistic means to manage the uncertainty and variability of the prediction of precipitation by managing their TSFs so that they can accept 1 in 1 000 and 1 in 3 000 year, 72 hour rainfall events.

The model recognises that there are no leach pads at NTO and recognises the tailings impact on the water balance and the behaviour of the TSFs. Inputs include thickener underflow, % solids and plant throughput.

The paddock style TSF (GTD03) consists of multiple cells, one of which is upgradient of the rest. Therefore, there is the potential during storm events for the upgradient cell to overtop into the ones downgradient. The model accounts for this by ensuring that the freeboards within the downgradient cells are such that they can accept both a storm event and overflow from the upgradient cell. Based on-site topography, surface runoff from the upgradient watershed has been discounted for the in-pit TSFs.

NTO is situated in an arid climate, where maximum and minimum winter temperatures are above freezing and thus negate the need to consider freezing and thawing conditions in the model.

A representation of infiltration and seepage has not been included in this model due to the lack of supporting hydraulic data. Communication between NTO and its tailings consultant has suggested that additions and losses through infiltration and seepage are negligible. In particular regard to seepage, it is the opinion of the tailings consultant that seepage is most during times of ponding above the tailings. Due to good tailings management, ponding is minimal, thus making seepage a transient event. This is evidenced by the fact that seepage has not been detected in the seepage trenches surrounding GTD03 (confirmed by a check of the Tails Dam Logsheets). In addition, by not taking into account any solution losses via seepage, the operation's water balance overestimates the amount of water in the TSFs, thus causing the operation to manage the facilities more conservatively.

Drain down pumping capacities and power outages are not specifically included in the model. All return water pumps are diesel operated and are not affected by any power outages that may be experienced by the process plant. To simulate pump failures, the return water from the TSFs can be set to zero, thus resulting in no water leaving the facilities.

There are no surface water discharges at NTO.

NTOs operating procedures incorporate inspection and monitoring activities to implement the water balance and prevent overtopping of ponds and impoundments and unplanned discharge of cyanide solutions to the environment.

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Process personnel inspect the in-use TSFs every three hours. The inspection includes pipeline and pump integrity, tailings level and embankment crest, pond sizes, embankment integrity and seepage.

NTOs ponds and impoundments are operated with adequate freeboard above the maximum design storage capacity determined to be necessary from water balance calculations. NTO operate their in-pit TSFs with a minimum freeboard of 0.5 m, whilst the paddock style GTD03 is operated with a minimum freeboard of 0.3 m. The process water dam is operated with a 350 mm minimum freeboard capable of accepting a 1 in 3 000 year, 72 hour rainfall event. The facilities are inspected seven times per day, checking, among other things, the freeboard.

NTO compares precipitation results to design assumptions and revises operating practices as necessary. Precipitation intensity data is obtained from the BoM weather station at Rabbit Flat, approximately 40 km north of the mine lease. The BoM update this precipitation intensity data on a biennial basis. During interviews, the Plant Metallurgists said that they check the BoM website approximately every six months to check for updates. Weather forecasts are checked daily to ascertain the likelihood of storm events. Based on this likelihood, the model is run with the appropriate rainfall intensity for that storm.

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## NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

**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:**

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

There are no TSFs or water bodies within the NTO operations with WAD cyanide levels consistently in excess of 50 mg/L. As such, other than fencing, no efforts have been made to restrict wildlife.

There are nine facilities at NTO with the potential to contain cyanide. Between February 2009 and August 2011 NTO had not been able to maintain WAD cyanide levels at these facilities at less than 50 mg/L on a consistent basis. Despite operating a Caro's Acid plant, there have been at least 97 occurrences of the 50 mg/L WAD cyanide limit (i.e. spigot discharge) being exceeded in the operation's TSFs since February 2009. These exceedances have been grouped into the following mechanisms of exceedance:

- Failure of the Caro's Acid plant - There have been numerous instances (i.e. >30) since February 2009 where the Caro's Acid plant has been offline, which has led to WAD cyanide exceedances. All except three of these instances occurred prior to August 2010. Since then, maintenance practices have improved and the operation's cyanide destruction capability has only been offline unexpectedly twice since August 2011, with neither time resulting in a WAD cyanide exceedance.
- New ore blends - During the re-certification period, NTO has undertaken campaign milling of various ore blends to keep the plant running whilst new reserves were being identified and exploited. The geology and metallurgy of these ore blends is not well known. In addition, undertaking test work on each new blend is not practical as it would require time consuming and expensive off-site preparation and analysis. As a result, the operation has been unable to predict with any certainty the ratios of Caro's Acid required to adequately consume the cyanide within the resultant tailings stream. NTO has been using a single ore type since October 2011, which has eliminated this mechanism of exceedance. The use of this ore type has been forecasted for a 10 year period.
- Instrumentation failure - On approximately 10 occasions, due to instrumentation failure (e.g. incorrect set points entered or loss of calibration), the WAD cyanide in spigot discharges has exceeded 50 mg/L. On each occasion, the cause of the instrumentation failure was identified and corrected, generally within the shift that it occurred.

Since August 2011, NTO has instituted a procedure whereby if upsets in the Caro's Acid plant occur, then the mill is shutdown in order to prevent the discharge of tailings above 50 mg/L. During the period between August 2011 and February 2012, the mill has been shut down twice. As a result, there has only been one minor exceedance (51 mg/L). Analysis of the duplicate sample indicated that it may not have been an exceedance (48.7 mg/L).

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## NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

It is the opinion of the Auditor that, whilst for a period of approximately 18 months since recertification there appeared to have been a systematic failure to ensure that discharges to open water bodies were below 50 mg/L, a finding of Full Compliance is warranted based on the following:

- Cause - Although the majority of the WAD cyanide exceedances were due to systematic failings, NTO has undergone a comprehensive assessment of the failings, identified the issues, made corrective actions and have shown a consistent track record of keeping tailings discharges below 50 mg/L WAD cyanide since August 2011.
- Duration - The Auditor believes sufficient time has passed since the correction of the systematic failures (some 20 months) to indicate that the corrective actions undertaken by NTO have been effective. Since August 2011, there has only been one minor exceedance of the 50 mg/L WAD cyanide discharge limit.
- Response - The Auditor believes that a considerable effort by NTO personnel has been made to correct the operation's systematic failings in regards to tailings discharge limits. Whilst there was a period of 18 months of discharges frequently being above 50 mg/L WAD cyanide, the issue was identified as part of a voluntary and comprehensive pre-audit undertaken by external auditors in August 2011. As a consequence of this pre-audit, a series of corrective measures were implemented by NTO. The most telling being the implementation of a procedure to shut down the mill in instances where the operation has determined that there is considerable risk in discharging tailings above 50 mg/L. Between August 2011 and February 2012, this procedure has been enacted on three occasions, which demonstrates NTO's commitment to maintain the required tailings discharge limits.

Maintaining a WAD cyanide concentration of 50 mg/L or less in open water is effective in preventing significant wildlife mortality at NTO. Since February 2009, NTO has recorded 19 737 wildlife visitations with only 21 deaths. This equates to 0.11% mortalities per visitation over the recertification period. Of the deaths recorded, four occurred during the summer months and during instances where spigot discharges exceeded 50 mg/L WAD cyanide. Due to safety and practicality issues, the carcasses of dead wildlife are generally not retrieved for autopsy. Therefore, the Auditor is unable to determine if the wildlife deaths described above are due to cyanosis. Given that:

- The ratio of deaths to visitations since February 2009 has been consistently below 0.22% per year
- Actual numbers of bird deaths have been decreasing over time
- Only four of the 21 deaths occurred during tailings discharge exceedances
- Those four deaths occurred during the summer period, where extreme temperatures cause stress levels in wildlife to rise and draw them to nearby water bodies
- Due to safety issues, the carcasses of the dead birds could not be collected for post-mortem.

The Auditor has surmised that the number of bird deaths at cyanide bearing water bodies is not significant.

The operation does not operate a heap leach pad.

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## NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

**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:**

Standard of Practice 4.5, requiring the operation implement measures to protect fish and wildlife from direct or indirect discharges of cyanide process solutions to surface water is NOT APPLICABLE to NTO.

NTO does not have an indirect discharge to surface water. The nearest water body is an ephemeral lake system 30 km south-west of the operation. This distance involved and the intermittent nature of the lake system suggest that there is no need to test WAD cyanide levels.

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R. Benzley  
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# NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

**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:**

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

There are no legislated beneficial uses downgradient of the NTO lease. Furthermore, the Northern Territory Government has not set any groundwater quality limits for the site. The Jumbuck and Billabong borefields, where NTO takes groundwater from, are downgradient of the site, but are located approximately 40 km away and are unlikely to be affected by the NTO’s cyanide facilities. Despite this, there are approximately 74 groundwater monitoring bores around the mill and operational and decommissioned TSFs (both up and downgradient of the facilities). Bores are also located around the underground mine. Results from these bores have not yielded a WAD cyanide concentration above 0.71 mg/L.

The nearest actual beneficial groundwater use occurs at a fresh water bore (i.e. Henry’s Bore), located approximately 8 km east of the site, which the indigenous population uses intermittently. The regional groundwater flow through the NTO site is in a northerly direction, and so this bore is not downgradient of the operation or subject to risk of adverse impact from NTO.

NTO harvests tailings from a disused TSF for use in the development of paste for underground backfill. The paste is produced on-site at a paste plant that is currently in the commissioning phase. Raw materials used are harvested tailings, binder (a low heat slag based cement) and raw water. Test work undertaken on harvested tailings indicates that little, if any, hazardous forms of cyanide remain within the tailings. Leachability test work on the tailings and paste suggest that cyanide concentrations would be negligible in any resultant leachate. This is supported by the results of sump water monitoring near backfill areas in the underground mine, which had only one reading just above the detectable limit. Hydrogen cyanide (HCN) monitoring is undertaken at the paste plant on an hourly basis as the agitation involved in the process is most likely to result in the evolution of gas. Since commissioning of the paste plant commenced, the highest reading recorded was 0.9 ppm, with readings being predominately 0 ppm. Given this, the potential for the evolution of any HCN gas from paste backfill is considered negligible and NTO has elected not to monitor for HCN gas underground.

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# NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

**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:**

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

With the exception of two ring beam tanks, spill containment measures are provided for the cyanide unloading, storage, mixing and process solution tanks. All process tanks are constructed on concrete plinths except for the paste plant wheel wash recycling tanks which are located on the contained clay lined paste drying pads at DBS and Granites. For the ring beam tanks, an Actions Report was developed for each tank. Each tank has been placed on an inspection regime involving external inspections annually, internal inspections every two years. A Tank In-Service Inspection Checklist has been implemented which addresses the tank foundations, shells, shell appurtenances and access structures. Two groundwater monitoring bores located down-hydraulic gradient of the process plant are monitored every three months for cyanide.

Secondary containments for cyanide unloading, storage and mixing tanks are generally 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. Bund volumes were calculated to be 194 m<sup>3</sup> compared to the largest tank volume of 160 m<sup>3</sup>.

Procedures are in place and being implemented to prevent discharge of cyanide solution or cyanide-contaminated waters that are collected in the secondary containment areas into the environment. Secondary containment for the leach/CIL area is satisfied by an appropriately sized containment pond. All water collected within Gerry's Pond and Sharyn's Pond is pumped directly to the netted PVC Pond (Process Water Pond) which in turn is pumped to the process water tank.

All cyanide process tanks are secondarily contained. Additional secondary containment for the leach/CIL area is provided by an appropriately sized and lined containment pond (i.e. Gerry's Pond). NTO personnel have stated that this secondary containment is used for emergency situations only. Appropriate cyanide spill clean-up procedures are available. The Process Department handle all large cyanide spills.

Spill prevention or containment measures are provided for most cyanide solution pipelines to collect leaks and prevent releases into the environment. There is a spill prevention tray system surrounding the cyanide delivery lines. These trays prevent any potential leaks from being released into the environment. All TSF pipelines are effectively contained within bund walls. Inspections are conducted in accordance with written procedures to check spillage outside bunds.

The operation has not identified any areas where cyanide pipelines present a risk to surface water and consequently there has not been any additional need to evaluate the requirement for additional protection needs. The nearest surface water body (ephemeral) is located 30 km from the site.

Cyanide tanks and pipelines are constructed of materials compatible with cyanide and high pH conditions. All pipe work exposed to cyanide is rubber lined steel or polyethylene pipe. An evaluation of the site infrastructure was undertaken in 2008 to confirm this status.

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# NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

**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:**

NTO is in FULL COMPLIANCE with Standard of Practice 4.8 requiring that operations implement quality control and quality assurance (QA/QC) procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

Quality control and quality assurance programmes have been implemented during construction of all new cyanide facilities and modifications to existing facilities, including cyanide unloading, storage, mixing facilities and other cyanide facilities. Evidence of quality control and quality assurance programmes for cyanide facilities existing at the time of the Certification Audit were reviewed as part of the Certification Audit Process.

QA/QC programmes have addressed the suitability of materials and adequacy of soil compaction for earthworks such as tank foundations and earthen liners, the installation of synthetic membrane liners used in ponds and leach pads and for construction of cyanide storage and process tanks. Tailings dam earthworks testing and inspection technical specifications referenced AS 1289 - Methods of Testing of Soils for Engineering Purposes and required density tests to be carried out not later than 24 h after compaction had been completed. QA/QC processes during the construction of the tailings dam and process water containment ponds have confirmed the suitability of the synthetic membrane liners used in ponds. An engineering firm inspected and reviewed the design and construction of the cyanide storage and handling facilities in 2008 and concluded that the design and construction was adequate.

Appropriately qualified personnel have reviewed cyanide facility construction and provided documentation that the facility has been built as proposed and approved. Appropriate qualified personnel have included in-house engineers, independent consultants and construction contractor's QA/QC personnel.

A paste backfill facility had been constructed at NTO towards the end of the recertification period. No QA/QC report was available for fixed plant (paste backfill plant, wheel wash facilities and storm water ponds). The Senior Mechanical Engineer for Projects advised that NTO had issued a Practical Completion Certificate to the construction contractor to allow commissioning operations to commence. He further stated that a construction completion package containing as-built documentation will not be issued to NTO until outstanding engineering punch list items have been addressed. The QA/QC signoff of the paste backfill facility will be addressed within the next Recertification Audit.

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## NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

**Standard of Practice 4.9: Implement monitoring programmes 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:**

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

NTO has developed written standard procedures for wildlife, groundwater and surface water. These have been developed and reviewed by NTO personnel with intimate knowledge of the site and qualified in the relevant area of expertise. Following review, all procedures are required to be approved by relevant department managers.

NTO has procedures and management plans that outline how and where samples should be taken, sample preservation techniques, chain of custody procedures, shipping instructions and cyanide species to be analysed.

Each specific procedure outlines, if appropriate, where samples are to be taken (either within the procedure or by referencing a document or map), the steps involved and the cyanide species to be analysed. Chain of custody, QA/QC and shipping instructions are also included in the procedures. In addition, the Dispatch of Samples to External Laboratories procedure further outlines chain of custody and shipping requirements.

The operation does monitor WAD cyanide in groundwater downgradient of the site. There are approximately 74 bores situated around the process plant, process water dam and the TSFs (both operational and rehabilitated). All facilities have bores both up and downgradient of the overriding groundwater flow, and the localised groundwater flow. NTO monitor these bores on monthly, quarterly and annual frequencies for a range of parameters, including WAD cyanide.

The operation does not have a direct or indirect discharge to surface waters and so no monitoring of surface water is required.

NTO environmental personnel inspect for wildlife mortality on all waterbodies potentially containing cyanide on a daily basis.

Sampling conditions are recorded on the wildlife inspections sheets and logsheets for water sampling.

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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.**

**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:**

NTO is in FULL COMPLIANCE with Standard of Practice 5.1 requiring that operations plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.

NTO has developed a *Cyanide Decontamination and Decommissioning Plan (Decommissioning Plan)* for cyanide facilities at the operation. The plan appears to be comprehensive and inclusive of all cyanide facilities, except the new process water tank, which has only been commissioned within the last six months.

Appendix E of the *Decommissioning Plan* outlines the implementation schedule for decommissioning activities. The schedule includes activities prior to, during and post-decommissioning.

The *Decommissioning Plan* states that it will be updated annually. The plan was last reviewed in August 2011.

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

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:**

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

An external consultancy has developed a costed decommissioning plan for NTO, using third party rates.

The operation does revise the cost estimates at least every five years and when revisions to the plan are made that affect cyanide-related decommissioning activities. The Plant Metallurgist stated that NTO revises the costs every three years. This is evident from the previous plan, which was based on December 2007 costs, whereas the current plan uses December 2010 costs.

A security is required under section 43 of the *Mining Management Act 2001* to enable the Minister to prevent, minimise or rectify environmental harm resulting from mining activities. Whilst not specifically for decommissioning, the security can also be accessed by the Minister for government costs incurred in the act of rehabilitation of a mining site. The current security, which is held in the form of a bank guarantee, exceeds the estimated cost of decommissioning at NTO.

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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.**

**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:**

NTO 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 plans, procedures, forms and sampling documents for both processing and maintenance tasks in the processing and TSFs areas relating to cyanide.

The procedures require, where necessary, the use of personal protective equipment (PPE) and address pre-work inspections. All employees and contractors working on the site are required to undertake SafeCheck prior to undertaking any task. SafeCheck is a Point of Work Risk Assessment process that provides personnel performing tasks and activities with a tool for identifying and controlling hazards prior to commencing work. SafeCheck can act as a trigger for a Job Hazard Analysis (JHA), which is a more rigorous form of hazard identification and risk assessment. Training on the SafeCheck process is provided during Induction training and all contractors and employees are issued with SafeCheck pocket book detailing the procedure, risk assessment matrix and record sheets.

The operation has implemented a change management procedure to facilitate process and operational changes and modifications to be reviewed for their potential impacts on worker health and safety, and incorporate the necessary worker protection.

The operation formally solicits and actively considers worker input in developing and evaluating health and safety procedures. This is done through the site document control system, daily positive attitude safety system (PASS) meetings and weekly toolbox meetings.

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# NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

**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.**

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:**

NTO is in FULL COMPLIANCE with Standard of Practice 6.2 requiring an operation operates and monitors cyanide facilities to protect worker health and safety, and periodically evaluates the effectiveness of health and safety measures.

The operation has determined that a pH of above 9.8 is appropriate for limiting the evolution of HCN gas during mixing and production activities. The operation has set a pH of 10.0 of the leaching circuit.

The operation has identified areas and activities where workers may be exposed to cyanide in excess of 10 ppm and require use of PPE in these areas or when performing these activities. Potentially high HCN gas areas are sign posted and activities where workers may be exposed to high HCN have procedures detailing PPE requirements.

A Process Plant risk assessment was conducted in September 2008 to identify areas or activities that have the potential to have elevated HCN levels (>10 ppm). The use of personnel monitors is not required by all persons working within the process area. Rather, an HCH monitor is worn by the Process Tank Operator who records HCN levels on the Tanks and Thickening Circuit Daily Log Sheet every two hours.

The operation has installed fixed monitors at Acacia and Gecko intensive leach reactors, the elution area, and restricted access to the leach feed screen and tails screen areas with gates and signs stating "no access without gas detection".

HCN monitoring equipment is maintained, tested and calibrated as directed by the manufacturer, and records retained for at least one year.

Warning signs have been placed where cyanide is used, advising workers that cyanide is present. No eating and no smoking signs are located at all key access areas to the process plant. Due to the extreme high temperatures and the need for employees to remain hydrated, Tanami has developed local arrangements for safe water consumption

Showers, low-pressure eyewash stations and dry-powder fire extinguishers were located at strategic locations throughout the operation in the cyanide areas, and are maintained, inspected and tested on a regular basis.

Tanks and piping containing cyanide at concentrations that pose a threat to worker health and safety (i.e., >15 mg/L WAD) were adequately labelled, along with high strength solution tanks.

MSDSs, first aid procedures and informational materials on cyanide safety were available in the language (English) of the workforce and are available in areas where cyanide is managed.

NTO has developed and implemented an Incident Reporting and Investigation Procedure capable of investigating and evaluating cyanide exposure incidents to determine if the programmes and procedures are adequate to protect worker health and safety or need revising.

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# NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

**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:**

NTO 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.

The operation has the necessary equipment to respond in the event of a worker’s exposure to cyanide, including water, oxygen, oxy-vivas, antidote kits, radios, telephones and an alarm system.

The operation inspects its First Aid equipment weekly and monthly to ensure that it is available when needed, and materials such as cyanide antidotes are stored and/or tested as directed by their manufacturer and replaced on a regular schedule.

The operation has developed specific written emergency response plans and procedures to respond to cyanide exposures. The nursing personnel maintain administration protocols and flow charts describing the treatment and evacuation procedures. Evacuations are coordinated through the Newmont Rapid Response System.

The operation does have its own on-site capability to provide first aid or medical assistance to workers exposed to cyanide. All operators within the process plant are required to have First Aid and Oxy-viva training and this is reflected in the training matrix. There are two a fully equipped Medical Centres servicing the process plant area and mining, staffed by back-to-back Occupational Health Advisors (registered nurses). Due to the isolated nature of the mine site, the on-site medical personnel are qualified to administer the cyanide antidote under instruction from the Director of Medical Operations (DMO).

The operation has liaised with the medical staff at the Alice Springs Hospital and the Royal Flying Doctor Service (RFDS) to inform them that they use cyanide and therefore the potential of a cyanide incident. Direct contact has been made with the Hospital which has a thorough understanding of the emergency response needs of the Tanami. The operation considers that Alice Springs Hospital and the RFDS have the capability to care for cyanide casualties.

Mock emergency drills are conducted periodically to test response procedures for various emergency scenarios, and lessons learned from the drills are incorporated into response planning via debriefs.

Every Sunday the emergency response team (ERT) conduct practical training activities such as rope exercises, hazardous materials training, etc. One Sunday each month an evacuation is held involving the mobilisation of the ERT. Every quarter, a full scale mock drill is conducted.

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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:**

NTO is in FULL COMPLIANCE with Standard of Practice 7.1 requiring an operation prepare detailed emergency response plans for potential cyanide releases.

At a corporate level Newmont engaged an emergency response consulting company to develop and implement a Rapid Response System (RRS) for all Newmont operations. The RRS aims to mitigate and prevent the escalation of adverse consequences in the event that existing risk management controls fail. When an incident or issue occurs a decision is made by the Site Emergency Controller whether to implement the RRS.

To complement the RRS, NTO has developed and implemented a site specific Emergency Response Plan (ERP). The ERP covers all operations including mining and processing at the operation and describes emergency response operations at the site level that are not already covered by the Newmont RRS.

The ERP references the relevant NTO emergency response procedures against each of the potential cyanide failure scenarios listed in Standard of Practice 7.1.2.

Planning for the response to transport related emergencies has been undertaken for on-site emergencies and transport incidents on the access road which is approximately 1.6 km in length. All cyanide emergencies response procedures related to cyanide were developed using a Code certified sodium cyanide producer’s Emergency Response Guide - Sodium Cyanide Granites. This guide details information on the physical and chemical form of the cyanide, method of transport, the condition of the road or railway, and the design of the transport vehicle.

The ERP and work instructions describe specific response actions (as appropriate for the anticipated emergency situations) such as clearing site personnel from the area of exposure, use of cyanide antidotes and First Aid measures.

Section 6.1 to 6.3 of the cyanide response plan details the comprehensive procedures to be initially followed in the event of an emergency, whilst cyanide emergency response work instructions describe specific ERT response actions for the identified scenarios.

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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:**

NTO is in FULL COMPLIANCE with Standard of Practice 7.2, requiring an operation involve site personnel and stakeholders in the planning process.

The Emergency Response Plan and cyanide emergency response plan was developed with input from the workforce. The operation formally solicits, and actively considers worker input in developing and evaluating health and safety procedures through its department safety meetings.

No potentially affected communities are located along the access road and surrounding the plant site area. The nearest permanent community is located 55 km north-west of the lease. Therefore, the operation deems its workforce to be the main group at risk from an on-site cyanide emergency.

The ERP does not anticipate the involvement of external assistance with cyanide emergencies but includes a number of entities that have a potential role in an emergency. Of these entities, the sodium cyanide producer and the RFDS have been involved in the cyanide emergency planning and response process.

The ERP review and revision process solicits and incorporate feedback from internal stakeholders. In addition, the DMO, RFDS and the sodium cyanide producer were included in a recent debrief following an emergency exercise.

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**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:**

NTO is in FULL COMPLIANCE with Standard of Practice 7.3 requiring an operation designates appropriate personnel and commit necessary equipment and resources for emergency response.

The elements of the ERP and procedures:

- a) designate primary and alternate emergency response coordinators whom have explicit authority to commit the resources necessary to implement the Plan
- b) identify Emergency Response Teams
- c) require appropriate training for emergency responders
- d) include call-out procedures and 24-hour contact information for the coordinators and response team members
- e) specify the duties and responsibilities of the coordinators and team members
- f) list emergency response equipment, including personal protection gear, available along transportation routes and/or on-site
- g) include procedures to inspect emergency response equipment to ensure its availability, and
- h) describe the role of outside responders, medical facilities and communities in the emergency response procedures.

NTO does not anticipate the involvement of external assistance with cyanide emergencies but the ERP does include a number of entities as having a potential role in an emergency.

The recent mock cyanide emergency drill conducted involved interaction with DMO, RFDS and the sodium cyanide producer via telephone. These entities were involved in debrief following completion of the mock drill.

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# NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

**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:**

NTO is in FULL COMPLIANCE with Standard of Practice 7.4 requiring the development of procedures for internal and external emergency notification and reporting.

The ERP and RRS include procedures and contact information for notifying management, regulatory agencies, outside response providers and medical facilities of the cyanide emergency where appropriate.

The ERP describes the necessary interactions between the ERP and the RRS. The ERP notes that one of the Emergency Response Coordinator’s duties is to report to the RRS Site Response Team (SRT) Safety Advisor who reports to SRT Leader who decides on his own or with the SRT team to make a decision to implement the RRS.

No potentially affected communities are located along the access road and surrounding the plant site area. The duty cards note within the RRS that the Site Response Team Leader is required with the Site Response Team External Relations Coordinator to identify the most appropriate spokesperson. The identified spokesperson is required to gather and feed information to the Site Response Team External Relations Coordinator. The Site Response Team External Relations Coordinator develops and approves media releases using a series of communication templates and guidelines contained within the RRS.

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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:**

NTO is in FULL COMPLIANCE with Standard of Practice 7.5, requiring an operation develop procedures for internal and external emergency notification and reporting.

NTO's ERP and associated work instructions do describe specific remediation measures as appropriate for the likely cyanide release scenarios. Each cyanide work instruction details the cyanide containment and recovery steps required as appropriate for the scenario described. All work instructions note that the neutralisation of solids and liquids is to be undertaken in consultation with the NTO Environmental Department.

In relation to drinking water, it is piped in a totally separate system that cannot be contaminated. Bottled water is available on-site if required. Hence no alternative drinking water supply is required. There are no permanent surface water courses in the vicinity of the site that could be affected by a cyanide spill.

The ERP does prohibit the use of chemicals such as sodium hypochlorite, ferrous sulfate and hydrogen peroxide to treat cyanide that has been released into surface water.

Soil decontamination and associated environmental monitoring is undertaken in accordance with the Orica Emergency Response Guide. The Orica Emergency Response Guide clearly describes the soil decontamination (Section 6.4) and residual cyanide testing process (Appendix 7).

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## NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

**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:**

NTO is in FULL COMPLIANCE with Standard of Practice 7.6 requiring an operation periodically evaluate response procedures and capabilities and revise them as needed.

NTO does review and evaluate the cyanide related elements of its ERP for adequacy on a regular basis. Each procedure has a specified review period based on risk. All procedures are available to employees via Goldnet and any employee can propose changes to a procedure even if it is not due to be reviewed. The ERP has been updated twice since it was approved in 2007. The procedures contained within the appendices to the ERP have also been updated since originally developed and are scheduled for review every two years. Cyanide-specific emergency response work instructions contain a statement that they are to be reviewed following cyanide related emergencies and drills.

Mock emergency drills are conducted periodically as part of the ERP evaluation process. An annual activity planner, developed and maintained by the Emergency Response Coordinator, details the weekly and monthly training plan. Every Sunday practical training activities are conducted such as rope exercises, hazardous materials training, etc. One Sunday each month, an evacuation is held involving ERT mobilisation. NTO completed a full mock cyanide exposure exercise (i.e. 23 July 2011) that addressed worker exposure and ERT response to a worker exposure at NTO's cyanide loading and storage facility.

NTO has in place systems to evaluate the ERP after use. The recent exercise *Operation Hardstone* identified various improvements to be made, mainly relating to the training and implementation of the ERP.

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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.**

**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:**

NTO is in FULL COMPLIANCE with Standard of Practice 8.1 requiring an operation train workers to understand the hazards associated with cyanide use.

The operation does train personnel who may encounter cyanide in hazard recognition. Prior to commencing at the Processing Plant, new starters and contractors complete the General Induction and an area-specific induction for the Processing Plant (i.e. Mill Induction). The Mill Induction training material incorporates the Orica cyanide awareness training.

Cyanide hazard recognition refresher training is conducted periodically. Refresher training is conducted in house or when an Orica representative is available to deliver the training session. The operation has established a two year refresh cycle and has established programmes to make training available annually to ensure compliance with the sites two year standard. A review of personnel files and interviews with crew members confirmed that cyanide awareness training was conducted periodically.

Cyanide training records are retained. The operation has implemented an electronic training records filing system. Processing department training records, including cyanide awareness training records, have been filed electronically and linked to an individual's training file.

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# NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

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

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:**

NTO is in FULL COMPLIANCE with Standard of Practice 8.2 requiring that an operation trains appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.

The operation does train workers to perform their normal production tasks, including unloading, mixing, production and maintenance to minimise risk to worker health and safety, and in a manner that prevents unplanned cyanide releases. When a new employee starts at NTO they receive induction training including cyanide awareness prior to starting work in the processing plant area. The induction process includes instructions on isolation and tagging. To isolate equipment, pipelines etc, the individual must complete an isolation course and be assessed as competent. The operation has a tiered approach to isolations and strict controls surrounding the isolation process with the emphasis on positive isolation. NTO also has formalised training for confined space entry. NTO's training package is being mapped to nationally recognised certificate III level training in resource processing. The employee is progressively assessed through a combination of written assessments and work place observations.

The training elements necessary for each job involving cyanide management are identified in the training materials. The training modules observed were detailed and clearly required assessment in the elements necessary for each job involving cyanide. The site's standard operating procedures (SOP) forms the basis of task related training and there are individual SOPs for most tasks involving cyanide. The training modules observed were detailed and clearly required assessment in the elements necessary for each job involving cyanide.

Appropriately qualified personnel do provide task training related to cyanide management activities. The trainers have extensive experienced in gold processing operations and have attained Certificate IV in Workplace Assessment and Training.

Employees are trained prior to working with cyanide. New employees are teamed with experienced colleagues for on the job training that is combined with formal training and assessment completed by the workplace assessors.

Refresher training on cyanide management is provided to ensure that employees continue to perform their jobs in a safe and environmentally protective manner. Cyanide refresher training is formally provided through the cyanide awareness course which is completed every two years. This training covers safety, cyanide hazards and environmental protection.

NTO does evaluate the effectiveness of cyanide training by testing and observation. The cyanide awareness training programme includes a written assessment at the completion of the training to evaluate participant knowledge.

Records are retained throughout an individual's employment documenting the training they receive. The records include the names of the employee and the trainer, the training date, the topics covered, and if the employee demonstrated an understanding of the training materials. A review of training files for

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# NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

production personnel showed that training records are retained for employees and do document the training received.

**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:**

NTO is in FULL COMPLIANCE with Standard of Practice 8.3 requiring an operation train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.

Cyanide unloading, mixing, production and maintenance personnel are trained in the procedures to be followed if cyanide is released. Training is provided through the induction process which provides instruction on NTO's emergency response actions. The operation has recently developed and rolled out an *Emergency First In Response* procedure that provides instructions and limitation for the response of cyanide unloading, mixing, production and maintenance personnel in the response to cyanide releases. The induction process includes response actions to taken in the event of an emergency including activating the alarm, evacuating the area and providing information to the ERT.

Site cyanide response personnel, including unloading, mixing, production and maintenance workers, are trained in decontamination and first aid procedures. NTO uses the cyanide awareness training package as the basis of response training. The processing and maintenance personnel are trained in first aid procedures and personnel decontamination. The ERT receive additional specialist emergency response training including HAZMAT training, use of breathing apparatus etc.

Emergency Response Coordinators and ERT members are trained in the procedures included in the ERP regarding cyanide, including the use of necessary response equipment. The ERT completes hazardous materials (HAZMAT), rescue, breathing apparatus and first aid training as part of standard emergency response training competencies. The mandatory and recommended training requirements are specified in the site's ERT training matrix.

The operation made off-site Emergency Responders familiar with those elements of the ERP related to cyanide. NTO is in a remote location and the involvement of external responders is limited to the RFDS. The RFDS would provide medical evacuation of casualties to emergency hospitals in Alice Springs or Darwin.

Refresher training for cyanide exposures and releases are regularly conducted. The operation uses the cyanide awareness training as the mechanism for refresher training. The cyanide awareness training together with mock drills provide the basis of the training programme.

Simulated cyanide emergency drills are periodically conducted for training purposes. NTO has undertaken various worker response drills including a recent full scale emergency mock drills involving full turn out of the emergency response team. These drills evaluated the response to worker exposure and were formally observed and training considered.

The response to environmental releases will generally be undertaken by processing personnel unless the circumstances present a risk to health where the ERT would assist in response. The processing department has recently conducted an environmental release scenario as part of training and testing the *Emergency First In Response* procedure.

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## NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

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Simulated cyanide emergency drills are conducted for training purposes for all relevant personnel to determine if they have the knowledge and skills required for effective response. The procedures are revised as necessary. The recent Exercise *Hard Stone* report identifies various actions relating to training and training methods. The actions have been entered into the EEAMS event management system for tracking and some actions have been closed out.

Training records are retained documenting the cyanide training, including the names of the employee and the trainer, the date of training, the topics covered, and how the employee demonstrated an understanding of the training materials. The operation has scanned physical training records into a PDF document format and records are filed by individual. The operation has consolidated records into a central location and hard copies of records are archived.

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**PRINCIPLE 9 - DIALOGUE**

**Engage in Public Consultation and Disclosure**

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

**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:**

NTO is in FULL COMPLIANCE with Standard of Practice 9.1 requiring an operation provide stakeholders the opportunity to communicate issues of concern.

The operation does provide for stakeholders to communicate issues of concern regarding the management of cyanide. At a corporate level, Newmont has a website focussing on sustainability issues at their mines ([www.beyondthemine.com](http://www.beyondthemine.com)). This website provides information on cyanide use in general, the ICMC and reportable statistics on cyanide incidents at their operations. Contact information is provided on this website.

At an operational level, NTO liaise directly with the Central Land Council (CLC) with regards to any issues on-site, including those pertaining to cyanide, that may have an impact on the Traditional Owners (TOs). Likewise, TOs can raise any concerns regarding the operation with the CLC, who will in turn communicate those concerns to NTO. This can occur either on an as needed basis or through the annual liaison meetings.

Little interaction occurs with the European populations of Rabbit Flat and Supple Jack stations due to distance and isolation. However, according to the Environment and Social Responsibility (ESR) Superintendent, both stations have the site's email and telephone contact numbers.

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## NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

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

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:**

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

NTO has created opportunities for the operation to interact with most stakeholders and provide them with information regarding cyanide management practices and procedures.

At an operational level, NTO has developed the following opportunities to communicate to internal and external stakeholders:

- General site induction
- Mill induction
- Annual TO liaison meetings
- Irregular tours

At corporate level, Newmont has developed the Beyond the Mine website ([www.beyondthemine.com](http://www.beyondthemine.com)), which provides an opportunity to communicate to internal and external stakeholders. This website has a contact email, which allows internal and external stakeholders to contact Newmont staff and enquire about cyanide issues.

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# NEWMONT TANAMI CYANIDE CODE RECERTIFICATION AUDIT

**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:**

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

Newmont has compiled information packages on cyanide and its management, and placed them on their website ([www.beyondthemine.com](http://www.beyondthemine.com) > Environment > Programs > Cyanide Management). This includes specific sections relating to written descriptions of how their activities are conducted and how cyanide is managed.

At an operational level, process plant operators undergo specific cyanide induction and training. NTO has also distributed cyanide information at meetings with traditional land owners.

NTO has disseminated information on cyanide in verbal form to the TO community, which has a significant illiterate population. NTO hold yearly liaison meetings with the TOs. In these meetings, cyanide use on-site is raised by NTO and the TOs are given an opportunity to seek further information. NTO is also intending to raise awareness of its cyanide use in the local community via radio announcements and interviews.

NTO has the mechanisms to make information publicly available on cyanide release or exposure incidents, where applicable. NTO reports all environmental incidents yearly as part of NT regulator requirements. The public may apply to see such information. Likewise, NTO is required to report all health and safety incidents (including those involving cyanide) to a regulatory agency.

In addition to reporting via regulatory avenues, Newmont posts statistics for all their operations regarding the five questions within this Standard of Practice on their Beyond the Mine website. These statistics can be found within the "Cyanide Management" page of the website. As of 22 February 2012, statistics for 2010 were displayed on this webpage.

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## Report Signature Page

**GOLDER ASSOCIATES PTY LTD**

A handwritten signature in black ink that reads "R. Beazley".

Russell Beazley  
ICMI Lead Auditor

RJB/EWC/hsl

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# **APPENDIX A**

## **Limitations**



## LIMITATIONS

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