



May 2018

ICMI RECERTIFICATION SUMMARY REPORT

Agnico Eagle's Kittilä Gold Mine, Finland

Submitted to:

International Cyanide Management Institute
(ICMI)
1400 I Street, NW - Suite 550
Washington, DC 20005
UNITED STATES OF AMERICA

Agnico Eagle Finland OY
Pokantie 541
99250
Kiistala
FINLAND

REPORT

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Distribution:

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1.0 SUMMARY AUDIT REPORT FOR GOLD MINING OPERATIONS

Name of Mine: Kittilä Gold Mine
Name of Mine Owner: Agnico Eagle Mines Ltd, Canada
Name of Mine Operator: Agnico Eagle Finland Oy
Name of Responsible Manager: Mikko Korteniemi
Address: Kittilä Gold Mine
Agnico Eagle Finland Oy
Pokantie 541
99250
Kiistala
FINLAND
State/Province: Lapland
Country: Finland
Telephone: + 358 16 338 0700
Fax: n/a
E-Mail: mikko.korteniemi@agnicoeagle.com

2.0 LOCATION DETAIL AND DESCRIPTION OF OPERATION

2.1 Mine Location

Agnico Eagle Finland's (AEF's) Kittilä mine is located in the municipality of Kittilä, a few kilometres northeast of Kiistala village about 50 km northeast of the village of Kittilä in the Lapland region of northern Finland, approximately 1025 km north of Helsinki and 150 km north of the Arctic Circle, Figure 1.

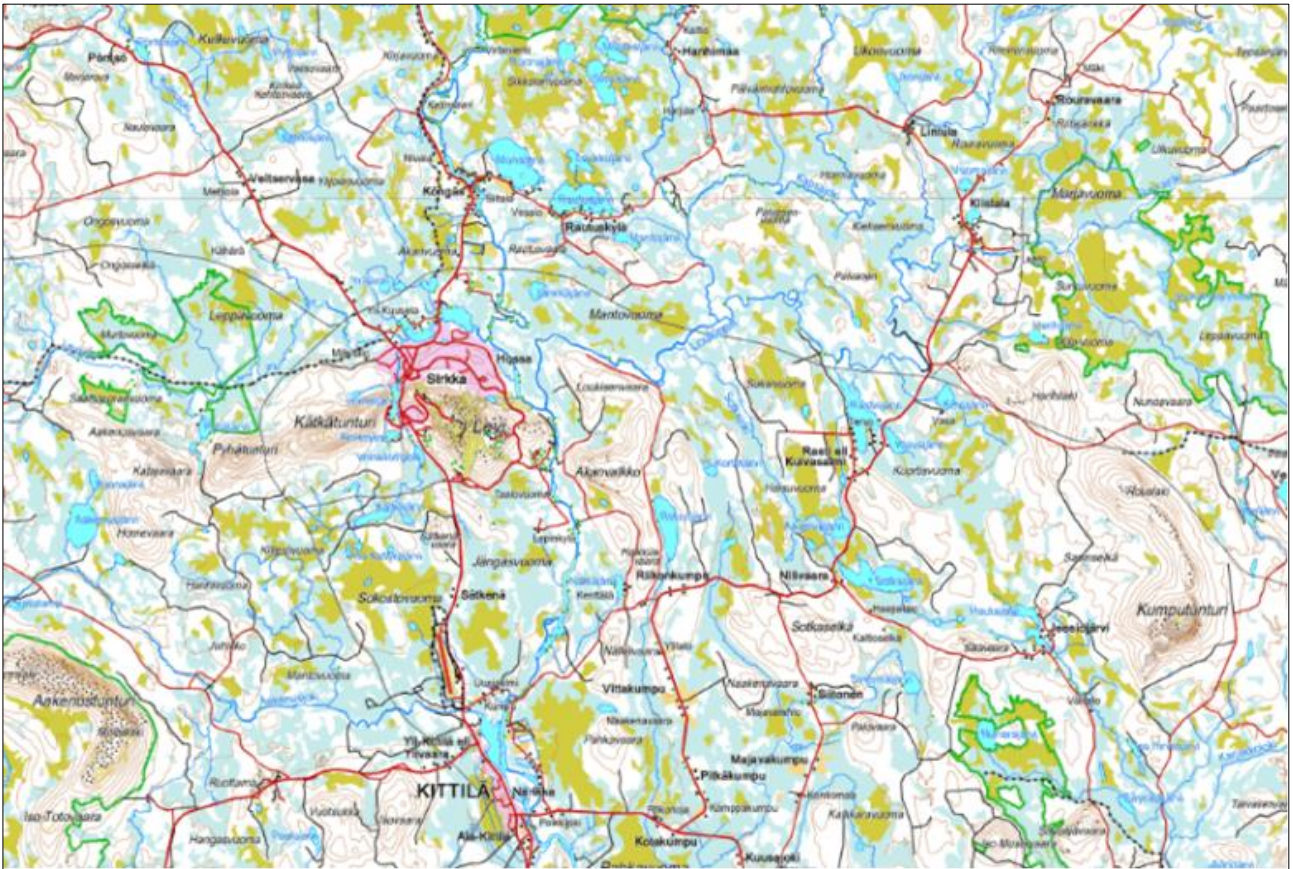


Figure 1: Location Plan

2.2 Background

The Kittilä ore bodies were initially mined from two open pits (Suuri and Roura) and underground operations were added in October 2010. Roura open pit was mined out in March 2011 and Suuri open pit in November 2012, and mining is now entirely underground in the Suuri and Roura deposits. Additional, small open pits will mine any remaining near-surface reserves in the future.

The underground method is open stoping followed by delayed backfill. Approximately 8 km of tunnels are developed each year to ensure sufficient ore production is available to keep the mill supplied. After extraction, stopes are backfilled with cemented backfill or paste backfill with Neutralization Plant (NP) tailings to allow the safe mining of adjacent stopes. Ore is transported to the surface crusher using underground haul trucks via a 3,500 metre-long ramp access system.

More than 1.6 million tonnes of ore are extracted annually. The mine’s annual gold production comes to roughly 6,500 kg. At current production volumes, the Kittilä mine’s known reserves are expected to produce gold until 2037.

The gold in the Suurikuusikko deposit is refractory; with most of the gold locked inside sulphide grains and only about four per cent existing as free gold. The mineral processing at Kittilä comprises crushing, grinding, flotation, pressure oxidation (autoclave), dissolution and electrowinning and smelting in a furnace before pouring into doré bars as detailed in the Process Flowsheet presented as Figure 2.



The process produces two tailing flows. The first flow is a flow of flotation tailings, named NP tailings (Neutralisation Plant tailings), which represents about 85% of the production, and whose supernatant is partly discharged through the infiltration field to Seurujoki River and partly recirculated to the mill. The second flow, is a flow of Carbon in Leach (CIL) tailings (after carbon in leach circuit and detox), which represents some 15% of the production and whose supernatant water is recirculated back to the mill. The total tailings area is approximately 110 ha and all ponds are lined with impermeable bitumen liners.

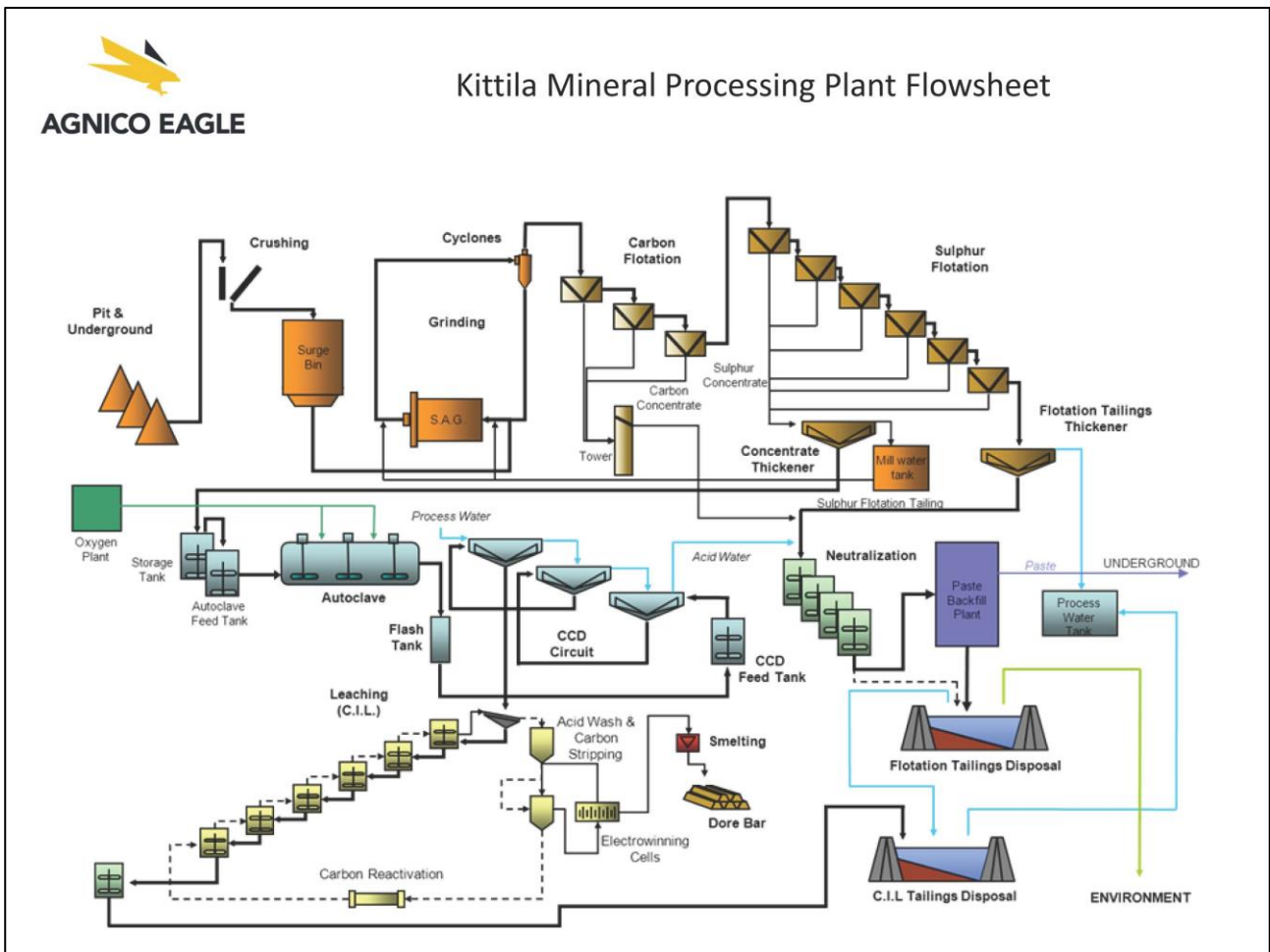


Figure 2: Flow Sheet



SUMMARY AUDIT REPORT

Auditors Findings

Kittilä Gold Mine is: in full compliance with **The International Cyanide Management Code**

in substantial compliance with

not in compliance with


Audit Company: Golder Associates

Audit Team Leader: Sophie Wheeler, Lead Auditor

Email: swheeler@golder.com

The operation's overall compliance status is in full compliance no significant cyanide incidents or compliance problems occurred during the previous three-year audit cycle. A minor cyanide supply issue arose which it was considered was dealt with by the mine appropriately as described in Section 1.1.

Name of Other Auditors

Name, Position	Signature
Romain Girard ICMI Pre-Certified Mine Technical Specialist	

Dates of Audit

The Certification Audit was undertaken between 13 -17 November 2017.

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 Gold Mine Operations and using standard and accepted practices for health, safety and environmental audits.

Kittilä Gold Mine
Name of Facility


Signature of Lead Auditor

25 May 2018
Date





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Whale

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Name of Facility

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Signature of Lead Auditor

Kittilä Gold Mine
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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

[X] in full compliance with

The operation is

[] in substantial compliance with

Production Practice 1.1

[] not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with 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.

AEF's contract with all cyanide manufacturer(s) and distributor(s) requires that cyanide be produced at a facility that has been certified as being in compliance with the Code.

CyPlus GmbH (CyPlus), located in Wesseling in Germany, is the cyanide producer for the Kittilä operation. The contract is between Agnico Eagle Mines (AEM) based in Canada and CyPlus. The current contract specifies that both parties agree to comply with the Principles and Standards of Practice of the ICMC.

CyPlus' production facility was re-certified as compliant with the code on 6 August 2015, and was originally certified in 2006. Kittilä has copies of the CyPlus's Summary Audit Reports as posted on the ICMI website thereby demonstrating compliance with the ICMI production protocol.

On one occasion in October/November 2017, there was a disruption of supply. AEF purchased cyanide from Brenntag Nordic Oy and Dragon Mining which are not ICMC certified, and cyanide from the Czech producer Draslovka which is ICMI certified. Only the cyanide from Dragon mining ended up being used on site, as it was the only one that were delivered in the same type of containment used on site (Big bags), and therefore did not require any modification to the mixing procedure. The other cyanide (in drums) were returned back to the different suppliers without having been used. AEF subsequently switched back immediately to the normal purchasing pattern from CyPlus. No other suppliers were used prior to this event or have been used since this event.

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[Handwritten Signature]

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.

[X] in full compliance with

The operation is

[] in substantial compliance with

Transport Practice 2.1

[] not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with 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.

CyPlus is a Cyanide Code certified consignor of cyanide to Kittilä. CyPlus's Supply Chain #1 Wesseling Plant to International Ports of Entry was originally certified by the ICMI on 2 June 2011 and recertified on 18 December 2014 and 28 August 2017. CyPlus is not active in transporting cyanide but contracts the full transport service to Evonik Services. Each single transportation order is released by CyPlus and regulated by Evonik-Services GmbH. They appoint the forwarding company Lexzau (located in Bremen/Germany) as Lead Logistics Provider (LLP) for the entire Evonik group of companies. Lexzau puts the ocean carriers Hapag-Lloyd in charge of organizing the complete transportation chain including pre-carriage to the respective port of departure ('carrier's haulage').

The route to the Kittilä mine is as follows:

- By road from CyPlus' Wesseling production facility to the Port of Cologne in Germany;
By rail from the Port of Cologne to the Port of Hamburg in Germany; and
By sea to the Port of Kemi in Finland (by Hapag-Lloyd).
By road to the Mine from the Port of Kemi (Korsu Oy).

The CyPlus Finnish Supply Chain #6 for transport within Finland 'from the port of entry to the customer's mine site' was certified as being in full compliance with the code on 18 December 2014 and recertified on 18 October 2017.

The contract between CyPlus and AEM specifies that both parties agree to comply with the Principles and Standards of Practice of the ICMC and that the contract shall be 'binding on the successor and assigns of Buyer and Seller'.

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

[X] in full compliance with

The operation is

[] in substantial compliance with

Transport Practice 2.2

[] not in compliance with





Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 2.2; require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.

AEM has a contract with the cyanide producer CyPlus. The contract specifies that both parties agree to comply with the Principles and Standards of Practice of the ICMC.

CyPlus is a Cyanide Code certified consignor of the cyanide to Kittilä. CyPlus' Supply Chain #1 Wesseling Plant to International Ports of Entry was originally certified by the ICMI on 2 June 2011 and recertified on 18 December, 2014 and on 28 August 2017. The CyPlus Finnish Supply Chain #6 for transport within Finland 'from the port of entry to the customer's mine site' was certified as being in full compliance with the code on 18 December 2014 and recertified on 18 October 2017.

CyPlus is not active in transporting cyanide but contracts the full transport service by Evonik Services. Each single transportation order is released by CyPlus and regulated by Evonik-Services GmbH. They appoint the forwarding company Lexzau (located in Bremen/Germany) as Lead Logistics Provider (LLP) for the entire Evonik group of companies. Lexzau puts the ocean carrier Hapag-Lloyd in charge of organizing the complete transportation chain including pre-carriage to the respective port of departure ('carrier's haulage').

AEF has chain of custody records identifying all elements of the supply chain that handles the cyanide brought to its site.

On one occasion in October/November 2017, there was a disruption of supply. AEF purchased cyanide from Brenntag Nordic Oy and Dragon Mining, which are not ICMC certified, and cyanide from the Czech producer Draslovka. The review of documentation during the disruption of supply indicate that while the transporter used for the transport of the cyanide from Dragon Mining or other suppliers were not certified under ICMI, a high level of care was taken to ensure that the transporters were made aware about the emergency procedure relative to the transport of cyanide, showing that the mine and the transporter were in communication during the transport of the cyanide.

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PRINCIPLE 3 – HANDLING AND STORAGE

Protect Workers and the Environment during Cyanide Handling and Storage

Standard of Practice 3.1: Design and construct unloading, storage and mixing facilities consistent with sound, 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 **Handling and Storage Practice 3.1**
 not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with 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.

Facilities for unloading, storing and mixing cyanide have been designed and constructed in accordance with cyanide producers' guidelines, applicable jurisdictional rules and sound and accepted engineering practices for these facilities.

The process plant design was undertaken by engineering firm SNC Lavalin, while the building plant design was done by engineering firm AHMA engineering in 2006, and built during 2006 to 2008.

Unloading and storage areas for liquid and solid cyanide are located as far away as reasonably practicable from people and surface waters. The storage of the cyanide at the AEF plant is in a warehouse and the mixing tanks are located inside the plant building. The two buildings are about 30 m apart. Crates of cyanide are transported one at a time, by forklift truck, from the warehouse to the mixing tanks.

No liquid cyanide is delivered to AEF. AEF only receives solid sodium cyanide briquettes in 1 tonne wooden crates from CyPlus.

Cyanide storage tanks are fitted with level indicators and high-level alarms to prevent the overfilling.

Cyanide mixing and storage tanks are located on a surface that can prevent seepage to the subsurface. All floors are concrete, there are no cracks, and the floor level is below outside ground level, preventing any potential spill to outflow the building. There is a sump that is designed to pump a spill back to the detox tank within the mill.

Secondary containments for cyanide storage and mixing tanks are constructed of materials that provide a competent barrier to leakage.

Cyanide is stored in the warehouse with adequate ventilation to prevent the build-up of hydrogen cyanide (HCN) gas. The warehouse has a roof and walls as well as concrete flooring. It is in a secure area where public access is prohibited, there are two doors that are locked at all times and the keys kept in the plant control room. There are no other materials or chemicals stored in the CN warehouse building.



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Standard of Practice 3.2: Operate unloading storage and mixing facilities using inspections, preventative 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 **Handling and Storage Practice 3.2**

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 3.2; operate unloading storage and mixing facilities using inspections, preventative maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

The empty cyanide containers are prevented from being used for any purpose other than holding cyanide.

Empty cyanide crates are checked for traces of cyanide and dismantled in the mixing room before being taken by forklift to the dedicated cyanide waste container, which is located outside the cyanide warehouse.

Empty plastic bags and liners are washed as part of the mixing event process and then placed in the press, which is located in the mixing room. When the press is full, the material is compressed and transported by forklift to the same dedicated cyanide container. A hazardous waste specialist, picks up the container from the mine several times a year and disposes of all the contents according to all current, relevant legislation.

AEF has developed three procedures that address activities to prevent exposures and releases during cyanide unloading and mixing activities including:


The Cyanide Offloading Procedure states that cyanide crates are handled by forklift trained mill or maintenance operators. The cyanide crates are stacked to a maximum of two high. There is camera footage in the control room taken during the offloading of the cyanide crates. The logistics coordinator is also advised at the beginning and the end of the offload.

Mixing takes place with two operators in the mixing room as well as remote camera observation from the control room. All operators and control room staff communicate with radios. There is camera footage in the control room taken during the offloading of the cyanide crates. The logistics coordinator is also advised at the beginning and the end of the offload.

The Cyanide Mixing Procedure addresses the operation of valves and couplings during mixing, which is all undertaken via the control room.

The actions to be taken in the event of a spill are detailed in the cyanide mixing procedure. This stipulates that the area should be washed after mixing. A full set of personal protective equipment (PPE), including full masks, gloves, boots and disposable clothing is detailed in the cyanide mixing procedure. In addition, all workers wear personal HCN monitors.

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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 preventative maintenance procedures.

[X] in full compliance with

The operation is

[] in substantial compliance with

Operations Practice 4.1

[] not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 4.1; implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventative maintenance procedures.

Written management and operation plans or procedures have been developed for cyanide facilities including unloading, mixing and storage facilities, leach plants, tailing impoundments and cyanide treatment, regeneration and disposal systems. The procedures are detailed and generally comprise the following sections: purpose, objective, definition, roles and responsibilities, methodology, health and safety, and revision.

The milling and flotation circuit do not use a solution with a cyanide concentration greater than 0,5 Mg/L

The plans and procedures identify the assumptions and parameters on which the facility design was based and any applicable regulatory requirements to prevent and control cyanide releases and exposures. For example, the operating manual for the tailings ponds indicates the levels of freeboard for the different ponds and embankments.

AEF has plans and procedures that describe the standard practices necessary for the safe and environmentally sound operation of the facility. The cyanide facilities (warehouse, mixing, CIL circuit and gold recovery circuit) are inspected at every shift. AEF has a calendar-based preventive maintenance programme, whereby maintenance is planned on an annual basis.

AEF has a procedure for the identification of changes in the mines processes or operating practices that may increase the potential for the release of cyanide and incorporation of any release prevention measures that may be necessary. The management of change review stages are undertaken by a management team that include staff from a cross section of departments and this includes the safety department and environmental department. Sign off is required by both the safety and environmental departments.

AEF has a cyanide management contingency procedure for situations where there is an upset in a facility's water balance, when inspections and monitoring identify a deviation from design or standard operating procedures, and/or when a temporary closure or cessation of the operation may be necessary. For example, there are contingency procedures for the mill such as shut down of the CIL circuit, shut down of the detox circuit, and failure of the power grid that address all the necessary steps to take to prevent any health and safety hazards related to such systems upsets. The mill ERP details how cyanide would be managed in the event of a temporary closure or cessation of operations.

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The operation inspects cyanide facilities on an established frequency sufficient to assure and document that they are functioning within design parameters. The mill inspection for cyanide facilities is done at each shift. The tailings dam and lines inspection is also undertaken at every shift.

Mill inspections are carried out during each shift, by the mill personnel on a monthly basis and by maintenance workers on a weekly and monthly basis. Checklists are used and details of any work orders raised are noted.

The monthly mill inspection form details items to be inspected by area. The form has space for comments and the addition of details for work order numbers raised. This inspection is carried out by the Mill Safety Coordinator and at least one other supervisor.

The maintenance department carry out both weekly and monthly inspections that are generated as part of the planned maintenance programme. The monthly programme checklist details all pipes, tanks, containments and valves that are to be checked and has space for comments and details of additional work orders generated.

The tailings dam inspection form addresses: leak detection, the tailings and water pipeline, as well as pond level (freeboard). No breach in the inspection requirements was identified.

Inspections are documented and the records maintained include the date of inspection, the inspector's name, any deficiencies observed, and any corrective actions. When corrective actions are identified, and maintenance is required, they are entered into the management system, where the nature and date of the corrective action is entered and a Work Order is generated.

The operation has on-site back up generating equipment to operate pumps and other equipment required to prevent unintentional releases and exposures, in the event, that the primary power source is interrupted. This equipment is regularly maintained and tested.

In case of unavailability of primary power grid, all automation, servers, field boxes and gas analysers would be supplied with electricity by an uninterrupted power supply (UPS). In addition, there are diesel generators that would start automatically in case of power outage after approximately 10 seconds. These diesel generators are able to generate 2.2 megawatts (MW). This back-up generating equipment is maintained and tested.

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

Operations Practice 4.2

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 4.2; introduce management and operating systems to minimise cyanide use, thereby limiting concentrations of cyanide in mill tailings.

The operation conducts a program to determine appropriate cyanide addition rates in the mill and evaluates and adjusts addition rates as necessary when ore types or processing practice require it. The mill is operating with defined cyanide addition design rates for each addition point. The rates have been determined through metallurgical testing. The curve showing the NaCN dosage grams per tonne (G/t) from the start of operations (January 2009) was reviewed and showed a clear reduction of the cyanide addition into the CIL circuit.

The operation has evaluated various control strategies for cyanide additions.

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The operation has implemented a strategy to control cyanide addition. Cyanide addition is controlled with titration tests that are undertaken at regular intervals.

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

Operations Practice 4.3

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 4.3; implement a comprehensive water management programme to protect against unintentional releases.

AEF has developed a comprehensive water balance that has been developed to forecast tailing deposition.

The probabilistic aspect of the water balance is integrated with the inclusion of what if scenarios.

The water balance is based on monthly evaluations. Parameters such as tailings deposition rates, precipitation, evaporation and seepage rates, run off, impacts of freezing and thawing, water discharge capacity, and potential power outages vary accordingly.

The data for tailings solids and water are issued by the mine and the mill. The design storm events, as calculated by Finnish consultants, use data from the Finnish meteorological institute from a weather station close to the mine (40kms, Kittilä airport). There is provision in the dam design for storm events.

There is no un-diverted run off from the upgradient area as there are diversion dykes where necessary to divert and transport any water from the dam watershed to downstream of the facility.

The water balance takes into account precipitation that occurs as snow and thawing in the spring months based on weather station data.

Operating procedures include inspection and monitoring activities to implement the water balance and prevent overtopping of ponds, impoundments and unplanned discharge of cyanide solutions to the environment. There is a monthly reconciliation on pond level and water balance data, as well as an annual aerial survey of the area.

The design values for freeboard are stated in the Operation, Maintenance and Surveillance (OMS) manual, and regular level checks are undertaken. Inspections record water level in ponds.

AEF does not measure precipitation but receives data on a monthly basis via the Finnish meteorological institute from a weather station located close to site. Data is incorporated in the water balance as real data and reconciliation is undertaken on the water balance on a monthly basis.

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

Operations Practice 4.4

not in compliance with



Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 4.4; implement measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions.

AEF does not operate any heap leaching facilities. Open water bodies are well below 50 mg/L weak acid dissociable (WAD) cyanide. The sampling procedure includes inspection for wildlife mortality; there are no records of wildlife mortality due to cyanide on site. If wildlife mortality occurs it would be reported on the daily dam and ponds inspection sheet.

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

Operations Practice 4.5

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 4.5; implement a comprehensive water management programme to protect against unintentional releases.

AEF's direct discharge to surface water is no greater than 0.5 mg/L WAD cyanide.

The data from the compliance point were reviewed and the WAD cyanide concentration was found to be less than 0.5 mg/L.

Since there is no recognised mixing zone for the discharge, the Rimmi discharge and the infiltration field values are used for compliance purposes, and the infiltration field show a WAD cyanide below the 0.022mg/L limit. Also, since AEF does not measure free cyanide, the WAD cyanide values were reviewed and found to be below the detection limits.

AEF does not have an indirect discharge to surface water.

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

in full compliance with

The operation is

in substantial compliance with

Operations Practice 4.6

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 4.6; implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of groundwater.

Ponds that may contain cyanide are designed with a membrane system. Only non-cyanide tailings are used for underground backfilling. There are 28 groundwater monitoring wells, and 15 of them that are used to assess if cyanide levels would appear in groundwater. All these wells displayed cyanide levels below permit limits for the recertification period.



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AEF does use mill tailings as underground backfill, but it is only the NP tailings that are sent to the paste plant for backfilling operation. Therefore, there are no impacts to worker health or beneficial uses of groundwater due to cyanide use.

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

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

in full compliance with

The operation is

in substantial compliance with

Operations Practice 4.7

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 4.7; Provide spill prevention or containment measures for process tanks and pipelines.

Spill prevention and containment measures are provided for all cyanide unloading, storage, mixing and process solution tanks. Secondary containments are present for the cyanide mixing and storage tank, the CILs and detox tank, the elution area, the electrowinning area, and the acid tank close to the cyanide process tanks.

Secondary containments for cyanide unloading, storage, mixing and process tanks are sized to hold a volume greater than that of the largest tank and any piping draining back to the tank.

All secondary containments are equipped with sumps that would collect any cyanide solution or cyanide contaminated water and send it to the detox tank and are therefore compliant with the Code.

All cyanide process solution pipelines are contained within the mill building and would report to the respective sumps of the area they are related to.

All cyanide containing tanks and pipelines are made of carbon steel, stainless steel, or HDPE, and are therefore compatible with cyanide and high pH conditions.

All tailings pipelines and return water pipelines are placed in lined ditches from the neutralisation plant to the tailings pond.

There are no cyanide pipelines that present a risk to surface water. There is only one cyanide pipeline without secondary containment that contains low strength cyanide solution (from detoxification plant to neutralisation plant) and is located immediately next to the mill, and far from any surface water. Special controls are not considered necessary for this pipe.

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

Operations Practice 4.8

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

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The operation is in full compliance with 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.

Quality control and quality assurance programs were implemented during the construction of new cyanide facilities and when modifications have been made to existing cyanide facilities (plant expansion and tailings dam uplifts in particular).

The quality assurance/quality control (QA/QC) programme for the tailing area addresses both the geotechnical properties (compaction and moisture) of the foundation material and the construction material, as well as the installation of the liners.

The content of QA/QC for cyanide storage and process tanks included geotechnical testing and compaction of tank foundations.

Quality control and quality assurance records for cyanide facilities have been retained and were made available during the audit.

Appropriately qualified personnel reviewed the cyanide facility construction and provided documentation that the facility was built as proposed and approved. All construction records reviewed included sign-off by the constructing company as well as the sign off by relevant the authorities upon inspection of a particular facility.

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

in full compliance with

The operation is

in substantial compliance with

Operations Practice 4.9

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 4.9; implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and groundwater quality.

AEF has developed written standard procedures for monitoring activities. AEF has developed an environmental monitoring programme which addresses cyanide monitoring in surface and groundwater. A sampling schedule is developed from the environmental programme.

Sampling and analytical protocols have been developed by appropriately qualified personnel with either an engineering degree in the field of environmental engineering, health and safety or applied sciences.

Sampling procedures specify how and where samples should be taken, sample preservation techniques, chain of custody procedures, shipping instructions, and cyanide species to be analysed.

Conditions under which samples are taken are documented in writing. The sampling form used requires information regarding the weather, sampling locations, depth of sampling, temperature, wind speed, and has a box for any remarks where notes such as wildlife activity or mortality can be noted.

AEF monitors for cyanide in discharges of process water to surface water and to surface and groundwater down-gradient of the site.



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AEF monitors the water quality of the Seurujoki River (recipient river) and the discharge from the discharge point. All data are collated into quarterly reports, as well as in an annual report which is distributed to the authority.

In addition, AEF monitors the groundwater at four potable wells on neighbouring properties. Samples are taken from these four wells every three months and the results are included in the annual groundwater monitoring report.

The operation inspects for and records wildlife mortalities related to contact with, and ingestion of, cyanide solutions.

Monitoring is conducted at frequencies adequate to characterise the medium being monitored and to identify changes in a timely manner. Sampling at the discharge point is undertaken on a daily basis (Monday to Thursday) when discharge is taking place. For other surface water points, sampling is done either on a weekly or monthly basis.

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PRINCIPLE 5 – DECOMMISSIONING

Protect Communities and the Environment from Cyanide through Development and Implementation of Decommissioning Plans for Cyanide Facilities.

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

in full compliance with

The operation is

in substantial compliance with

Decommissioning Practice 5.1

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 5.1; plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.

AEF has developed written procedures to decommission cyanide facilities when operations cease.

The decommissioning procedure includes an implementation schedule for decommissioning activities.

The procedure indicates that the development of the cyanide specific decommissioning plan should be started in the 18 months prior to the date of the permanent shutdown of operation and should be ready no later than 6 months prior to that date.

AEF reviews its decommissioning procedures for cyanide facilities during the life of the operation and revises them as needed. The cyanide decommissioning management plan has been revised in October 2017 and states in Section 4 that it will be updated every 3 years and 2 years before the planned closure date.

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

Decommissioning Practice 5.2

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 5.2; establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.

There is a detailed cost estimate for the AEF, 77,640 euros for cyanide related facilities which comprises a small part of the overall decommissioning costs which are 27 M euros. The applicable jurisdiction requires a financial guarantee as part of the granting of the environmental permit and the amount has been put aside through three bond guarantees.

The Asset Retirement Obligation spreadsheet (in which the decommissioning costs are summarised) is updated for internal purposes by AEF on an annual basis.

AEF has not established self-insurance or self-guarantees as a financial assurance mechanism as the applicable jurisdiction requires financial guarantee.



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 eliminated, reduce and control them.

in full compliance with

The operation is

in substantial compliance with

Worker Safety Practice 6.1

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 6.1; identify potential cyanide exposure scenarios and take measure as necessary to eliminate, reduce and control them.

AEF has developed procedures describing how cyanide-related tasks (unloading, mixing, plant operations, entry into confined spaces and equipment decontamination prior to maintenance) should be conducted to minimise worker exposure.

The procedures detail the PPE required for each task. For example, the Cyanide Mixing procedure details the type of PPE, the necessity for two workers to perform the task, the requirements of the control room, who also watch the actions on the CCTV, use of a personal HCN monitor and a radio.

Pre-work inspections are used at the beginning of every shift. These are documented by means of a 'Work Card'.

AEF has implemented procedures for the review of proposed process and operational changes and modifications for potential impacts on worker health and safety. Change Management is part of AEF's Responsible Mining Management System. This process is used for major modifications or for modification that involve a number of categories which include mine layout, closure planning, training and qualification and mine planning. All departments including Health Safety and the Environment are consulted and sign off required from managers across departments include Health, Safety and Environment (HSE) and Industrial Safety. For minor modifications, or changes of practices, meetings are held where changes are discussed and safety representatives are present in these meetings.

AEF actively solicits and considers worker input in developing and evaluating health and safety procedures.

There are several channels used to collect worker input including a continuous improvement system via suggestions on the intranet and through a suggestion box, Work Cards; procedures review and shift meetings.

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

in full compliance with

The operation is

in substantial compliance with

Worker Safety Practice 6.2

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with 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.

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The operation has determined the appropriate pH for limiting the evolution of HCN gas during mixing and production activities.

The optimum pH is detailed by the metallurgical department on a parameter sheet. This sheet is updated as necessary depending on the ore type or other process requirements such as lime reduction. The pH set at the time of the audit was $\text{pH} \geq 10.9$ for the CILs. The pH is checked both manually with a pH probe and with automatic sensors in CIL tanks 2, 4, 6, 8 and 9 and the two conditioning tanks. The same tanks are used for lime addition if required for pH control.

Results from the last 3 years were reviewed, both for the manual pH probe information and from automatic sensors. pH levels were found to be below 10 on only one occasion on 5 February 2017 for just manual probe results which was put down to a pH probe malfunction. The results from the automatic sensors and manual pH probe results are continually monitored for any major variance.

Hydrogen cyanide monitoring equipment is maintained, tested and calibrated as directed by the manufacturer. Records of maintenance, testing and calibration are retained for a period of at least one year. Fixed monitors are calibrated by AEF's electrical department annually. The records of calibration for 2014, 2015 and 2016 were reviewed. The span gas used for the calibration was within the expiry date. The portable monitors are calibrated annually by Dräger. The calibration records for the personal monitors were reviewed for the same three year period.

The operation has identified that there are no areas where workers are exposed to cyanide in excess of 10 parts per million on an instantaneous basis and 4.7 parts per million continuously over an 8-hour period. The operation ensures that worker exposure to 4.7 ppm HCN gas continuously over an eight hour period is prevented, by analysis of continuous monitoring data to ascertain if any exceedances occur and the use of time weighted averages. Gas monitors are generally found to be reading zero levels almost all of the time.

AEF has a total of 17 Dräger Polytron 3000 and 7000 fixed HCN monitors installed at the following locations: CIL tanks, carbon desorption, lime pump, elution tank, cyanide destruction, cyanide storage, cyanide mixing, destruction and the metallurgical laboratory and liquid laboratory.

In addition, there are 40 portable detectors - both Dräger X AM 5000 and PC 7000 models. All workers in the mill, including maintenance workers, are required to use a HCN portable monitor when entering the cyanide area.

The fixed monitors alarm at the following concentrations:

- 5 ppm with a flashing red light; at which point investigation takes place; and
- 10 ppm with a flashing red light and audible alarm. This signals an evacuation is required. The lights were all clearly labelled as cyanide alarms.


The portable monitors alarm at the following concentrations and have the same actions

- 5 ppm with a flashing light; and
- 10 ppm with audible alarm and vibration.

The general induction and mill induction presentations clearly detail that smoking, open flames or eating and drinking are not permitted except in designated area. Some warning signs are also present in the mill, cyanide mixing and cyanide storage areas.

The safety showers and eye washes were inspected during the mill tour. Eye washes are generally of the bottled type and all expiry dates were checked and found to be in date. The safety showers are linked to an

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alarm system on the control room monitors which activates when in use. The showers and eye washes are inspected by the Mill Safety Expert every month although written records are made annually. Fire extinguishers are inspected annually by outside contractors.

The operation inspects its first aid equipment regularly to ensure that it is available if needed and that cyanide antidotes are stored and tested as directed by the manufacturer and replaced on a schedule to ensure effectiveness in the event of an incident.

The cyanide antidote kit (Cyanokit) is stored in the control room and within a first aid box. The manufacturer's storage instructions were viewed and it was found to be stored at the correct temperature.

There are ten first aid kits located in the mill area. The mill safety expert makes a formal inspection of the first aid equipment once a year. Records of this inspection were reviewed. Any materials that are used are marked on the daily Work Card; these Work Cards are read by the Mill Safety Expert and replaced immediately. In addition, checks are made on first aid equipment during the pre-shift inspection.

A number of first aid kits were inspected during the site tour and ample materials were stored and all of the contents were within expiry deadlines.

All workers in the mill are trained for first aid and medical assistance to cyanide exposure and there is a minimum of 20 people trained for Emergency Response with at least 3 of them being present on any shift.

The labels for pipes containing cyanide are coloured white and black and state sodium cyanide in Finnish. These signs include the flow direction for cyanide solution.

Safety Datasheets (SDS), first aid procedures and other additional materials on cyanide safety are available in the Mill control room and on a shared drive on the computer network. The SDS for cyanide is in Finnish which is the language of the workforce. This information is also available in areas where cyanide is managed.

An AEM company standard is in use for accident reporting and investigation. This system is on line via the Intelx system. A written procedure details the requirement for reporting and investigations. It details which accident/incidents or near misses require investigation and who is required in the investigation team. A number of accident reports from 2015 to 2017 were reviewed and found to be of a high standard.

Mock emergency drills are conducted periodically to test response procedures for cyanide exposure scenarios. Lessons learnt from the drills are incorporated into response planning.

Mock emergency drills are performed with both internal and external stakeholders. A mock drill was performed at the Site in November 2017; it involved a truck hitting the CIL tailings pipeline and involved both a cyanide exposure and a release to the environment. The report of this drill details improvements that can be made from the drill and specific action items. All specific actions items identified have been implemented.

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

Worker Safety Practice 6.3

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 6.3; develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

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The operation has water, oxygen, a resuscitator, antidote kits and a radio, telephone and alarm system readily available for use at cyanide unloading, storage and mixing locations and elsewhere in the plant.

AEF have a number of documents relating to cyanide which detail the action to be taken should a cyanide exposure incident occur.

All patients requiring first aid treatment in hospital are transported to the regional hospital in Kittilä, 65 km from the mine. This can be done by using either the mine's own first aid car (similar to an ambulance) or calling for an ambulance from Kittilä hospital or if necessary using an air ambulance dispatched from Kittilä hospital.

The operation has a formalised agreement with the regional hospital (Kittilä Hospital) so that they are aware of the potential need to treat patients for cyanide exposure. A letter from Kittilä hospital dated 11 May 2017 stated that the hospital was aware of the potential to treat patients for cyanide exposure.

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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 **Emergency Response Practice 7.1**

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 7.1; prepare detailed emergency response plans for potential cyanide releases.

AEF have a number of emergency response plans relating to cyanide the facilities: External Emergency Response Plan (written by the Authorities based on the Internal Emergency Plan; Internal Emergency Response Plan for the Mill; Tailings Emergency Response plan; Crisis Management plan for AEM; Crisis Management plan for AEF Safety Datasheet 2017.

The Emergency Response Plans considers the potential cyanide failure scenarios appropriate for its site-specific environmental and operating circumstances.

AEF is responsible for the cyanide when it reaches the cyanide warehouse. Prior to this it is the responsibility of the transport company, Korsu Oy. Should an accident occur during transportation the response actions are detailed in the External Emergency Response Plan. The document is written and controlled by the Municipality.

Clearance of site personnel and potentially affected communities from the area of exposure is detailed in both the External Management Plan (section entitled Warning the Population) and the Crisis Management Plan as well as the Safety Datasheet which is presented to local communities. The nearest potentially affected community are a number of farms within 1 km of AEF, the nearest village Kiistala is 6 km south-west of mine. Affected communities would be contacted by use of the media (where new flashes and messages can be given on radio and TV, or by direct contact, as the mine has contact details of people living in the neighbouring farms.

Specific response measures cover: use of cyanide antidotes and first aid measures for cyanide exposure; control of releases at their source; Containment, assessment, and mitigation; and future prevention of releases are detailed in the Mill Emergency response plan Section 5.1 which relates solely to cyanide.

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 **Emergency Response Practice 7.2**

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 7.2; involve site personnel and stakeholders in the planning process.



The involvement of site personnel, stakeholders, local responses agencies and local communities to Emergency Response Plan (ERP) planning process meets Code requirements.

The workforce can make comment on the cyanide emergency response planning by use of the Work Card, during safety meetings or safety training and emergency response training for members of the ERP teams.

Stakeholders and potentially affected communities are involved in cyanide emergency response planning via the External Emergency Plan. The External ERP is written by the Municipality (fire department) in cooperation with AEF and is updated every spring. In conjunction with this a public hearing is held every three years to discuss the plan the next public meeting is due in 2018.

The fire brigade visits AEF every few months and can comment on the internal ERP during their visits and undertake joint mock drills with the mine.

A public hearing is held every three years to discuss the External Emergency Response Plan and the next public meeting is due in 2018.

AEF organise town meetings and tours of the mine for the local communities during which they are made aware of the risk associated with accidental cyanide released. In addition, all local communities have been sent the Safety Datasheet 2017 which details chemicals used at the mine, an overview of the Mining area functions, preparing the mine for possible incidents, Kittilä mine waste water tanks, and instructions for an accident.

Local response agencies and medical facilities are involved in cyanide emergency planning and response process via the process of compiling the External Emergency Plan. The External ERP is written by the Municipal fire department in cooperation with AEF and other local response agencies. The document details all response agencies that would be involved and these agencies are contacted by the Municipality to ensure they are aware of their role in emergency response planning and process.

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 **Emergency Response Practice 7.3**

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 7.3; designate appropriate personnel and commit necessary equipment and resources for emergency response.

Due to the legal requirement for an External ERP outside entities are well aware of their involvement with Emergency Response and have been included in mock drills.

Designated primary and alternate emergency response co-ordinators have explicit authority to commit the resources necessary to implement the Plan. This is detailed in the AEF Crisis Management Plan and Mill ERP.

Emergency Response Teams are identified and detailed in the AEF Crisis Management Plan and Mill ERP. Each shift has three emergency responders and always includes the shift supervisor.



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Appropriate training for emergency responders is required. Approximately 60 hours of training is legally required to be an emergency responder, this is then supplemented by annual refresher training comprising another 40 hours of training.

Call-out procedures and 24-hour contact information for the co-ordinators and response team members is detailed in the Contact sheet for Emergency Response and in the Mill EPR.

The duties and responsibilities of the co-ordinators and team members are specified in Appendix 8 of the Mill ERP where it states who is in charge in an emergency situation in a clear flow diagram. A further document titled Emergency Responders Instructions details the role and responsibility of the Emergency Response personnel. The Crisis management plan also details Crisis Management Team Responsibilities.

Emergency response equipment, including personal protection gear, is available along transportation routes and/or on-site – a specific list of Emergency response equipment is held by AEF.

Procedures to inspect emergency response equipment to ensure its availability are included in emergency response procedures. Inspections of equipment are made by the Safety Department.

The role of outside responders, medical facilities and communities is described in the emergency response procedures. These are detailed in the External ERP.

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

Emergency Response Practice 7.4

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 7.4; develop procedures for internal and external emergency notification and reporting.

All ERPs contain the emergency contact number for AEF's Emergency Control Centre. The Emergency Control Centre would then dial 112 for the emergency services (including medical facilities, police and fire) to alert them to the incident. Contact information for these response providers is also detailed in the External ERP.

Contact information for management is detailed in both the AEF Crisis Management Plan and Appendix 8 of the Mill ERP.

The Plan includes procedures and contact information for notifying potentially affected communities of the cyanide-related incident and any necessary response measures and for communication with the media. This is detailed in the AEF Crisis Management Plan and Mill ERP Appendix 8.

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

Emergency Response Practice 7.5

not in compliance with

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Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with 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.

The Plan specifically prohibits the use of sodium hypochlorite, ferrous sulphate and hydrogen peroxide to treat cyanide that has been released into surface water. This is detailed in the Emergency Response Plan.

The Plan addresses the potential need for environmental monitoring to identify the extent and effects of a cyanide release, and includes sampling methodologies, parameters and where practical, possible sampling locations.

Drinking water is supplied from two of on-site boreholes that source water from approximately 50 m below ground level. In addition, bottled drinking water is also purchased and AEF has a supplier that can provide bottled water if it is necessary.

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

Emergency Response Practice 7.6

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 7.6; periodically evaluate response procedures and capabilities and revise them as needed.

The internal ERP details in the introductory section that it is revised every year or whenever significant changes in activities occur.

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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

Training Practice 8.1

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 8.1; train workers to understand the hazards associated with cyanide use.

Training for cyanide hazard recognition is undertaken in the following ways: Induction training; Mill induction training; Cyanide awareness training; Work Card Training; Monthly safety meetings.

The Cyanide awareness training presentation includes the following topics: General Cyanide Information; Toxicity; Exposure routes; Symptoms of poisoning; Protection against exposure; Cyanide first aid.

Sign-in sheets from cyanide safety training sessions were reviewed for all shifts. Specific checks were made for the control room operator working at the time of the Mill inspection one of the workers who performed the cyanide mix. Both had received Cyanide Awareness training in 2017 and one received it in 2016 and 2015, whereas the other was a new hire in 2017. Training records are held on the Intellex system.

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

Training Practice 8.2

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with 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.

All workers in the Mill receive: Induction training; Mill Induction training; and Cyanide Awareness training.

They then receive task specific training to enable them to perform their normal production tasks, including unloading, mixing, production and maintenance, with minimum risk to worker health and safety in a manner that prevents unplanned cyanide releases.

Task specific training involves shadowing an operator before training on the specific operating procedure to understand the mechanics and details of performing the task safely. The operating procedures are detailed to ensure safe working practices. An operator cannot work independently unless he has been specifically trained on a task.



Shift supervisors are responsible for task training. The supervisor has experience in that work task and is therefore appropriately qualified to undertake the training.

Cyanide refresher training is provided annually to everyone who encounters cyanide. This is undertaken as a half hour long safety meeting that is given by the Mill Safety Expert and consists of the full Cyanide Awareness presentation. Training records for a number of mill workers present during the visit were checked to ascertain if they had received cyanide awareness refresher training. This was confirmed.

Records of training received are retained throughout an individual's employment. The records are placed on the company's Intellex system.

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

Training Practice 8.3

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 8.3; train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.

All cyanide unloading, mixing, production and maintenance personnel are trained in the procedure to be followed if cyanide is released.

Training for decontamination and first aid procedures is detailed in the following training: Induction training; Mill Induction training; Cyanide Awareness training; Task training; Monthly safety meetings.

Emergency Response Co-ordinators and members of the Emergency Response Team are trained in the procedures regarding cyanide contained within the Emergency Response Plan. This includes the use of necessary response equipment.

Before becoming a member of the emergency response team each member undertakes an external course that provides a national qualification in fire and rescue. This course is approximately 25 hours – 60 hours long. Rescue co-ordinators attend a further external course called a team leader course which is approximately 100 hours long.

The AEF emergency response plan is sent to the municipal fire brigade annually who use it to help produce the fire brigade's External Emergency Response plan. This is made in collaboration with other local responders and medical providers. This external plan is then discussed at public meetings where community members can become familiar with those elements of the plan related to cyanide.

Cyanide hazard recognition refresher training is provided annually to everyone who encounters cyanide. Cyanide hazard recognition refresher training includes cyanide-related emergency response procedures.

Simulated cyanide emergency drills are periodically conducted for training purposes. They cover both worker exposures and environmental releases.

A mock drill was performed at the Site in November 2017; it involved a truck hitting the CIL tailings pipeline and involved both a cyanide exposure and a release to the environment. The report of this drill details improvements that can be made from the drill and specific action items. All specific actions items identified have been implemented.



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The mock drill report for the drill that took place in November 2017 included a section on lessons learnt and actions planned. Any areas where deficiencies were found would be addressed in safety meetings at the mill and emergency responder training courses.

Records are retained documenting cyanide training on the company's Intalex system and include 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.

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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

Dialogue Practice 9.1

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 9.1; provide stakeholders with the opportunity to communicate issues of concern.

The stakeholders could communicate via phone, email, the company website or in person at the security gate or via community liaison committee members and Open House days.

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

Dialogue Practice 9.2

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 9.2; initiate dialogue describing cyanide management procedures and responsively address identified concerns.

There are opportunities for the operation to interact with stakeholders and provide them with information regarding cyanide management practices and procedures.

This has been done via:

- A document called Safety datasheet 2017 which details chemicals used at the mine, an overview of the mining area functions, preparing the mine for possible incidents, Kittilä mine waste water tanks, and instructions for an accident has been sent to all local residents;
- Open house events include exhibitions and presentations. This includes many opportunities to ask questions and information regarding cyanide management. AEF organize a bus service to transport anyone interested in attending the events as they do when holding Committee Liaison Committee meetings;
- Kittilä Mine News is a short newsletter that includes greetings from the mine manager, interviews with neighbours, stakeholders or workers at the mine, and details on specific projects. This newsletter currently sent to 505 stakeholders, neighbours, and public bodies including the local library, the tourist information centre and the municipality; and
- The AEM company website that has a number of videos from company personnel describing the cyanide management practices and procedures. A process flow diagram is available detailing gold processing and use of cyanide.



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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

Dialogue Practice 9.3

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 9.3; make appropriate operational and environmental information regarding cyanide available to stakeholders.

Information on the following cyanide release or exposure incidents will be made publically available:

- Cyanide exposure resulting in hospitalisation or fatality;
- Cyanide releases off the mine site requiring response or remediation;
- Cyanide releases on or off the mine site resulting in significant adverse effects to health or the environment;
- Cyanide releases on or off the mine site requiring reporting under applicable regulations; and
- Releases that are or that cause applicable limits for cyanide to be exceeded.

To date it has not been necessary to release information to the public on these matters as none of the above has occurred. Should any spills or other incidents occur they would be included in the Annual and Quarterly Environmental Report to the Alvehalintovirasto (AVI) (Regional State Administration Agencies) and Tukes (Finnish Safety and Chemicals Agency).

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GOLDER ASSOCIATES (UK) LTD

Sophie Wheeler
Project Manager/Lead Auditor

Dale Haigh
Reviewer

Date: 25 May 2018

Author: Sophie Wheeler, Romain Girard/DH/es

Company Registered in England No.1125149
At Attenborough House, Browns Lane Business Park, Stanton-on-the-Wolds, Nottinghamshire NG12 5BL

VAT No. 209 0084 92

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At Golder Associates we strive to be the most respected global group of companies specialising in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organisational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

Africa	+ 27 11 254 4800
Asia	+ 852 2562 3658
Australasia	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 55 21 3095 9500

solutions@golder.com
www.golder.com

Golder Associates (UK) Ltd
Cavendish House
Bourne End Business Park
Cores End Road
Bourne End
Buckinghamshire
SL8 5AS
UK
T: [+44] (0) 1628 851851

