

**INTERNATIONAL CYANIDE MANAGEMENT CODE
GOLD MINING OPERATION RECERTIFICATION AUDIT
BARRICK HEMLO, CANADA**

SUMMARY REPORT

Submitted to:

*Williams Operating Corporation
P.O. Bag 500,
Marathon, Ontario, Canada P0T 2E0*

and

*International Cyanide Management Institute
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Submitted by:

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May 10, 2021

**BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT**

TABLE OF CONTENTS

1. Introduction, Summary, and Attestation	3
2. Location and description of mining and milling operation.....	4
3. Summary Audit Report.....	8
Principle 1 – Production.....	8
Principle 2 - Transportation	8
Principle 3 – Handling and Storage	11
Principle 4 - Operations.....	13
Principle 5 – Decommissioning.....	21
Principle 6 – Worker Safety.....	23
Principle 7 – Emergency Response.....	27
Principle 8 – Training.....	32
Principle 9 – Dialogue.....	35

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

**BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT**

1. INTRODUCTION, SUMMARY, AND ATTESTATION

This summary report has been prepared to meet the requirements and intentions of the International Cyanide Management Institute (ICMI) to demonstrate that following named project has met the obligations in implementing the International Cyanide Management Code (Code).

Name of Project: Barrick Hemlo

Project Owner / Operator: Williams Operating Corporation (WOC)

Name of Responsible Manager: Adam Foulstone, General Manager

Address and Contact Information: Williams Operating Corporation
P.O. Bag 500,
Marathon, Ontario, Canada P0T 2E0

Audit Company: Environmental Resources Management (ERM)

Audit Team:

Lead Auditor: Michelle Gillen CEA
Email: michelle.gillen@erm.com

Gold Mining Technical Expert Auditor: Glenn Keays, CEA, EMSLA
Email: glenn.keays@erm.com

Date of Audit: This recertification audit was conducted March 2-5, 2020.

Auditors Findings:

	<input checked="" type="checkbox"/>	in full compliance with	
Barrick Hemlo Mine	<input type="checkbox"/>	in substantial compliance with	International Cyanide
is	<input type="checkbox"/>	not in compliance with	Management Code

This operation has not experienced compliance problems during previous three-year audit cycle.

Hemlo Mine
Name of Facility


Signature Lead Auditor


May 10, 2021
Date

**BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT**

Attestation:

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 Mining Operations Verification Protocol and using standard and accepted practices for health, safety and environmental audits.

<u>Michelle Gillen</u> Name of Auditor	 Signature of Lead Auditor	<u>May 10, 2021</u> Date
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Name and Signature of Other Auditors:


<u>Glenn Keays</u> Name of Auditor	 Signature Auditor	<u>May 10, 2021</u> Date
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2. LOCATION AND DESCRIPTION OF MINING AND MILLING OPERATION

Barrick Hemlo is a combination of three mine properties (Golden Giant Mine, David Bell Mine and Williams Mine). All of the major cyanide facilities are associated with the Williams Mine. The David Bell Mine has been decommissioned since 2013 and there are no longer any mining operations occurring there. The Golden Giant Mine has been decommissioned and there are no longer and mining operations occurring there. The operation refers to itself as Barrick Hemlo (Hemlo). This report refers to the operation as Hemlo. Hemlo is located in the District of Thunder Bay, Bomby Township near the north shore of Lake Superior, at approximately 85o 53' W longitude and 48o 40' N latitude. The site is adjacent to Highway 17, approximately 37 kilometers (km) east of Marathon, 350 km east of Thunder Bay and 430 km northwest of Sault Ste. Marie.

The active cyanide facilities at the Hemlo operation include:

- Grinding Circuit
- Gravity Concentration Circuit – has not operated since mid-2018
- Pre-Leach Thickener
- Cyanide Storage Tank and Offload Facility
- Cyanide Leach Circuit

<u>Hemlo Mine</u> Name of Facility	 Signature Lead Auditor	<u>May 10, 2021</u> Date
---------------------------------------	---	-----------------------------

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

- Leach Tanks (6 of 9 currently in use)
- Carbon-In-Pulp (CIP) Circuit (6 tanks)
- Carbon Strip Circuit
- Barren Solution Tank
- Loaded Solution Tank
- Tailings Pump Box
- Tailing Management System (TMS – includes tailings pond and polishing pond)
- TMS pipeline systems
- Williams Paste Plant

All milling is performed at the Williams Mill. The grinding circuit includes two parallel trains, each comprised of a semi-autogenous grinding (SAG) mill, a ball mill, a deister screen and secondary cyclones. The gravity concentration circuit in each grinding train employs a Knelson concentrator for gravity gold recovery. The gravity circuit has not been in use since 2018. The grind slurry enters a large pre-leach thickener at approximately 25 percent solids, and the resulting thickener underflow is transferred to the cyanide leach circuit at approximately 50 percent solids.

The cyanide leach circuit consists of nine leach tanks; however, the number in operation varies currently six are in use. Gold is extracted from solution in the CIP circuit, which consists of six tanks. Loaded carbon is stored in two storage vessels. Acid (nitric) and caustic are used in the carbon strip circuit and the loaded strip solution is pumped to a surge tank prior to entering the electro-winning circuit located within the refinery. Barren strip solution is stored in a surge tank adjacent to the loaded strip solution surge tank. The stripped carbon is reactivated via acid washing and a regeneration kiln.

Tailings from the CIP circuit report to the tailings pump box. The operation targets sending approximately 20-30 percent (or 86,000 MT target) to the paste plant (in 2019 only 15% sent underground). The active paste plant is located at the Williams site. The paste plant is a standalone facility enclosed within a building with an adjacent, external thickener tank. Cement slag binder is used to bind the filtered tailings slurry and the final tailings paste is pumped into the underground mine workings as backfill. The remaining CIP tailings is pumped to the tailings pond via a high-density polyethylene (HDPE) pipeline. The TMS consists of a large impoundment separated into two basins by an internal divider dam. One basin (currently the David Bell Pond) receives tailings slurry from the mill. The other basin (Williams Pond) functions as a polishing pond. The function of each basin (i.e., tailings deposition pond or polishing pond) changes periodically as the tailings management plan requires. Reclaim water from the tailings pond is returned to the mill for use in the grinding circuit. Polishing pond water also returns to the mill for re-use in Actiflo, dust suppressant, paste, and pump gland water. Some water from the Actiflo tank is also used as dust suppression water in the underground mine.

Sodium cyanide is delivered in liquid form and is offloaded to the cyanide storage tank located within the

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

mill building at the Williams site. The grinding and process circuits are also located inside the mill building, with the exception of the large, 215-foot diameter pre-leach thickener located on the north side of the mill building. As noted above, the paste plant is located within a separate building with a thickener tank located outside. The Williams paste plant building and thickener tank are located immediately northwest of the mill building.

Weak Acid Dissociable (WAD) cyanide concentrations in the tailings pond (i.e. Williams Pond/David Bell) reclaim, are below the target of < 50 ppm. Therefore, because reclaim water from the tailings pond is returned to the mill for use in the grinding circuit, the milling and gravity concentration equipment are considered cyanide facilities under requirements of the International Cyanide Management Code (ICMC).

The Hemlo operation also operates an Effluent Treatment Plant (ETP) at the TMS on a seasonal basis (permitted April through November) to treat water from the polishing pond prior to discharge to the receiving environment (surface water). The ETP is designed to precipitate antimony and heavy metals and to adjust pH levels. Reagents used in the process include ferric sulfate and lime. Hemlo relies on natural degradation of cyanide in the polishing pond, and the water is not specifically treated to reduce cyanide levels. The plant also includes a destruct circuit, which utilized hydrogen peroxide and copper sulfate in the event cyanide levels are above the allowable discharge standards. The cyanide destruction was used occasionally in 2014/2015, but has not been used since 2015.. The site is currently constructing a detox plant that will render this system obsolete. The WAD cyanide concentrations in the ETP feed are consistently below 0.5 mg/L.

Hemlo receives liquid sodium cyanide in specially engineered tanker trucks from Cyanco's Cadillac Facility. The sodium cyanide is delivered by Quality Carrier's Inc. Cyanco and Quality Carriers are signatory to the Code and both companies are certified as compliant with the ICMC. Hemlo stores and manages sodium cyanide in engineered tanks, pipelines, and a tailings storage facility that have had appropriate Quality Assurance and Quality Control (QA/QC) during construction. Hemlo employees are trained in cyanide hazards and first aid, first response, emergency response, and specific operational task training. Hemlo facilities are fenced to preclude wildlife and livestock from entering reagent grade cyanide process areas. Hemlo conducts inspections to assure that facilities are functioning as designed and to monitor process solutions. Preventive maintenance programs are in place to assure the continuous operations. Hemlo has approved closure and reclamation plans along with financial assurance to support the appropriate management of cyanide solutions and solids.

Changes to the operation during the past three years include

- The construction of raises on Dams A, B, D, E, F, H, I for the TMS
- The CN destruct facility at the ETP has not been used since 2015
- Red dye has been added to the cyanide solution delivered to the site since June 2019
- A slag blend has replaced the flyash in the underground pastefill

No other significant changes in the operation or facilities were reported. During the recertification audit a cyanide detoxification plant and sulphide flotation circuit are under construction and will be brought on line in 2020.

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

**BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT**

The Hemlo operation was found to be in Full Compliance with the International Cyanide Management Code; and this operation has not experienced compliance problems during the previous three-year audit cycle.

Audit Dates: March 2-5, 2020

Auditors: Michelle Gillen, Lead Auditor
Glenn Keays, Gold Mining Technical Expert Auditor

SIGNATURES

This Gold Mining Verification Audit Report presents the detailed findings of our International Cyanide Management Code audit of Barrick Hemlo located in Canada. The audit was conducted according to the ICMI Gold Mining Verification Protocol dated February 2018.

Respectively submitted by:



Michelle Gillen, CEA
Lead Auditor



Glenn Keays
Gold Mining Technical Auditing Expert

Hemlo Mine
Name of Facility



Signature Lead Auditor

May 10, 2021
Date

**BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT**

3. SUMMARY AUDIT REPORT

PRINCIPLE 1 - PRODUCTION

Encourage responsible cyanide manufacturing by purchasing from manufacturers who operate in a safe and environmentally protective manner.

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

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

Basis for Audit Finding:

Cyanco Canada Inc. (Cyanco) is the cyanide supplier to Hemlo since January 2009. Cyanco was originally certified October 3, 2006, and most recently recertified in 2019. Amendment # 5 extends the terms of the original contract between Cyanco and all of Barrick facilities in the Americas to March 31, 2021. Liquid cyanide is shipped by rail from Cyanco's production facility in Winnemucca, Nevada to Cadillac, Quebec. In Cadillac the cyanide is transferred to truck trailers and is truck transported to the Hemlo Mine.

The contract between Barrick Gold of North America (Barrick) and Cyanco states that Cyanco shall comply with the ICMC's "Principles and Standards of Practice" during the manufacture, transportation, storage, use and disposal of the product (cyanide) and the supplier shall only deliver product (cyanide) produced in an ICMI Code certified facility.

Cyanco's Winnemucca Production Plant is a Code certified operation as reported on the ICMI website, and recertified in 2019. The Cyanco Cadillac Facility (Cyanco Sodium Cyanide Transloading Terminal) is a Code certified operation as reported on the ICMI website: originally certified in January 4, 2007, recertified September 24, 2010, and recertified a second time October 15, 2013. At the time of this recertification Cadillac was last recertified on April 7, 2017.

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

**BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT**

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.*

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

Basis for Audit Finding:

Cyanco Canada Inc. (Cyanco) is the cyanide supplier to Hemlo since January 2009. Cyanco was originally certified October 3, 2006, and recertified November 22, 2016. Liquid cyanide is shipped by rail from Cyanco’s production facility in Winnemucca, Nevada to Cadillac, Quebec. In Cadillac the cyanide is transferred to truck trailers and is truck transported to the Hemlo Mine. (Hemlo has purchased cyanide solely from Cyanco during the recertification audit period – 2016 through 2020.)

Cyanco’s Winnemucca Production Plant is a Code certified operation as reported on the ICMI website – certified in 2019. The Cyanco Cadillac Facility (Cyanco Sodium Cyanide Transloading Terminal) was originally certified in January 4, 2007, and most recently recertified April 7, 2017.

The Barrick-Cyanco Amendment 1 contract requires that Cyanco, the Seller, will ensure there are written agreement(s) with Subcontractor(s) that clearly designate specific responsibilities for safety, security, release prevention, training and emergency response in transporting and handling cyanide between Hemlo and Cyanco. Additionally, the contract requires use of Code certified transporter(s); and the use of subcontractors is addressed in the Code’s Transportation Audit Protocol. In that Quality Carrier has been Code certified Barrick Hemlo Operation is in compliance with this Standard of Practice. Based on confirmation by both parties this amendment remains in place and the contract has been extended to 2021.

Cyanco in an e-mail to all customers, (whether they are code certified or not), will have red dye in the cyanide delivery after April 2019. The site’s shipments of cyanide since June 11, 2019 have contained the dye.

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

**BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT**

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

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

Basis for Audit Finding:

The cyanide supply contract with Cyanco requires Cyanco to comply with the "Principles and Standards of Practice" of the International Cyanide Management Code during the manufacture, transportation, storage, use and disposal of Product (cyanide). Compliance with the Code requires that the supplier and transporter to conform to specific compliance matters set out in the Code's Cyanide Production and Cyanide Transportation Verification Protocols. These Verification Protocols specifically address packing, labeling, storage, transportation routes, unloading and other requirements transportation requirements

Cyanco transports the liquid cyanide to Cadillac, Quebec via Cyanco's US/Canadian Rail Transport system. Cyanco US/Canadian Transport utilizes the Union Pacific Railroad and the Canadian National Railroad to transport bulk liquid cyanide between Winnemucca and Cadillac.

Quality Carriers Inc. is the trucking company responsible for transportation of the liquid cyanide from Cyanco's Cadillac facility to Hemlo's Williams mine. Quality Carriers is a Code certified operation as reported on the ICMI website – certified December 11, 2017. Records from the past three years of cyanide transport documentation, and current within the ICMI audit period, confirm that the cyanide is coming from the Cadillac facility via Quality Carriers.

The cyanide supply contract between Barrick and Cyanco specifies that Hemlo takes ownership of the product at the time the liquid cyanide is delivered into the cyanide storage tank at the mine site. Hemlo has bills of landing showing that Cyanco and Quality Carriers are the sole suppliers and transporters of the cyanide.

Cyanco confirmed that as of April 2019, all shipment of liquid cyanide to the site will include a red dye.

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

**BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT**

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.*

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

Basis for Audit Finding

Facilities at site which unload and store cyanide have been designed and constructed in accordance with sound and acceptable engineering practices. Hemlo has a single 100,000-litre carbon steel cyanide storage tank located inside the Williams mill building. The specifications for the cyanide storage tank were detailed in a letter from Fabmar Metals Inc. to Profor Engineering Services Inc. (Profor) dated October 2009. The specifications include design to American Petroleum Institute (API) 650 Code and 300 welded steel 0.25-inch shell thickness and a 3/8-inch bottom. The design drawings of the tank (numbered 209098-M1 through M8 and S1 through S4) include concrete and reinforcing layout, concrete elevations and section, steel fabrication details, liquid cyanide storage fabrication details, equipment and piping layout and elevations, piping details, and cyanide supply piping to barren strip area. Liquid cyanide is unloaded into the cyanide storage tank located inside the Williams mill building.

The unloading and storage area is located away from public access. All personnel with access to the unloading and storage facilities, including contractors receive site-specific health and safety training that includes cyanide hazard awareness.

The cyanide unload pad on which the tanker truck parks when unloading liquid cyanide is constructed with cast-in-place reinforced concrete with curbed containment. The concrete unload pad is an adequate barrier to prevent seepage to the subsurface. There is an annual preventative maintenance inspection to review the concrete condition and an outside contractor is brought in every three years to conduct a detailed inspection of all containment areas. All leakage on the offload pad and the tank containment area would gravity drain to the leach circuit containment sump via a polyvinyl chloride (PVC) drainpipe pipe connecting the two sumps and ultimately pumped into the process circuit. The tanker unload containment allows containment and recovery of all spilled solution. The Hemlo cyanide storage tank has level indicators (a pressure transducer and a float) and a high level alarm that warns of overfilling. In addition, the level of cyanide solution levels within the tanks can be monitored from the control room. The cyanide supplier, Cyanco, has remote telemetry monitoring of the cyanide tank level to track cyanide usage and inventory, allowing them to dispatch cyanide loads when needed. The cyanide storage tank is located inside the Williams mill building and has adequate ventilation.

The offload area is totally inside the Williams mill building and any spillage from a tanker truck would be

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

contained by the building's secondary containment system. The cyanide storage tank is also located inside the mill building with its own secondary containment (in essence a double secondary containment system). The Mill Building is located away from surface waters with nearest water body being Moose Lake, located approximately 350 metres to the east of the Mill Building. Between the lake and the Mill Building is a storm water pond that would intercept any spillage from the mill. If the volume of spillage exceeded the capacity of the storm water pond, the solutions would flow back into the mine where it could be pumped into the water management system.

The Williams mill building is within the fenced complex of the Williams Mining operation. There are no unsecured valves at the cyanide storage tank or unload system that would allow direct access to the liquid cyanide. Hemlo has isolated the cyanide storage tank and unload pad away from incompatible chemicals such as acids, strong oxidizers and explosives. No smoking or eating is allowed near the cyanide storage area or in the mill.

Standard of Practice 3.2: Operate unloading, storage and mixing facilities using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

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

Basis for Audit Finding:

Hemlo and the cyanide supplier have developed standard operating procedures to prevent exposures and releases during cyanide unloading. The procedures include a description and photograph of the valves and couplings on the tanker and the unload connections to operate to complete a liquid cyanide unload. Unload procedures by Cyanco, Quality, and Hemlo were reviewed. The procedures cover the responsibilities for the transporter and the Hemlo operator. Unloading does not occur until a Hemlo operator is present to observe compliance with the PPE requirements, truck parking and chocking, and to unlock the unload piping. Both the transporter and the Hemlo operator check to confirm that the storage has sufficient capacity for the unload. The Hemlo operator is trained in the transporter PPE requirements, procedures, and emergency shut off locations. The transporter and the Hemlo operator have access to PPE and oxygen in the case of an emergency. The Hemlo operator observes the entire offload event including the disconnection upon completion of the offload.

Hemlo only receives liquid cyanide in tankers. The liquid is transferred from the tanker to a storage tank and there are no empty cyanide containers that require disposal, rinsing, crushing or cleaning.

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

**BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT**

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 utilizing contingency planning and inspection and preventive maintenance procedures.

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 4.1**
 not in compliance with

Basis for Audit Finding:

The Hemlo operation has developed written management, operating and contingency plans and procedures for all cyanide facilities at the Williams Operations including the Mill area. The operating plans and procedures developed and implemented by Hemlo cover safe operation and management of the facilities.

Hemlo has implemented inspection programs for cyanide facilities that cover the cyanide offload area, leach circuit, and CIP circuit and carbon strip circuit. In addition to the daily process area inspections, safety inspections of the cyanide offload facility are conducted upon each delivery event. Hemlo also conducts routine inspections of the tailings systems and performs wildlife inspections daily. The combination of inspections performed by operations, maintenance and safety personnel adequately encompass the cyanide facilities

Critical parameters around tailings performance were identified through risk assessment (bowtie) have been entered into Intalex (V6) and tasks are assigned to various persons to verify.

The Tailings Facility Operation and Surveillance Manual (TOMS Manual) outlines the management framework for the ongoing operation, maintenance, and surveillance of the tailings system, including the basis for measuring performance and demonstrating due diligence.

These inspections are sufficient to assure and document that the cyanide facilities are functioning within the design parameters and to ensure their safe and environmentally sound operation.

Hemlo has implemented a PM program Oracle for critical equipment. The PM schedule provides a listing of the equipment along with the planned time for maintenance. The PM system is managed using Oracle© software, which automatically produces PM work orders on an established schedule.

The Hemlo operation maintains three diesel power generators on site. The primary generator is located in the Mill building, a secondary generator is located at the TMS divider dam and a third generator was installed at the effluent treatment plant in 2015. The generators were verified to be in place and properly maintained during the verification audit. The 1,500-kilowatt (kW) generator located in the mill is capable

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

of powering all critical process equipment during primary power outages.

A Water Quality Management procedure was developed that formalizes the procedures for sampling, reporting, and managing the water quality throughout the water cycle from end spill discharge through to ETP feed and discharge. The physical inspection of the mill tailings and process waters within the TMF is completed six times daily (using the swipe system) to confirm the physical integrity of any surface water diversion and initiate spill response procedure for leaks. Other water levels within ponds and other water diversion structures are monitored continuously and are alarmed if levels are outside of parameters.

Hemlo has developed and implemented a procedure to identify and evaluate operational changes related to the safe management of cyanide. This document is titled Management of Change Procedure, and is used throughout Barrick. This procedure prescribes the methods to be used by employees and contractors to manage changes at all Barrick Gold operations and project sites. The MOC processes require the approval through a workflow tracker in InTelex of various departments at Hemlo, including technical services, health and safety, environment, security, maintenance community etc.

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

	<input checked="" type="checkbox"/>	in full compliance with	
The operation is	<input type="checkbox"/>	in substantial compliance with	Standard of Practice 4.2
	<input type="checkbox"/>	not in compliance with	

Basis for Audit Finding:

The Hemlo operation has implemented a continuous cyanide reduction program to optimize the use of cyanide and to control WAD cyanide concentrations discharged to the tailings pond as well as maximize recovery. The end of pipe (end spill) target concentration at the discharge to the tailings pond is less than (<) 50 mg/L WAD cyanide. Hemlo uses an automated online cyanide monitor and controller system to regulate, and minimize, cyanide addition at the leach circuit. The controller monitors process parameters and online actual titrated cyanide values every 15 minutes to determine the amount of cyanide that should be added to drive the plant toward a desired set point. The online titration device acquires a sample from the process stream, performs the titration, and processes the result. The result provides feedback as to the deviation from the desired value (set point). To optimize recovery and minimize cyanide consumption, while maintaining WAD cyanide concentrations below 50 mg/L at the discharge to the tailings pond, the operation currently attempts to maintain free cyanide concentrations at the first cyanide addition leach tank at 110 mg/L.

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

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

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 4.3**
 not in compliance with

Basis for Audit Finding:

Hemlo has developed a comprehensive, probabilistic water balance model, using Microsoft Excel[®] software, which tracks water flow throughout the engineered water management facilities at the Williams sites, including the mines, Mill complex, and the tailings impoundment. Hemlo uses the 1:10-year wet runoff event to forecast water management requirements although the water balance model can be used to evaluate conditions for variable storm events as well. The design maximum operating water level in the TMS ponds is 3 meters below the embankment crests to allow for retention of a 24-hour PMP event while maintaining 0.5 meters of freeboard. The facility is operated to provide containment of the Probable Maximum Flood (PMF) which is generated by the Probable Maximum Precipitation (PMP) (380 mm in 24 hours). For the Williams Basin, the PMF requires the storage of approximately 1.18 million cubic metres of water.

The operating manual for the tailings facility describes the operating standards and procedures for the transport and containment of tailings, process water recycling, effluents and residues to ensure the economical, safe, and environmentally responsible storage and disposal of tailings and the management of water. Hemlo conducts operational and environmental inspections to evaluate the condition of the entire tailings management system. The Environmental Department inspects the water levels in the tailings facility weekly in wells. In the summer a survey of the pond level is also measured weekly. Volumetric (bathymetric) surveys are conducted twice annually, and the design engineer conducts annual inspections of the facility embankments. Critical measurement points have also been added to Intalex to make sure critical parameters are measured and checked (e.g. pond levels, etc.). The operation has maintained water levels below maximum levels in the tailings storage facility over this ICMC recertification period

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

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 4.4**
 not in compliance with

Basis for Audit Finding:

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

The tailings impoundment the pre-leach thickener and the paste thickener structure are the only facilities at the Hemlo operation in which open cyanide-bearing solutions are stored. The operation does not have other active solution ponds, open solution channels, or sumps. Hemlo manages its cyanide addition rates at the cyanide leach circuit to optimize cyanide use while maintaining WAD cyanide concentrations below 50 mg/L at the discharge to the tailings pond. Dilution water is added at the final tailings pump box to further lower cyanide concentrations in the tailings stream, if necessary. Although there are excursions whereby the tails discharging into the TMS is above 50 mg/L (~4-6 times per year, and typically the value is below the 50 mg/L but the next sampling round, to a maximum reading 61 mg/L); the WAD cyanide concentrations are maintained well below 50 mg/L in the TMS, and as such no other protective measures for wildlife have been implemented. There have been no cyanide related wildlife fatalities in the past three years.

The sole source of water introduced into the pre-leach thickener structure is reclaimed water from the TMS, which is also used in the grinding mill. WAD cyanide concentrations in the TMS reclaim water are well below 50 mg/L. Therefore, wildlife protective measures have not been implemented at the structure.

The tailings impoundment and related systems are inspected on a daily basis and include wildlife monitoring. Field personnel are trained to report wildlife observations according to the Hemlo Wildlife Management Procedure. Wildlife Monitoring records confirm that there have been no cyanide related wildlife mortalities in the past three years.

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

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 4.5**
 not in compliance with

Basis for Audit Finding:

The Hemlo operation operates an Effluent Treatment Plant (ETP) at the tailings facility on a seasonal basis (permitted April through November) to treat water from the polishing pond prior to discharge to the receiving environment (surface water). The plant is designed to precipitate antimony and heavy metals and to adjust pH levels. Samples are taken three times each week during the treatment season according to Hemlo's Industrial Sewage Works Environmental Compliance Approval with the Ontario Ministry of the Environment, Conservation and Parks (MOECP). Data for 2016-2019 showed total cyanide mean concentrations typically well below 0.5 mg/L for the treated effluent. When the concentration is not below 0.5 mg/L the effluent is not discharged, until it meets the standard.

Effluent from the ETP is discharged to an ephemeral stream that drains to Frank Lake (the receiving water body downstream of the end-of-pipe discharge point). Water quality at Frank Lake is sampled four times each year (March, May, August, and October). Hemlo provided water quality data for 2016-2019 demonstrating that WAD cyanide concentrations at Frank Lake (surface water monitoring point M4) were 0.002 mg/L or less for all sampling events. The data demonstrated that Total cyanide concentrations at Frank Lake were 0.005 mg/L or less for all sampling events. The Hemlo operation does not have an

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

indirect discharge of cyanide solutions to surface waters and is not subject to a designated beneficial use for surface water. The quarterly cyanide samples are sent to a certified outside laboratory in Thunder Bay, Ontario for cyanide analyses.

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

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 4.6**
 not in compliance with

Basis for Audit Finding:

The Hemlo tailings facility consists of a large impoundment separated into two basins by an internal divider dam. One basin receives tailings slurry from the mill and the other basin functions as a polishing pond. The facility is designed, constructed, and operated to prevent seepage through the dam and foundations. The containment embankments are constructed with a low permeability compacted till core. The divider dam separating the tailings pond and the polishing pond is a permeable structure. Collector dikes and seepage collection sumps are located along the perimeter of the facility at the downstream toes of the containment embankments. The tailings slurry delivery and water reclaim pipelines are constructed of HDPE material and are predominately located above ground to facilitate regular inspections. A series of catch basins and dump ponds exist along the tailings pipeline corridors to collect and control inadvertent pipeline releases or leakage. Water that collects in these ponds is pumped back to the TMS and not discharged to the environment. Hemlo compares measured groundwater quality with various Ministry of the Environment, Conservation and Parks (MOECP) Standards (guidelines). The groundwater monitoring data for 2016 to 2019 did not identify any impacts due to cyanide. Although no change in the impacts to health are expected the site has developed and is in the process of implementing a sampling campaign to confirm worker exposure.

Hemlo conducts regular monitoring of the tailings pond water levels and volumes to ensure that the operating criteria are being met. In addition, regular monitoring of groundwater quality is conducted to ensure that the facility is functioning as designed and protective of the environment. Water quality data for 2016-2019 demonstrated that WAD, Total, and Free cyanide concentrations in monitoring wells were below the detection limits (i.e., <0.002 mg/L WAD and Total, and <0.005 mg/L Free). There are no regulatory water quality standards for cyanide in Ontario, nor are there identified beneficial uses of groundwater for the Hemlo operation. However, Hemlo compares the measured groundwater quality with various Ministry of Environment Standards (guidelines).

The 215-ft diameter pre-leach thickener has concrete walls (ring beam) and a floor constructed of two layers of compacted sand with a 1-mm thick HDPE geomembrane placed between the upper and lower sand layers. The floor system is supported by compacted rockfill, sloped to the center. The entire structure is partially embedded in rockfill with approximately two-thirds of the concrete ring wall exposed. Therefore, this large structure essentially functions as a synthetic-lined pond. The physical integrity of the facility is inspected regularly and an overflow weir and launder system continuously maintains the solution level in the pre-leach thickener structure at a level approximately 1.5 feet below the

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

top of the concrete ring wall. The facility does not employ a leak detection system and Hemlo does not conduct groundwater monitoring directly downgradient of the structure.

Approximately 15-33% of the mill tailings were sent to the paste plant to produce backfill for ground control in the underground mine workings in the past three years.

Hemlo also conducts groundwater monitoring throughout the property. According to data presented in the 2016-2019 monitoring programs, seepage has not caused cyanide concentrations in groundwater to raise above laboratory detection limits and no remedial activity is currently required.

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

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

Basis for Audit Finding

Cyanide storage and process tanks at the Williams operation are located inside buildings within concrete secondary containment (concrete floors and stem walls). A large pre-leach thickener is located outside, on the north side of the Mill building. The Williams paste plant facility is located inside a building within concrete secondary containment (concrete floors and stem walls). The paste plant thickener tanks are located outside the plant. Stormwater controls and sedimentation ponds provide secondary containment for the pre-leach and paste plant thickeners. The paste plant thickener has a concrete ring beam foundation with a leak detection and recovery system installed. The foundations for all other process tanks containing cyanide solution and slurry provide an impermeable barrier between the tank bottoms and the ground. Secondary containments for cyanide process tanks within the process buildings are sized to contain a volume greater than that of the largest tank within the containment and any piping draining back to the tank. The pond, which provide secondary containment for the large thickeners is adequate to contain the volume and design storm event, however, in the event of a larger storm event than designed, pumps have been installed to send the excess water to the underground water to provide additional capacity to account for the design storm event.

The concrete secondary containments provided for the cyanide process tanks in the Mill building and the paste plants have concrete floor sumps with dedicated pumps to collect and remove cyanide solution and slurry spillage for return to the process circuits. The Hemlo Spill Prevention and Contingency Program include a specific procedure for the sampling and remediation of contaminated soil to prevent adverse impacts on surface water or groundwater. The procedure also provides instructions for the proper disposal of cyanide-contaminated soil, which include returning the material to the Mill process or placing it in tailings facility. Hemlo prohibits the use of the sediment ponds for containment of material from the paste plant thickeners except in emergency situations.

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

Hemlo has constructed cyanide process pipelines inside the mill, including fill and distribution, so the mill building will collect leaks and prevent releases. Leak detection measures implemented for the tailings pipelines include a differential flow alarm system. Hemlo implemented a pipe-in-pipe system along a portion of the pipeline corridor between the Mill and the tailings facility where it runs alongside an environmentally sensitive area. Hemlo has also implemented a robust inspection program along the pipeline corridors. The corridors are patrolled and inspected daily. Based on the physical controls and inspection program implemented by Hemlo, adequate spill prevention and containment measures are provided for the tailings pipeline system.

Hemlo uses steel, HDPE and PVC pipelines for conveyance of cyanide solutions and slurries. All cyanide storage and process tanks are steel. These materials are compatible with cyanide and high pH solutions.

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

Standard of Practice 4.8: *Implement quality control/quality assurance procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 4.8**
 not in compliance with

Basis for Audit Finding:

Hemlo has QA/QC programs for construction of new facilities and modifications to existing facilities; and QA/QC documentation exists for existing, constructed cyanide facilities as well. Evaluations and reports of the cyanide facilities concluded they have been constructed and are operated in general accordance with industry standards of practice and care. The reports and documents have been prepared by qualified professionals.

At the time of the 2020 Recertification Audit the final construction report for 2018 dam lift was not available due to work continuing into 2020. But 2019 dam lift work completed in 2019 did have final construction reports maintained on site. No additional modifications have occurred to the cyanide facilities in the review period.

The 2020 Recertification Audit verified that all of the QA/QC documents are being maintained on site and are available for review.

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

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 4.9**
 not in compliance with

Basis for Audit Finding

Hemlo has prepared and implemented written standard procedures for monitoring activities to evaluate the effects of cyanide use on wildlife, surface water and groundwater quality. The environmental programs have been prepared, approved and implemented by qualified professionals and include all appropriate sampling and analysis documentation. Review of field sampling forms, chain of custody and quality assurance data was completed. Environmental personnel responsible for collecting environmental samples are hired with a minimum of a college diploma in in a related field (e.g. environmental, fish/wildlife, chemical technology etc.) and are provided with in house training on sampling procedures.

Hemlo conducts monitoring at frequencies adequate to characterize the surface water and groundwater quality and wildlife mortalities. The operation's Industrial Sewage Works Certificate of Approval

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

presents the surface water and groundwater sampling schedule. WAD cyanide concentrations for the ETP effluent are monitored over each treatment season and water quality at Frank Lake (receiving water) is sampled four times each year. Hemlo conducts surface water sampling for cyanide monthly and quarterly at various monitoring locations site wide, including two monitoring points located immediately downgradient of the tailings facility embankments. Hemlo conducts semi-annual monitoring of groundwater quality surrounding the tailings impoundment. Wildlife monitoring is integrated into the daily inspections performed at the tailings facility and field personnel are trained to report wildlife observances.

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.***

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

Basis for Audit Finding:

Hemlo has developed written plans and procedures to decommission their cyanide facilities at the cessation of operations. The last update of the Williams Operating Corporation (WOC) Mine Closure Plan was prepared by AMEC and last updated in January 2019. The Plan includes the mill and process circuit, tailings storage facility, polishing pond and the ETP. There is a separate appendix “M” titled Hemlo Cyanide Decommissioning and Decontamination Plan that documents specific actions related to the cyanide facilities. The schedule is described in yearly increments starting within one year of a decision to commence close out.

The David Bell Mine Closure Plan (prepared by AMEC Earth and Environmental) changed status with Ontario Ministry of Northern Development and Mines (MNDM) on April 14, 2014 to Temporary Suspension to initiate activities within the closure plan. At the time of the re-verification the activities in the 2010 closure plan were approximately 80% complete.

MNDM requires that mine closure liabilities be externally reevaluated with every process modification and hence the 2019 Closure Plan was updated due to the switch to thickened tailings (starting in 2020, and Detox plant). This was an update to the 2016 closure plan.

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

**BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT**

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

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

Basis for Audit Finding

Hemlo is required by MNDM to review and update the cost when there are changes in planned disturbances. This most recent updates are reflected in the WOC January 2019 closure plan and the 2015 David Bell rehabilitation update. Barrick requires ongoing annual review and update of the Life of Mine Plan. Barrick internally requires closure costs to be updated yearly as part of its Accounting Policy #240.1 "Provisions for Environmental Rehabilitation"

Hemlo has developed a cost estimate for the funding of third party implementation of the decommissioning activities for Hemlo Mines. The cost estimates have been reviewed and approved by the MNDM. Hemlo has established approved financial mechanisms to cover the estimated costs for cyanide related decommissioning activities.

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

**BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT**

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.*

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

Basis for Audit Finding:

Cyanide monitoring control programs (documents dated January 2018) frame the overall approach for minimizing employee exposure to cyanide through identification, and measures to eliminate, reduce or control possible scenarios. This framework document outlines the sources and engineering/administrative control programs, overall work practices, use of PPE, mapping of HCN limits, exposure investigations, training responsibilities and overall management responsibilities.

In addition, Hemlo has developed written Standard Operating Procedures (SOPs) and Operating Plans that describe how cyanide related tasks are performed. These plans and procedures cover the safe operation of the entire cyanide management facilities at Hemlo. Individual task specific SOPs provide details for safe operation of cyanide equipment, PPE requirements and inspection requirements. Hemlo has also signage for PPE requirements located at the entrances of the process areas. In addition, cyanide training materials discuss PPE requirements. Pre-work inspections prior to liquid cyanide offloading are completed by process operators.

Barrick has a Management of Change (MOC) Procedure that includes the methods to be used to manage changes at all Barrick Gold operations and sites. The procedure includes minimum standards to ensure changes that impact safety, health, environment or productivity are identified, assessed, managed and appropriately communicated to all affected personnel. The MOC requires a functional area review that requires completion of a health impacts questionnaire where cyanide management can be indicated as a trigger to be assessed in the MOC and formal risk assessment (FRA). Changes are communicated to the workforce and training requirements updated where necessary. Hemlo has safety meetings to provide information and training to employees as well as solicit input from employees on worker safety issues.

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

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.*

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

Basis for Audit Finding:

Hemlo has determined the appropriate pH for limiting the evolution of hydrogen cyanide gas (HCN). The pH is monitored on a regular basis to maintain its concentration as recommended in the operating plans. Daily pH logs were reviewed to verify compliance. Fixed HCN monitors are installed in areas of potential exposure to cyanide. In addition, Hemlo requires the use of portable HCN meters to conduct work in areas where cyanide is present or for certain tasks. For example, prior to maintenance work or confined space entry, work areas are checked for HCN concentrations with a portable HCN meters. In addition Hemlo reviews cyanide monitoring data frequently to determine if additional tasks or stationary monitoring equipment should be installed.

The alarm levels for the HCN meters (fixed and portable) are set at 4.2 ppm low level alarm and 4.7 ppm high level alarm. All alarms require review and possible investigation and all alarms require evacuation from the area. In addition to an audible alarm, there are warning lights and an alarm display on the control room. HCN monitors are maintained, calibrated and inspected as recommended by the manufacturer. Records are kept and include calibration information.

Warning signs are in areas where cyanide is used to alert workers that cyanide is present, that smoking, open flames, eating and drinking are not allowed and that the necessary cyanide-specific PPE must be worn. Pipes carrying cyanide are marked and the direction of flow is indicated with arrows on the pipe. Signage for confined spaces at the tank entry points has also been placed.

Showers, low-pressure eye wash stations and non-acidic sodium bicarbonate fire extinguishers are located at strategic locations throughout the operation and are maintained, inspected and tested on a regular basis. MSDS are available through the Canadian Centre for Occupational Health and Safety website or in hard copy from Security. The MSDS and first aid procedures are in English, the language of the workforce. Hemlo has and implements procedures for accident and incident investigations associated with cyanide. These procedures include actions to determine the reason why the accident/incident occurred, and identify the corrective actions and/or controls to take to prevent similar occurrences in the future. Documentation was reviewed on site to demonstrate this process was functioning.

The cyanide addition points in leach tank was physically inspected from a safe distance. It was noted that the solution entering the tanks was coloured. From Cyanco's procedures and product information, it stated that the solution was dyed a red colour. What was observed at the time of the audit was a solution that was of a yellowish colour. This was confirmed by the mill personnel. They contacted Cyanco and determined the dye is added at the point of manufacture in Winnemucca, NV and that it was possible there was colour degradation, or perhaps a bad batch at that time. They committed to following up on this

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

matter.

Hemlo has developed a procedure for “Accident & Incident Investigations”. The procedure describes actions to 1) determine the reason why the accident/incident occurred, and 2) identify the corrective actions and/or controls to take to prevent similar occurrences in the future. The procedure also includes a form to be used for the investigation.

There were no reportable cyanide related incidents during the recertification period, however, there were a number of “Exceedance Reports,” where an HCN monitor may have alarmed, prompting investigation.

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

	<input checked="" type="checkbox"/>	in full compliance with	
The operation is	<input type="checkbox"/>	in substantial compliance with	Standard of Practice 6.3
	<input type="checkbox"/>	not in compliance with	

Basis for Audit Finding:

Hemlo has the use of oxygen delivery as the primary response to exposure followed by the use of a CYANOkits consisting of B-12 (hydroxocobalamin) that must be given intravenously. The kit requires immediate provision of oxygen followed by the intravenous in the CYANOkits. It was noted that external ambulance attendants are certified to administer intravenous if immediate attention is required. CYANOkits are located at the first aid station near security, and in the emergency response vehicle (ERV). Oxygen is also available at these stations and in the mill at designated first aid stations. All Mill employees have been trained in the use of oxygen delivery. In addition, Hemlo has a telephone and alarm system in the offloading area. Automated External Defibrillators (AED) are also located in the nursing station and in the ERV. All operators working with cyanide carry a radio to notify the control room or their supervisor in case of an emergency. Hemlo has implemented various inspection processes to ensure that first aid equipment is available and in good condition if needed.

Hemlo has developed written emergency response plans for cyanide exposures. These plans include emergency actions for HCN Elevated Levels, PPE, First Aid for Cyanide Poisoning including the provision of oxygen, Decontamination Procedures, Major Releases of Liquid, Transportation Events, Offsite and Onsite, Releases during Fire and Explosion Events, Pipe, Tank and Ruptures, and Overflow of Ponds and Impoundment Areas. The plan also includes emergency contact information, accounting for employees and mill evacuation.

Hemlo has a trained and equipped Emergency Response Team (ERT). In addition, Hemlo has an on-site medical unit that is staffed with a nurse practitioner. The nurse practitioner is qualified to provide medical/emergency assistance including the intravenous for the CYANOkits. The antidote kits are stored as per the manufacturer direction in the First Aid room.

If an emergency occurs a call for an ambulance is immediately placed and the emergency response vehicle (ERV) is deployed. An advanced Medical First Responder (usually a Security Person and/or

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

Nurse) will be contacted to assist with care and transfer of the patient to the ERV and then taken to the security gate where transfer to Wilson Memorial General Hospital (in Marathon Ontario) Ambulance Personnel will be made. The transfer from the site ERV to the Marathon Ambulance will be made on site and a First Responder will accompany the patient to the hospital.

Hemlo has been involved with Hospital staff regarding cyanide exposure awareness including providing a CYANOkit to the Hospital and training of emergency care workers on its use. Based on the legal system in Canada which provides free basic medical care, the local hospital is obligated to treat all patients without exception and therefore emphasis has been more placed on informing staff of the response requirements to cyanide exposures. There is also a letter of agreement between Hemlo and the Hospital stating that outlines formal arrangements for assistance.

Hemlo conducts mock emergency drills based on likely release/exposure scenarios to test response procedures and incorporate any deficiencies or lessons learned from the drills into its response planning. Verification was through interviews with safety and emergency response personnel and review of mock drill reports.

Mock cyanide emergency drills are being performed on a regular basis (annually) and incorporate lessons learned from the drills into its response planning. Auditors reviewed documentation of mock drills over the past three years to verify compliance.

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

**BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT**

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.*

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

Basis for Audit Finding:

Hemlo has developed several plans and SOPs that address emergency response to potential accidental releases of cyanide. Hemlo plans contain procedures for potential scenarios such as: 1) catastrophic release of hydrogen cyanide from storage or process facilities; 2) accidents during cyanide transportation; 3) releases during offloading; 4) release of cyanide during fires and explosions; 5) pipe, valve or tank ruptures; 6) overtopping of ponds and impoundments; 7) power failure; 8) uncontrolled seepage; 9) failure of cyanide treatment, destruction or recovery systems; and 10) failure of tailings impoundments, heap leach facilities and other cyanide facilities.

The cyanide supplier (Cyanco) and transporter (Quality Carriers) for Hemlo has been certified as fully compliant with the ICMC and its Emergency Response Plan addresses all the Code requirements for the transportation of cyanide. Cyanco is responsible for cyanide spills up to the point of offloading at the site. There is also a risk assessment of the cyanide transportation route provide by Cyanco to Hemlo. However, Hemlo includes procedures to respond to transportation related emergencies in the “Surface Emergency Procedures” Plan. The plan also includes emergency contact information, accounting for employees, and mill evacuation. The Contingency Plan for Notification of Downstream Users describes procedures to notify downstream communities in case of an emergency as well as actions to stop, contain, assess and mitigate a cyanide spill. Notification requirements are specific to each possible spill event and include notification of First Nation groups, government, local and communities.

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

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

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

Basis for Audit Finding:

Hemlo has involved its workforce and stakeholders in the emergency response planning through safety meetings and mock drills. Hemlo also meets with stakeholders to discuss its emergency response planning. Hemlo conducted a meeting with representatives of the Wilson Memorial General Hospital, the Marathon Fire Department, the Ontario Provincial Police (OPP), and the Marathon ambulance. These agencies were actively involved in the mock drill that was conducted in 2010 and were communicated with during the various mock table top drills that were conducted between 2016 and 2019. Hemlo also communicates with its workforce and stakeholders to keep the ERP current. Additional engagement with the external emergency response agencies was planned for later in 2020.

Hemlo has developed a pamphlet on Barrick’s Responsibility Use of Cyanide which was last distributed in 2016 during community meetings. The pamphlet includes Code Certification of Barrick mines, Worker Safety, Training, Manufacture, Transportation, Handling and Storage, Emergency Response, Cyanide and Gold Ore Processes, and Mine Closure. Opportunities for public input were also available during the David Bell Mine Closure Plan consultation period. Hemlo has its own on-site capabilities for Firefighting, Hazmat Clean-Up and Medical Emergency.

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

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

Basis for Audit Finding:

Hemlo has committed in its emergency response plans the necessary emergency response equipment and first aid to manage all cyanide incidents at the operation and to coordinate transportation to the nearest medical facility. The emergency response plans include the anticipated roles and responsibilities of the Superintendents and other emergency response team (ERT) members as well as an updated list of the members of the ERT. The plans also include call out procedures and 24-hour contact information for the management and emergency control team. Hemlo has a list of its emergency response equipment (e.g., fire, cyanide exposure and spill response equipment). Emergency equipment

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

and supplies are inspected on a regular basis.

Hemlo has its own on-site capabilities for Firefighting, HazMat Clean-up and Medical Emergency. Emergency responders are trained in Advanced Medical First Aid, HazMat and Firefighting and receive annual refresher training. There are also records of training for the Wilson Memorial General Hospital located in Marathon, Ontario, in the use of the CYANOkits confirming their involvement in the use of kits should an employee require treatment.

Mock cyanide emergency drills are being performed on an annual basis, and outside entities (hospital, fire) were actively involved in the 2010 drill. Staff noted that planning a major drill in 2020 was underway that would be involving outside emergency response agencies and the local hospital.

The “Surface Emergency Procedures” Plan provides detailed contact information and describes the anticipated roles of the hospital, ambulance, the Marathon Fire Department and OPP, if required, in case of an emergency.

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

	<input checked="" type="checkbox"/>	in full compliance with	
The operation is	<input type="checkbox"/>	in substantial compliance with	Standard of Practice 7.4
	<input type="checkbox"/>	not in compliance with	

Basis for Audit Finding:

The “Surface Emergency Procedures” plan includes procedures and contact information for notifying the management, regulatory agencies (e.g., Ministry of Labor (MOL), Ministry of Natural Resources, Mine Rescuer Officer, Ontario MOECP, Environment Canada and other regulatory agencies) and outside response providers (e.g., Marathon Fire Department, Manitouwadge Fire Department, Marathon ambulance, hospital and OPP). The “Surface Emergency Procedures” Plan includes procedures for communication with the media.

The Contingency Plan for Notification of Downstream Users includes procedures and contact information for notifying the communities of Black River (Heron Bay Reserve and Pukaskwa National Park) and White River, that may be impacted in case of a major spill from the site.

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

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

treatment chemicals.

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

Basis for Audit Finding:

The “Spill Prevention and Contingency Program” requires that immediate measures be taken to shutdown and isolate the source of the spill to minimize the spill quantity. Emergency containment structures would be constructed to minimize the extent of any releases to prevent released material from reaching natural drainages. The spilled solution will be removed and recovered back into the mill process or deposited in the tailings pond, as necessary. Soil samples will be taken following clean up to confirm complete removal of all cyanide contaminated materials. The plan describes what final cyanide concentration will be allowed in residual soil as evidence that the release has been completely cleaned up. Hemlo does not consider the use of chemicals such as sodium hypochlorite, ferrous sulfate and hydrogen peroxide to treat cyanide that has been released into surface waters.

The “Spill Prevention and Contingency Program” addresses the potential need for environmental monitoring to identify the extent and effect of a cyanide release. The plan includes a sampling protocol for spills to the environment. The protocol includes soils and water sampling procedures, parameters, sampling methodologies and potential sampling schedule and locations. The plan includes provisions for alternate water supply in the event the water plant goes down, the site has a contract with a water supplier. The plan was updated and revised in January 2019.

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

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

Basis for Audit Finding:

The emergency response plans are reviewed and evaluated annually through the Intellex document review system. Hemlo conducts mock drills on a regular basis to practice and prepare for emergencies and to provide insight into the effectiveness of its emergency response plans. The emergency response plans are also reviewed following any incident or mock drill requiring their implementation. No cyanide incidents occurred during this ICMC recertification period.

Emergency response plans including the Spill Prevention and Contingency Program (Developed in December 2015 and updated 2019) and the “Surface Emergency Procedures” Plan (2019) are reviewed

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

and evaluated annually through the Intelex document review system. Plans will also be reviewed and revised following mock drills and incidents as needed. Auditors reviewed revision date and revision number on the documents to verify compliance.

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

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.

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

Basis for Audit Finding:

Hemlo provides initial training and annual refresher training to all employees on Sodium Cyanide Site Awareness. This cyanide training includes Code Compliance requirements, uses of cyanide at Hemlo, location of cyanide, cyanide offloading, physical appearance, cyanide properties, cyanide exposure, precautions, HCN alarms, exposure limits, symptoms of exposure and emergency response. Hemlo retains all cyanide training records for all employees. The training modules have been updated annually in 2014, 2015, and 2017 to provide more in-depth coverage. Training records include the names of the employee and the trainer, the date of training, the topics covered (i.e. the training deck in most cases) and test results demonstrating an understanding of the training.

Hemlo conducts mock emergency drills based on likely release/exposure scenarios to test response procedures and incorporate any deficiencies or lessons learned from the drills into its response planning. Verification was through interviews with safety and emergency response personnel and review of mock drill reports.

Mock cyanide emergency drills are being performed on a regular basis (annually) and include both release and exposure scenarios. Auditors reviewed documentation of mock drills over the past three years to verify compliance.

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

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

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

**BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT**

Basis for Audit Finding:

In addition to job specific training all personnel in job positions that involve the use of cyanide and cyanide management (including offloading, production and maintenance) receive a “Sodium Cyanide Mill Training.” This training is more in-depth and covers where the cyanide is used in the process, physical appearance, cyanide properties, pH and HCN Evolution, cyanide exposure limits, routes of exposures and human effects, HCN monitoring (portable and fixed HCN monitors), HCN monitor alarms, safety showers, cyanide handling and offloading, PPE, leach circuit cyanide addition, maintenance procedures, cyanide SOPs and information, symptoms of exposure, emergency call procedures, first aid response (mild and severe poisoning), cyanide fire and cyanide spill response and clean up. Task-specific training is also provided prior to working with cyanide independently. Task specific training includes cyanide related SOPs and Operating Plans and covers all process circuits and activities. Training elements for each specific job are identified in training materials.

Hemlo requires and provides annual refresher for cyanide management to assure that employees continue to perform their jobs in a safe and environmentally protective manner. In addition, Hemlo discusses cyanide related health and safety issues as well as changes in cyanide management SOPs, if any, at safety meetings. Training effectiveness is verified through planned job observations where supervisors verify the competency of operators, and through written tests. Training records are retained throughout an individuals employment and were retrievable during the audit (electronically for the past 13 years).

Trainers as well as a number of managers are qualified trainers with the training department responsible for delivering training. These individuals are “Train the Trainer – Advanced” certified by North West Training & Development. The task specific training to new operators is provided by various process supervisors/trainers who have several years of experience in the mine process.

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

- | | | |
|-------------------------|--|---------------------------------|
| The operation is | <input checked="" type="checkbox"/> in full compliance with | Standard of Practice 8.3 |
| | <input type="checkbox"/> in substantial compliance with | |
| | <input type="checkbox"/> not in compliance with | |

Basis for Audit Finding

All mill employees including personnel responsible for unloading, mixing, production, and maintenance are trained in the procedures to be followed if cyanide is released. This role was re-assigned to the security department (17 employees that work on shifts) which now acts as first responders. In addition to first aid training, first responders have AED, HAZMAT Level I and II training, and delivery of oxygen training. Mill employees are receive “Annual Refresher Training” on cyanide which includes physical appearance, cyanide properties, pH and HCN Evolution, cyanide exposure limits, routes of exposures and human effects, HCN monitoring (portable and fixed HCN monitors), HCN monitor alarms, safety showers, cyanide handling and offloading, PPE, leach circuit cyanide addition, maintenance procedures, cyanide SOPs and information, symptoms of exposure, emergency call procedures, first aid response including decontamination (mild and severe poisoning), cyanide fire and cyanide spill response and clean

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

**BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT**

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The Emergency Response Superintendents (Emergency Response Coordinator) and members of the ERT are trained in the emergency procedures described in the “Surface Emergency Procedures” Plan. This team also acts as the mine rescue team and therefore have additional training associated with this function such as the use of SCBAs, high ropes etc. The training includes responding to elements in the cyanide emergency response plan such as emergency actions for HCN Elevated Levels, PPE, First Aid for Cyanide Poisoning including the Cyanide Antidote Use and Decontamination Procedures, Major Releases of Liquid, Transportation Events, Off Site and On Site, Releases during Fire and Explosion Events, Pipe, Tank and Ruptures, and Overflow of Ponds and Impoundment Areas.

The site also holds annual mock emergency drills which cover both worker exposure and environmental releases. The drills are evaluated to review the adequacy of these plans and update training where needed. Documentation of the debriefs are retained.

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

PRINCIPLE 9 – DIALOGUE

Engage in public consultation and disclosure.

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

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

Basis for Audit Finding:

Hemlo provides many avenues of opportunity for stakeholders to communicate issues of concern regarding the management of cyanide at the mine. Hemlo sponsors and conducts “Communities of Interest Meetings” with the participation of local communities. These meetings are typically held twice a year or as the need arises and members of the general public and government leaders are encouraged to attend and discuss issues related to the mining operation including the use of cyanide.

On a Corporate level Hemlo participates in the Corporate Responsibility Management System (CRMS) for managing communities of interest (COI). In 2018, community meetings were held with the various first nation communities prior to submittal. Recent meetings provided updates on mining operations, life of mine and other general issues. They had a working group for specific issues regarding the closure plan.

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

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

Basis for Audit Finding:

Hemlo creates opportunities to interact with stakeholders and provide them with information regarding cyanide management practices and procedures. Hemlo sponsors and conducts “Communities of Interest Meetings” with the participation of local communities. These meetings are typically held twice a year or as the need arises and members of the general public and government leaders are encouraged to attend and discuss issues related to the mining operation including the use of cyanide.

Opportunities for public input were also available during the David Bell Mine Closure Plan consultation period. The presentation on the David Bell Mine Closure Plan included decommissioning of cyanide facilities and in 2017 consultation on plans for cyanide detox were held.

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date

BARRICK HEMLO, ONTARIO
ICMC RECERTIFICATION AUDIT - SUMMARY REPORT

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

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

Basis for Audit Finding:

Hemlo has developed a pamphlet on Barrick’s Responsibility Use of Cyanide which was last distributed during a 2016 community meetings. The pamphlet has written descriptions of how their activities are conducted and how cyanide is managed, and made these descriptions available to communities and stakeholders.

The pamphlet includes Code Certification of Barrick mines, Worker Safety, Training, Manufacture, Transportation, Handling and Storage, Emergency Response, Cyanide and Gold Ore Processes, and Mine Closure. Barrick also has environmental personal present at community meetings to help answer any questions regarding Hemlo. Although Ojibway speaking First Nations were identified as local COI, English is the preferred language.

There is currently no requirement for Hemlo to report a CN exposure unless it has resulted in a first aid (it would then be recorded in a log book), or a medical aid (at which time it would be reported through the Workman’s Safety Insurance Board and the Ministry of Labour (MOL)). Based on interviews, and a review of documentation listed, there have been no reportable releases or reportable exposures which would have required Hemlo to make information publicly available since the initial certification audit. The “Spill Prevention and Contingency Program” requires the company to report all spills/releases exceeding the reportable quantity and conditions to provincial and federal regulatory agencies (e.g., Ontario Ministry of the Environment, Conservation and Parks (MECP), Environment Canada and others) as needed. Spill information reported to Ontario MECP is available upon request to public. Hemlo has not had any releases during the audit period and as such no information has been released to the public.

Hemlo Mine
Name of Facility


Signature Lead Auditor

May 10, 2021
Date