



August 10, 2017

ICMI RECERTIFICATION SUMMARY AUDIT REPORT

Goldcorp Inc. Porcupine Gold Mines, Timmins, Ontario, Canada

Submitted to:

International Cyanide Management Institute
1400 I Street, NW, Suite 550
Washington, DC 20005 USA

Goldcorp Inc.
Porcupine Gold Mines
Timmins, Ontario
Canada
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REPORT



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[Signature]
Signature of Lead Auditor

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1.0 SUMMARY AUDIT REPORT FOR GOLD MINING OPERATIONS

Name of Mine: Porcupine Gold Mines
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Name of Mine Operator: Porcupine Gold Mines Limited
Name of Responsible Manager: Marc Lauzier
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2.0 LOCATION DETAIL AND DESCRIPTION OF OPERATION

PGM consists of mining operations at Hoyle Pond underground, Dome underground and the Hollinger open pit, all of which feed the Dome processing facility.

2.1 Mine Location

PGM is located within the city limits of Timmins, Ontario, Canada. The PGM property area includes approximately 38,000 hectares of mining claims.

Access to the property is via paved road and all the principal properties straddle Highway 101 as it enters the City of Timmins from the east, 60 kilometres from the TransCanada Highway. The Dome mine and mill are located to the southwest of the town of South Porcupine, and the Hoyle Pond property is situated some 20 kilometres east of Timmins. The Hollinger open pit is located adjacent to the City of Timmins.

PGM is located within the Boreal Climatic Region which is characterized by contrasting seasons with warm, moderately humid summers and cold, dry winters. Temperatures range from -45 to +30 degrees Celsius. Mean rainfall is 600 millimetres and mean snowfall is 300 centimetres.

2.2 Mining Operations

In 2017, Porcupine marked its 107th year of continuous mine and mill operations, producing more than 67 million ounces of gold since production began. At the present time, most of the gold produced at PGM comes from Hoyle Pond, with the Dome Underground and Hollinger open pit contributing smaller portions. In 2016, a total of 3,490,800 tonnes of ore from the mining operations was sent to the Dome mill, producing 277,100 ounces of gold.

PGM is currently evaluating a potential large-scale open pit mine and related processing facility at the Dome mine, called Project Century. Project Century is reported to have the potential for extending mining at the Dome for another 10 to 15 years.

2.3 The Mill

At the Dome mill, ore from PGM's mining operations is crushed in three stages to produce a product size of 80% passing ½". Primary and secondary crushing is achieved in a 400 HP 42"x 65" gyratory and 400 HP 7' standard cone crusher, respectively. The latter feeds a 10' x 24' double deck screen in a closed circuit with a HP700 cone crusher. The screen undersize reports to two 4,000 tonne fine ore bins and the oversize is conveyed to a 75 tonne tertiary surge bin feeding the HP700 cone crusher. Due to the limited fine ore bin capacity, an external fine ore stockpile and reclaim conveyor system provide for supplemental mill feed during extended shutdowns of the crushing plants.

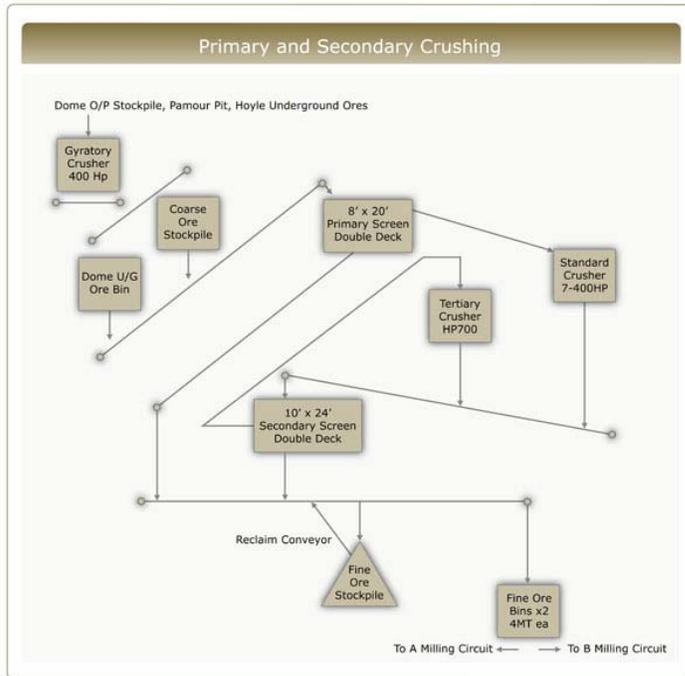


Figure 1: Primary and Secondary Crushing

Minus 1/2" material is fed to a grinding circuit that consists of two parallel grinding lines. Circuit A consists of a 10.5' diameter x 14' 700 HP rod mill and 13.5' x 20' 2200 HP ball mill while Circuit B consists of a 15' diameter x 20' 2200 HP rod mill and a 16' x 28.5' 4500 HP ball mill. Gravity gold is recovered by the use of five Knelson CD-30 Concentrators fed from the cyclone underflow. A Consep CS6000 Acacia Reactor is used to intensively leach the Knelson concentrate. The Acacia loaded solution has a dedicated electrowinning circuit. Gravity recovery accounts for up to 45% of the recovered gold, depending on ore type.



Figure 2: Grinding Circuit A



Figure 3: Grinding Circuit B

The cyclone overflows reports to a 155' thickener where the slurry density is increased to 55-60% solids. The thickener underflow feeds six leach tanks in series, which provide about 32 hours residence time.

Lime is added to the mill discharge pump boxes, thickener feed well, as well as staged addition points in the leach circuit to maintain a pH of 11.5 during cyanide leaching. Cyanide is added to the first tank of the leach circuit. Staged oxygen addition maintains oxygen levels for optimum leach kinetics. After leaching, the slurry passes over a vibrating screen to remove any grit before being pumped to the CIP circuit where solution gold is adsorbed by activated carbon contained in the CIP tanks. Loaded carbon is removed from the tanks and stripped. A fine carbon collection system is in place to collect any fine carbon generated during the transferring and sizing stages and is periodically shipped to a smelter for refining. The elution process transfers the gold from carbon into solution. The solution is passed through electrowinning cells where gold attaches itself to a cathode in the form of high-grade sludge. The cells are cleaned by power washing the sludge off the stainless mesh, and the sludge is filtered, dried and then refined in an induction furnace.

CIP tails pass over a vibrating screen to collect any carbon which may have leaked past the inter-stage screens. This carbon is collected and returned to the CIP circuit. The final tails are sampled using an automated full stream sampler before being pumped to the tailing impoundment.

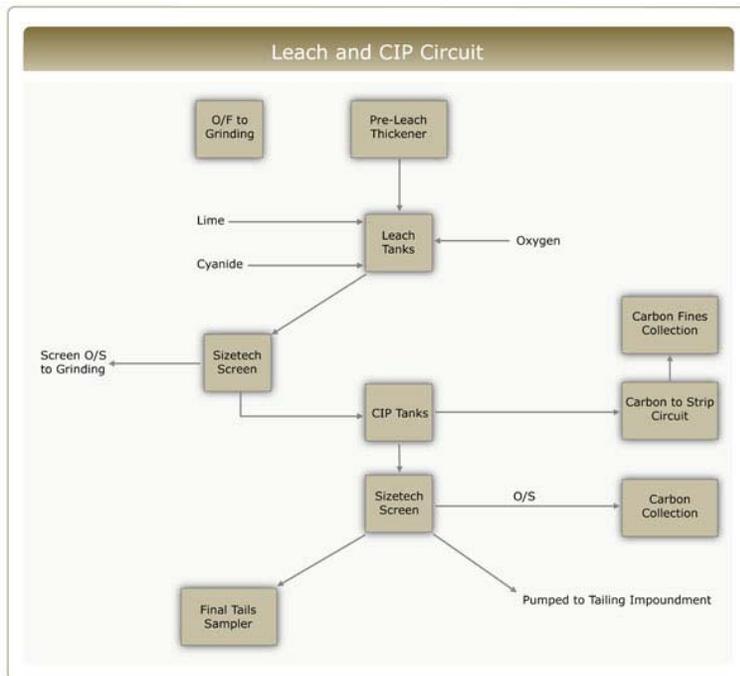


Figure 4: Leach and CIP Circuit

2.4 Tailings and Dam Construction

The No. 6 Tailing Management Area is located approximately 3 km to the south of the mill site and consists of a naturally occurring basin enclosed by topographic highs to the east and west of the facility, and by construction of a series of dams within the topographic lows around the perimeter.

Construction of the No. 6 tailing facility began in 1983 and has been raised in stages since that time with engineered dams constructed using local fill materials. In 1997, an emergency spillway was constructed on the east side of the north dam to replace the old style decant structure.

Tailing slurry is pumped from the mill to the No. 6 Tailing Management Area via a 22 inch pipeline that branches into two 18 inch pipelines at the north dam to allow for the tailing material to be distributed around the perimeter of the facility to maintain beaches. A pond is also maintained at the north end of the basin where the emergency spillway is located, along with a mill water reclaim system.

Currently, mill process water is comprised entirely of water reclaimed from the tailing impoundment; previously, reclaim water accounted for about 95% of the mill process water. Excess water in the impoundment is treated prior to being discharged to the environment. The Effluent Treatment Plant (ETP) operates each year between May and October, and uses sulphur dioxide and air to destroy any residual cyanide and ferric sulphate and lime are used to precipitate heavy metals. A 105' diameter x 16'-9" reactor clarifier separates the precipitated sludge which is pumped back into the tailing impoundment where it is co-deposited with the tailing. The clear overflow is further treated with EDTA and carbon dioxide to control to regulatory limits.



Figure 5: Dam Construction and Rehabilitation – 1



Figure 6: Dam Construction and Rehabilitation – 2



Figure 7: Tailings Dam Spillway and ETP

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SUMMARY AUDIT REPORT

Auditors Findings

PGM is: [X] in full compliance with The International Cyanide Management Code
[in substantial compliance with]
[not in compliance with]

No significant cyanide incidents or cyanide exposure incidents were noted as occurring during the recertification period.

Audit Company: Golder Associates Ltd.
Audit Team Leader: Evan Jones, Lead Auditor
Email: evanjones@golder.com

Name of Other Auditors

Table with 2 columns: Name, Position and Signature. Row 1: Linda Byron, Mining Technical Specialist, [Signature]

Dates of Audit

The Recertification Audit was undertaken over four days from March 20 to 23, 2017.
I attest that I meet the criteria for knowledge, experience and conflict of interest for Code Verification Audit Team Leader...
I attest that this Summary Audit Report accurately describes the findings of the verification audit.

Porcupine Gold Mines
Name of Facility
[Signature]
Signature of Lead Auditor
August 10, 2017
Date

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PRINCIPLE 1 – PRODUCTION – USE ALL OF THESE SUMMARIES TO UPDATE THE DAR SUMMARIES

Encourage Responsible Cyanide Manufacturing by Purchasing from Manufacturers that Operate in a Safe and Environmentally Protective Manner

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 1.1

not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 1.1, requiring the operation purchase cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide and to prevent releases of cyanide to the environment.

PGM exclusively purchases its sodium cyanide from Chemours (formerly E.I DuPont de Nemours) under a Supply Agreement which requires cyanide to be produced at a facility that has been certified as being in compliance with the Code. Chemours, the cyanide producer, was recertified as fully compliant on July 15, 2016. Independent cyanide distributors were not used.



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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

Standard of Practice 2.1

[] not in compliance with

Summarize the basis for this finding/deficiencies identified:

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

The Supply Agreement with Chemours clearly states Code responsibilities between producers and transporters. The Supply Agreement extends to any subcontractors and carriers that may be used by Chemours.

Standard of 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

Standard of Practice 2.2

[] not in compliance with

Summarize the basis for this finding/deficiencies identified:

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

The Supply Agreement between PGM and Chemours stipulates that transportation is the responsibly of Chemours, and that Chemours shall only engage Code certified distributors and transporters. Miller Transporters Inc. (Miller) was the primary transporter for PGM throughout the recertification period, until December 2016. Miller was recertified to the Code on June 26, 2014.

Starting in January 2017, Chemours has delivered cyanide to PGM through their Canada Cyanide Supply Chain, which was recertified to the Code on August 11, 2016.

PGM maintains copies of the bills of lading and delivery dockets that show the chain of custody.



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

Standard of Practice 3.1

not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Handling & Storage Practice 3.1, requiring that cyanide handling and storage facilities are designed and constructed consistent with sound, accepted engineering practices, quality assurance/quality control (QA/QC) procedures, spill prevention and spill containment measures.

The cyanide unloading and storage areas are located within the plant area and away from people and surface waters as far as practical. The unloading, mixing and storage facilities have not changed since they were found to be compliant in the 2014 recertification audit, with the exception of some minor concrete work within the offload pad area. A leak test was conducted that showed the containment remained intact following this work. The 2014 recertification audit reported an inspection by Chemours that verified the compatibility of existing facilities with liquid cyanide offloads, and the use of Chemours non-drip fitting to connect to pipelines.

The concrete cyanide unloading area is designed and constructed to contain, recover or allow remediation of any leakage from the tanker truck.

Two alarm systems are in place for the mix and holding tanks to prevent the overfilling of cyanide storage tanks. Monthly preventive maintenance is being undertaken, and the mix and holding tank systems are maintained in good working order.

The cyanide mixing and storage tanks are located on a concrete surface that prevents seepage to the subsurface. The concrete secondary containment for the cyanide mix and holding tanks appears to provide a competent barrier to leakage

The cyanide is stored with adequate ventilation to prevent the build-up of HCN gas, under a roof and off the ground. The central storage area and reagent mixing facilities are in secure areas where public access is prohibited and employee access is restricted. The cyanide is stored separately from incompatible materials through packaging and secondary containments which prevent mixing.



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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 **Standard of Practice 3.2**

not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Handling & Storage Practice 3.2 requiring that cyanide handling and storage facilities are operated using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

Bulk cyanide is delivered in Excel trailers. Solid cyanide briquettes in the trailers are dissolved by circulating mix water through the Excel trailers and into the mixing tank. Once the cyanide has been dissolved the trailers are removed from site for reuse.

PGM has developed and implemented plans and procedures to prevent exposures and releases during cyanide unloading and mixing activities that cover: the operation of all valves and couplings; handling cyanide containers without rupturing or puncturing; timely clean up of spills; and providing for safe unloading by requiring appropriate personal protective equipment and having an observer. The Site Emergency Response Plan and the Cyanide Emergency Response Plan identify responsibilities of the emergency responders, and include inspection procedures for emergency equipment. Cyanide-related training is provided to emergency responders, and emergency call-out procedures are tested weekly by Security.

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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.

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 4.1

not in compliance with

Summarize the basis for this finding/deficiencies identified:

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

PGM has developed a comprehensive set of standard operating procedures for mill operations, pipelines, pumps and tailings facilities that include several procedures directly related to cyanide handling and management, as well as the safe performance of maintenance and optional activities where cyanide is encountered. These include documents that summarize the assumptions, parameters and regulatory requirements for the operation of the cyanide facilities.

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

The operation has a management of change procedure to identify when changes in a site's processes or operating practices may increase the potential for the release of cyanide and to incorporate the necessary release prevention measures.

The operating manuals and procedures include requirements and procedures to maintain freeboard and design storage capacity in the tailings pond, inspection and operation of cyanide equipment, and preventive maintenance requirements. The operating manuals and procedures identify also describe the action to be taken in case of planned or emergency shutdown and restart of all plant related facilities.

Inspections of cyanide unloading, mixing and process areas are conducted and documented on a frequency sufficient to assure they are functioning as intended, including daily in operator inspections, and before each mix event. Secondary containment systems are inspected on a weekly basis. Non-destructive testing (NDT) is performed on the mix and holding tanks, and other tanks containing cyanide solutions. PGM's inspection program includes four inspections of the tailings lines and dam per day (two per shift).



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Inspections are documented depending on the types and formats of inspection forms used, and include the date of the inspection, the name of the inspector, and any observed deficiencies. The nature and completion date of corrective actions are also documented on the inspection form.

All preventive maintenance activities are tracked in PGM's maintenance management system. PGM has developed PM programs in accordance with manufacturers' recommendations and best practices to assure the continuous functioning of cyanide equipment.

PGM has emergency generator systems to run critical mill equipment (the Mill generator) and the reclaim water system (the Reclaim generator) during power outages.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 4.2

not in compliance with

Summarize the basis for this finding/deficiencies identified:

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

The operation conducts tests and assays to determine appropriate cyanide addition rates for different ore types, and adjusts addition rates as necessary based on automatic and manual monitoring of cyanide and gold concentrations.

Cyanide addition occurs at the A1 leach tank, the strip circuit, and the acacia circuit; other addition points are available but rarely required. Cyanide in tailings typically is less than 10 ppm WAD.

PGM has implemented a strategy to controls its cyanide addition based on monitoring of the cyanide consumption both using the TAC analyser and the manual operator sampling reports, through addition of cyanide at the A1 leach tank and acacia circuit. Cyanide addition rates typically result in cyanide in tailings of less than 10 ppm WAD.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 4.3

not in compliance with

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Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 4.3, requiring the operation to implement a comprehensive water management programme to protect against unintentional releases.

PGM has developed a comprehensive, probabilistic water balance that is updated on a monthly basis.

The water balance addresses the rate of deposition of tailings (there are no heap leach facilities at PGM); design storms; the quality of the input data through statistical evaluation; the impact of run-off from the catchment; the impact of freezing and thawing; losses due to evaporation and seepage; and the capacity of the ETP. The impact of power outages has been predicted as well. The water balance is used as a management tool to plan dam wall and spillway sill raises.

Regular inspections of the pond water level, pond area and bathymetric surveys are undertaken and the ponds and impoundments are operated with adequate freeboard above the maximum design storage capacity. Precipitation is measured at nearby Timmins airport and used to update the water balance annually.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 4.4

not in compliance with

Summarize the basis for this finding/deficiencies identified:

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

There are no open waters where WAD cyanide exceeds 50 mg/L at PGM. This was demonstrated through a review of analytical data.

The lack of wildlife mortalities reported at the site indicates that maintaining a WAD cyanide concentration of 50 mg/L or less in open water is effective in preventing significant wildlife mortality.

There are no heap leach facilities or solution ponds at the site.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 4.5

not in compliance with

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Summarize the basis for this finding/deficiencies identified:

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

The WAD cyanide concentration of the direct discharge to the Porcupine River was consistently below 0.5 mg/L.

There is no mixing zone permitted in the jurisdiction. WAD cyanide concentrations (which have been correlated to Free cyanide) at the discharge from the effluent treatment plant (ETP) are consistently <0.022 mg/L.

There is no 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 **Standard of Practice 4.6**

not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 4.6, requiring the operation implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of groundwater.

The hydrogeology of the tailings dam area has been studied to ensure its suitability to minimize impacts on groundwater. The dam walls include a low permeability geomembrane barrier. There are no recognized beneficial uses of groundwater beneath or immediately downstream of the operation.

A network of groundwater monitoring wells has been installed and is sampled regularly to ensure groundwater is not being impacted by the operation. Monitoring of WAD cyanide in groundwater has shown the concentration to be below detection levels (<0.005mg/L).

The site does not use mill tailings for backfill.

Cyanide levels in groundwater have not risen above levels protective of beneficial use; therefore, PGM is not undertaking any remediation of groundwater.

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

in full compliance with

The operation is in substantial compliance with **Standard of Practice 4.7**

not in compliance with

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Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 4.7 requiring that the operation provide spill prevention or containment measures for process tanks and pipelines.

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

- Cyanide mixing and holding tanks;
- Leach tanks; and
- CIP tanks.

Secondary containments for cyanide unloading, storage, mixing and process tanks are sized to hold 110% of the largest tank within the containment. All process tanks and pipelines have adequate secondary containment. There are no tanks without secondary containment.

Procedures and engineering systems are in place to prevent discharge to the environment of any cyanide solution or cyanide-contaminated water that is collected in the secondary containment area. The mill building and secondary crusher building are designed such that releases or spills of cyanide solutions are collected in secondary containments and are not released to the environment. Tailings pipelines are designed as pipe in pipe, or within containment berms / ditches to collect leaks or spills and prevent releases to the environment, and to ensure protection of surface water.

Any materials collected in secondary containments would ultimately be discharged to the tailings. Emergency response plans include procedures for handling releases of cyanide solutions.

Cyanide pipelines do not present a risk to surface waters.

All tanks and pipelines are constructed with compatible materials such as carbon steel and HDPE, or stainless steel components.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 4.8

not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 4.8 requiring that operations implement QA/QC procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

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QA/QC assurance programs for construction of all cyanide facilities were found to be in compliance with Code in the 2014 recertification audit. Since that time, facility modifications have been undertaken with QA/QC programs developed, implemented and reported on by qualified persons. Records of QA/QC programs are maintained at PGM.

In two instances where QA/QC programs were not in place, a professional engineer signed reports that describe the facilities as being suitable for continued operations without risk of release or exposure to cyanide solutions.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 4.9

not in compliance with

Summarize the basis for this finding/deficiencies identified:

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

The operation has written standard procedures for monitoring activities for wildlife, surface and groundwater quality. These procedures have been prepared by appropriately qualified persons.

The procedures contain information on how and where samples should be taken, sample preservation techniques, chain of custody procedures, shipping instructions, and cyanide species to be analyzed.

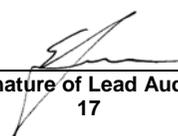
The operation monitors for cyanide (WAD, Total and Free) in discharges of process water to surface water and in surface and groundwater at appropriate monitoring locations down-gradient of the site.

PGM inspects, documents and reports any wildlife mortality that may be associated with cyanide.

Monitoring is conducted at frequencies adequate to characterize the medium being monitored and to identify changes in a timely manner.

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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.

[X] in full compliance with

The operation is [] in substantial compliance with Standard of Practice 5.1

[] not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 5.1 requiring that the site plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.

The operation has a Closure Plan that includes plans for decommissioning cyanide facilities. This is supported by cyanide equipment decontamination procedures.

The plan includes a 12 month implementation schedule for the decommissioning works.

The decommissioning plan is updated from time to time in accordance with the requirements of the Ontario Ministry of Northern Development and Mines. An update is expected in 2017.

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

[X] in full compliance with

The operation is [] in substantial compliance with Standard of Practice 5.2

[] not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with the Standard of Practice 5.2 requiring that the site establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.

The Closure Plan includes a cost estimate and schedule for third party decommissioning of the site including all cyanide facilities, equipment decontamination and wastewater treatment.

The 2011 closure cost estimate was revised in 2016 in preparation for a 2017 revised Closure Plan.

An automatically renewing letter of credit is issued to the Ontario Ministry of Northern Development and Mines to cover the cost of 3rd party decommissioning of the mine.



3.0 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 Standard of Practice 6.1

not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 6.1 requiring that the site identify potential cyanide exposure scenarios and take measures as necessary to eliminate, reduce and control them.

PGM has developed Standard Operating Procedures and other procedures which identify potential exposure pathways for cyanide, and specify the working procedures and PPE required to eliminate, reduce and control them. The procedures also require pre-work inspections.

A Change Management procedure is in place to ensure that proposed process and procedural changes are reviewed for and consider potential impacts to the environment and worker health and safety.

Worker input is sought while developing or modifying work procedures, through safety huddles and crew meetings, and review / sign-off processes.

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

in full compliance with

The operation is in substantial compliance with Standard of Practice 6.2

not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 6.2 requiring that the site operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.

The site has determined appropriate pH (12.5 in the mix tank, and 11.5 elsewhere) for operating the facility to avoid HCN generation.

The site uses both fixed and portable HCN monitors to ensure that worker exposure to HCN gas is limited. These alarm when the concentration of HCN reaches 2 ppm which triggers warning alert, and again when it reaches 3.7 ppm, which triggers an evacuation and emergency response.



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Areas of potential exposure to HCN have been identified and indicated with signage. Standard operating procedures have been developed to minimize the risk to workers from HCN gas, and include PPE requirements and portable HCN monitoring requirements.

The fixed HCN monitors are calibrated quarterly in accordance with the manufacturer's recommendations. Portable HCN monitors are bump tested each time they are used, and calibrated annually or as needed by an external contractor. Records of calibration are kept on site for at least 1 year.

Warning signs, no eating, no drinking, and no smoking signs have been placed in all areas where cyanide may be encountered, and on all cyanide facilities warning that the tanks and pipes may contain cyanide solutions. Tailings area signage warns that all liquids contain cyanide.

Emergency showers and eye wash stations are located at locations around the plant where there is a risk of cyanide exposure. These are checked regularly on operator tours. Type ABC fire extinguishers (with nitrogen propellant) were located at numerous places around the plant. The inspection records were attached to the fire extinguishers.

SDS for solid and liquid cyanide are available electronically in English (the language of the workforce).

Procedures are in place to investigate the response to real and mock cyanide incidents, and to modify procedures in the light of any findings from the investigations.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 6.3

not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 6.3 which requires that the site develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

PGM has oxygen therapy and cyanide antidote kits (Cyanokits) required for treating potential victims of cyanide exposures and trained personnel capable of administering the antidote. PGM has specific written plans for dealing with cyanide exposures, updated to reflect new antidote procedures. First aid equipment is regularly inspected to ensure it will function correctly and remains within its useful life. Cyanide delivery drivers are issued radios for communications purposes during offloading; radios, telephones, and other emergency communication devices (e.g.: alarms) are readily available at storage and mixing locations.

PGM has on site facilities, including a site nurse and clinic to provide first aid to staff exposed to cyanide. PGM has a procedure to transport cyanide exposure victims to Timmins District Hospital.

PGM has arrangements in place through the Timmins Fire Chief with local emergency responders such as the ambulance service and Timmins District Hospital, who have confirmed they have adequate training and facilities to deal with victims of cyanide exposure.

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Mock drills are performed to test the emergency response procedures developed at site, and to incorporate learning's from these drills into revised programs and action plans.

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.

[X] in full compliance with

The operation is

[] in substantial compliance with

Standard of Practice 7.1

[] not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 7.1 which requires that the site prepare detailed emergency response plans for potential cyanide releases.

PGM has a variety of comprehensive written emergency response plans and related procedures to deal with potential cyanide releases.

The plans consider all reasonably foreseeable cyanide failure scenarios, including the operations role in responding to transportation incidents.

The plans address the potential need for evacuations of both the site and potentially affected communities. It specifies procedures for the use of specialised first aid equipment, antidotes and measures to control cyanide releases.

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

[X] in full compliance with

The operation is

[] in substantial compliance with

Standard of Practice 7.2

[] not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 7.2 which requires that the site involve site personnel and stakeholders in the planning process.

PGM has involved the workforce in the development of the emergency response plans, and seeks the review and sign-off of the Timmins Fire Chief on the plans, who signs on behalf of the community and other emergency response service providers. PGM has also reviewed the ERP with Chemours, who have responsibility for the transport of cyanide.



ICMC RECERTIFICATION SUMMARY AUDIT REPORT

PGM has made potentially affected communities aware of the risks associated with cyanide release through a series of public events and advisory committees.

Local emergency responders have been involved in the emergency planning process.

PGM consults and communicates with stakeholders to ensure the emergency response plan is kept current.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 7.3

not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM Is in Full Compliance with Standard of Practice 7.3 which requires that the site designate appropriate personnel and commit necessary equipment and resources for emergency response.

PGM has designated appropriate staff equipment and other resources for emergency response.

PGM has confirmed that outside responders understand their roles in an emergency situation and their willingness to be involved in mock drills. Drills have been conducted with third parties.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 7.4

not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 7.4 which requires that the site develop procedures for internal and external emergency notification and reporting.

The ERP and related documents provide details on procedures for notifying management, outside responders and regulatory authorities.

The ERP and related documents give details for contacting affected communities, which will be handled through the Timmins Fire Chief and the Ontario Provincial Police. The Mine General Manager is responsible for dealing with the media.



ICMC RECERTIFICATION SUMMARY AUDIT REPORT

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 7.5

not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 7.5 which requires that the site incorporate in response plans and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals.

The emergency response plans specify remediation measures required for a range of solid and liquid cyanide releases, including tailings. These measures included detailed work procedures, clean up requirements and disposal measures.

The use of sodium hypochlorite, ferrous sulphate and hydrogen peroxide are specifically prohibited for the neutralisation of cyanide that may enter into surface water.

The emergency response plans and other procedures/associated documents give details of the locations and frequencies of required environmental monitoring, and the sampling and analytical methods to be used.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 7.6

not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM Is in Full Compliance with Standard of Practice 7.6, which requires that the site periodically evaluate response procedures and capabilities and revise them as needed.

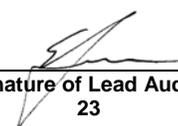
PGM updates the ERP at least annually.

Mock cyanide emergency drills are performed at least annually.

The mine has a system to review the results of emergency responses and mock emergency drills and updates procedures accordingly.

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PRINCIPLE 8 – TRAINING

Train Workers and Emergency Response Personnel to Manage Cyanide in a Safe and Environmentally Protective Manner

Standard of Practice 8.1: Train workers to understand the hazards associated with cyanide use.

[X] in full compliance with

The operation is

[] in substantial compliance with

Standard of Practice 8.1

[] not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 8.1 which requires that the site train workers to understand the hazards associated with cyanide use.

PGM trains all personnel who may encounter cyanide in cyanide hazard recognition, and all workers in the mill in a more advanced cyanide awareness course.

Periodic cyanide hazard recognition refresher training is undertaken.

Training records are retained on the SAP database system and in the training department.

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

[X] in full compliance with

The operation is

[] in substantial compliance with

Standard of Practice 8.2

[] not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 8.2 which requires that the site train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.

The operation trains workers to undertake cyanide related tasks safely with respect to themselves, their colleagues, the community and the environment.

The training materials identify the elements necessary for the safe performance of each job, based on the sites safe working procedures.

Appropriately qualified personnel deliver the training, with accredited external specialists engaged as required.



ICMC RECERTIFICATION SUMMARY AUDIT REPORT

Employees are trained prior to working with cyanide, with assessment undertaken to ensure they understand the requirements.

Refresher training is undertaken regularly and as identified from planned task observations.

The effectiveness of training is assessed through written tests on each training module, and through planned task and crew observations.

The competency of the trainers themselves is also assessed through workplace observations.

Detailed records of training are retained as hard copy and on the SAP database.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 8.3

not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 8.3 which requires that the site train appropriate workers and personnel to respond to exposures and environmental releases of cyanide.

All mill workers and contractors are trained in the appropriate emergency response for worker exposure and environmental releases of cyanide.

Emergency responders are trained in cyanide decontamination and first aid procedures and participate in mock emergency response drills.

Emergency responders are trained in the procedures included in the emergency response plan concerning cyanide, and in the use of appropriate equipment.

Offsite emergency responders have been made aware of their responsibilities and have confirmed they are prepared to deal with cyanide related emergencies.

Refresher training in cyanide emergency response is undertaken regularly.

Emergency response mock drills are undertaken regularly.

Emergency response mock drills are evaluated and lesson learnt captured and incorporated into updated procedures.

Emergency response training records are retained either as paper copy or on electronic database systems.

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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.

[X] in full compliance with

The operation is [] in substantial compliance with Standard of Practice 9.1

[] not in compliance with

Summarise the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 9.1 which requires that the site Provide stakeholders the opportunity to communicate issues of concern.

PGM has a number of community engagement initiatives including community tours, a Resource Development Agreement committee, a Hollinger Pit Community Advisory Committee, and publically accessible feedback forms. Opportunities are provided for community and First Nations input on the Closure Plan revisions.

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

[X] in full compliance with

The operation is [] in substantial compliance with Standard of Practice 9.2

[] not in compliance with

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 9.2 which requires that the site initiate dialogue describing cyanide management procedures and actively address identified concerns.

PGM has a number of community engagement initiatives including the RDA and HPCAC committees, tours that are open to the public, and responding to feedback received online from the public. Meeting minutes suggested that a broad range of environmental, safety, and regulatory issues are reviewed in these meetings, and that information regarding cyanide is provided on tours.

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

[X] in full compliance with

The operation is [] in substantial compliance with Standard of Practice 9.3

[] not in compliance with



ICMC RECERTIFICATION SUMMARY AUDIT REPORT

Summarize the basis for this finding/deficiencies identified:

PGM is in Full Compliance with Standard of Practice 9.3 which requires that the site make appropriate operational and environmental information regarding cyanide available to stakeholders.

PGM makes operational and environmental information regarding cyanide available through its website and communications at stakeholder committee meetings and public tours.

The majority of the local population is literate and so written information is considered adequate.

Information regarding cyanide releases or exposures would be made available through a number of regulatory and corporate communications channels; PGM has not had any releases of this nature.

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Established in 1960, Golder Associates is a global, employee-owned organization that helps clients find sustainable solutions to the challenges of finite resources, energy and water supply and management, waste management, urbanization, and climate change. We provide a wide range of independent consulting, design, and construction services in our specialist areas of earth, environment, and energy. By building strong relationships and meeting the needs of clients, our people have created one of the most trusted professional services organizations in the world.

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