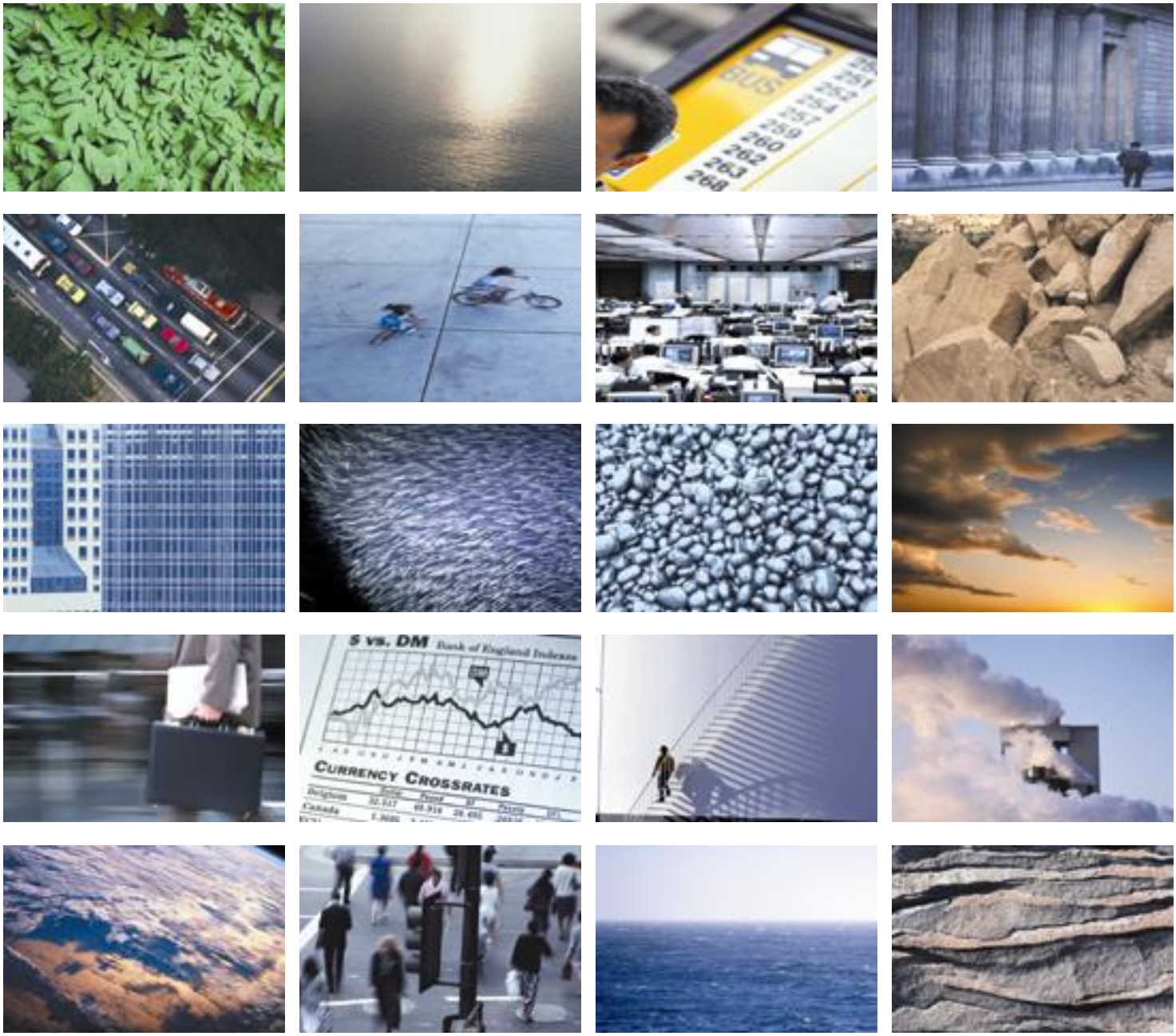

PIERINA MINE– BARRICK GOLD CORPORATION

Cyanide Code Audit
Summary Audit Report

PROJECT NO. 0351773

JANUARY 2018

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1 GENERAL SUMMARY

1.1 INFORMATION ON THE AUDITED OPERATION

Name of Mine: Pierina Mine
Name of Owner: Minera Barrick Misquichilca S.A.
Name of Mine Operator: Minera Barrick Misquichilca S.A.
Name of Responsible Manager: Rodolfo Baca, General Manager
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1.2 LOCATION DETAIL AND DESCRIPTION OF OPERATION

The Pierina Mine (from now onwards "Pierina" or "the Site") is located in the District of Jangas, Province of Huaraz, Department of Ancash in the Cordillera Negra of the Andes Mountains, in the north-central part of Peru, approximately 10 kilometers to the northwest of the city of Huaraz. Pierina is located at an elevation ranging from 3,800 to 4,100 meters.

The mine is accessed by road from the town of Jangas (16 kilometers), north of Huaraz. The mining site is located within the Rio Santa Basin and sub-basins, all of which drain to the east into the Rio Santa. Pierina is located across a deep valley from the Huascarán National Park, which is located in the Cordillera Blanca of the Andes and is a designated United Nations Educational, Scientific and Cultural Organization (UNESCO) Natural Heritage site. The mine has no direct or indirect impact on said Park. The climate in the project area is characterized by defined rainy and dry seasons. The rainy season extends from November to April when approximately one meter (m) of rainfall occurs.

Pierina comprises an open pit mine, a waste rock storage area, a valley-fill heap leaching facility (the Pacchac Valley heap leach facility), process and storm water pond system, acid rock drainage and cyanide detoxification treatment plant, polishing pond, barren solution treatment plant, plant detox, a Merrill Crowe processing plant to recover gold, silver and mercury as a by-product, the construction of Phase 7 that included; the expansion of the leach pad, installation of geomembrane raincoat liners, associated pipelines, and improvements was made in the South Diversion Ditch (SDD). The open pit has been developed by conventional mining methods using trucks and loaders to extract gold-bearing ore. The waste is transported by trucks to a storage area designed specifically for this purpose. Ore is placed on the valley fill heap leach facility by truck. The valley fill heap leach facility is fully lined with geomembrane and employs a cross-valley dam to impound pregnant process solutions within the placed ore. Gold is recovered using conventional methods of heap leaching with dilute sodium cyanide solution. The auxiliary facilities required for the mining operation include administration offices and buildings, laboratories, warehouses, maintenance shops, emergency facilities, electric power distribution, water supply, roads, fuel and reagent storage tanks, drainage structures, and explosive storage areas.

Pierina has developed and implemented a comprehensive process water balance program that includes monitoring and regular updates to track and plan water management activities. Pierina has an emergency response team that is trained to respond to onsite fires, chemical spills and worker exposures to cyanide. The mine is currently in active closure stage, where the mining pit slopes are being stabilized; as a result additional (incidental) mineral is being recovered and processed.

1.3 OVERALL AUDITOR'S FINDING

In the past three years, Pierina has only had one cyanide related incident; Pierina has a procedure for the investigation of incidents which gives guidelines on finding root causes of accidents and to determine corrective actions and communications to prevent similar reoccurring events; uses the tap root tracking system, which allows a safety incident and near miss to be recorded, evaluated and followed through to remediation. The incident occurred on 3 February, 2016, a Minera Barrick Misquichilca operator ("MBM" from now onwards) shut off one Royal box valve, which caused that pregnant leach solution (PLS) in the Royal Box overflowed and reached the South Diversion Ditch (SDD), this was immediately detected by process personnel who diverted the flow to the polishing pond as preventive measure. This incident was reported to ICMI and to the environmental agency. Correction measures included improvements in the Royal Box valves and the SDD.

This operation is

- √ in full compliance
- □ in substantial compliance *(see below)
- □ not in compliance

With the International Cyanide Management Code.

* For mining operations seeking Code certification, the Corrective Action Plan to bring an operation in substantial compliance into full compliance must be enclosed with this Summary Audit Report. The plan must be fully implemented within one year of the date of this audit.

Audit Company: ERM Peru S. A.
Audit Team Leader: Juan Carlos Rangel Lopez
E-mail: juancarlos.rangel@erm.com

Names and Signatures of Other Auditors:
Christian Cardenas (Mining Technical Auditor) _____
Date(s) of Audit: June 26 to 28, 2017

I attest that I meet the criteria for knowledge, experience and conflict of interest for Code Verification Audit Team Leader, established by the International Cyanide Management Institute and that all members of the audit team meet the applicable criteria established by the International Cyanide Management Institute for Code Verification Auditors.

I attest that this Summary Audit Report accurately describes the findings of the verification audit. I further attest that the verification audit was conducted in a professional manner in accordance with the International Cyanide Management Code Verification Protocol for mining operations and using standard and accepted practices for health, safety and environmental audits.

Pierina Gold Mine	_____	January 03, 2018
Name of Mine	Signature of Lead Auditor	Date

2 SUMMARY REPORT

This operation is

√ in full compliance
□ in substantial compliance
□ not in compliance

With the International Cyanide Management Code.

2.1 PRODUCTION: ENCOURAGE RESPONSIBLE CYANIDE MANUFACTURING BY PURCHASING FROM MANUFACTURERS THAT OPERATE IN A SAFE AND ENVIRONMENTALLY PROTECTIVE MANNER.

2.1.1 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

Summarize the basis for this Finding/Deficiencies Identified:

Pierina is in full compliance with Standard of Practice 1.1 which requires that the site 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.
Since 2009 Orica has supplied cyanide to Pierina. Orica produces cyanide at their Yarwun Plant in Queensland, Australia. Orica's production operations at their Yarwun Plant in Queensland, Australia were first certified as code compliant on 28 November 2006; the facility has maintained the certification with the latest recertification being granted in February 2017.
According to the personnel interviewed there were not events that caused interruption of service from Orica and no other providers were used. No deviations were noted during the review of the procurement records. Pierina has bought cyanide from a Code compliant manufacturer for the duration of this recertification period.

2.2 *TRANSPORTATION: PROTECT COMMUNITIES AND THE ENVIRONMENT DURING CYANIDE TRANSPORT.*

2.2.1 *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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 2.1 which requires that the site establish clear lines of responsibility for safety, security release prevention, training and emergency response in written agreements with producers, distributors and transporters.
Since 01 January 2009, Pierina has bought its cyanide from Orica under a cyanide purchase contract The Cyanide Supply Contract between Pierina and Orica contains clauses requiring that the supply of cyanide (i.e. manufacture and supply chain) be fully compliant with the Code.
According to the reviewed contract, Orica is responsible for itself and its subcontractors, including transportation, for Code compliance. The contract also establishes the requirements for manufacturing, handling, storing, packaging labeling, transporting and emergency response to be compliant with the Code.

2.2.2 *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

Summarize the basis for this Finding/Deficiencies Identified:

Pierina is in full compliance with Standard of Practice 2.2 which requires that the operation require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.
Since January 2009 the cyanide supply contract for the mine is with Orica. The cyanide supply contract requires that the supply chain be certified as fully compliant under the Code. The Code requires that adequate emergency response plans and capabilities are in place.
Transport from Yarwun to the Port of Brisbane is covered under Orica's Australia supply chain certification dated 05 October 2010 and the Latin

America supply chain that cover from Brisbane port to the port of Callao in Peru, and distribution facility in Ventanilla - Peru
Stiglich Transportes S.A. (Stiglich) was used as transporter until September 2014; then, it was replaced by Orica with DCR Mineria y Construcción (DCR). Stiglich was certified in full compliance during the period that they provided services to Orica/Pierina. DCR has been certified in full compliance during the period they have provided services to Orica/Pierina.
The procurement department at Pierina keeps copies of the relevant documentation of the supply chain from Yarwun and the 'Guía de Remisión Remitente' showing the chain of custody from Callao to the mine to the mine site which demonstrates that cyanide is delivered to site via a Code certified supply chain and this documentation was made available to the auditors.

2.3 HANDLING AND STORAGE: PROTECT WORKERS AND THE ENVIRONMENT DURING CYANIDE HANDLING AND STORAGE.

2.3.1 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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 3.1. Pierina has designed and constructed unloading, storage and mixing facilities consistent with sound, accepted engineering practices, quality control/quality assurance procedures, spill prevention and spill containment measures.
Pierina receives solid NaCN (Sodium cyanide) briquettes in one-ton "bag-in-box" containers. The containers are stored in a secure, concrete lined and covered building. The design of the solid sodium cyanide storage facility meets local jurisdictional requirements and is based on sound and appropriate engineering practices. No modifications/changes have been made to the unloading, storage and mixing facilities since the initial certification audit. And the facilities have been maintained in good working order. Solid sodium cyanide is loaded into a secure cyanide storage warehouse located away from people and surface waters. Liquid cyanide is stored in a locked room within the Merrill Crowe process area and the area has restricted access. The solid sodium cyanide storage area ventilation has been evaluated by the Loss Control Department to determine the overall ventilation performance in the warehouse; the ventilation systems include fans venting room air to the outside as well as ventilation of the mixing tank. The walls to the warehouse have partial plastic covering to prevent the wind-blown inflow of rainwater. Pierina has isolated the cyanide solid and the cyanide solution storage areas away from incompatible chemicals such as acids and oxidizers. In addition Pierina cyanide mixing storage tanks have level indicators and high-level alarms as well as automatic valve-shutdown devices that prevent the

overfilling. In addition, the cyanide levels within the tanks are monitored from the control room, also cyanide mixing and storage tanks are located on concrete pads and within concrete curbed containment that prevents seepage to the subsurface. During the site inspection by the auditors the facilities were found to be in good order.
The site is currently undergoing progressive closure and so the rate of cyanide usage has been reduced significantly. The cyanide warehouse and the mixing and storage areas are within concrete containment to contain releases and precipitation that may contact cyanide.

2.3.2 *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

Summarize the basis for this Finding/Deficiencies Identified:

Pierina is fully compliant with Standard of Practice 3.2. Pierina operates unloading, storage and mixing facilities using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

Pierina receives solid sodium cyanide in "bag-in-box" containers. Written procedures prohibit the reuse of the bags and boxes for other purposes, cleaned plastic bags are disposed in a secured landfill by a contractor and the wooden boxes are disposed in the mine landfill. Rinse water is collected and sent to the barren solution tank. the Standard operational Procedures ("SOP" from now onwards) require a detailed inspection and documentation prior to moving the boxes for mixing, and include procedures that cover the responsibilities for the transporter and the site personnel, Pierina procedures also include detailed information on the operation of valves and couplings during the mixing, a cyanide make up flowchart is located in the plant control room, the flowchart identifies critical cyanide solution pumps and valves located in the cyanide preparation area; also has procedures that specify a maximum stacking height of three boxes during truck unloading and long-term storage in the warehouse. Auditors verified the Pierina meets with this requirement.
Pierina's written procedures require the presence of the hazardous materials response team during the unloading of the cyanide delivery trucks. The warehouse personnel are required to wear Personal Protective Equipment (PPE from now onwards) including Tyvek ® suits and dust respirators. The Pierina procedure requires two operators to perform the mixing operations. The review indicated that Pierina has developed a comprehensive pre-inspection, appropriate tasks, and appropriate observation to safely complete and document all mixing events.

2.4 ***OPERATIONS: MANAGE CYANIDE PROCESS SOLUTIONS AND WASTE STREAMS TO PROTECT HUMAN HEALTH AND THE ENVIRONMENT.***

2.4.1 ***Standard of Practice 4.1: Implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventive maintenance procedures.***

The operation is:

√ in full compliance with
□ in substantial compliance with Standard of Practice 4.1
□ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 4.1. Cyanide solutions and waste streams are managed to protect human health and the environment. Pierina has numerous reports and standard operating procedures for its cyanide facilities, and these documents identify key design criteria and operating parameters.

Pierina has operating plans and standard operating procedures (SOPs) that describe the management and operation of the cyanide facilities (e.g. the Merrill Crowe Plant, the Leach Pad Facility and the cyanide destruction treatment plant). These plans and procedures cover the safe operation of the entire cyanide management facilities and have been regularly updated during the recertification period.

Pierina has developed, and used, a change management procedure that also includes formal risk assessment. Pierina has a set of contingency plans for upset or temporary conditions, including power outages, Pierina has five generators, site generators have a total capacity of 5,200KW (5.2MW) and Critical generators are started automatically when the power goes out. These generators are structured to power emergency equipment necessary to maintain the containment and control of process solutions.

These documents have been reviewed and updated regularly; latest versions are dated 2015, 2016 and 2017. Procedures were mostly updated or created to comply with regulatory changes and due to the installation/construction of new equipment and facilities, respectively.Daily shift and monthly inspections of the cyanide facilities are completed by operatorsPierina has established inspection frequency on a daily shift, weekly and monthly basis. These inspections are documented in daily operator reports, weekly and in monthly inspection forms. The inspection forms include pictures indicating the specific items to be inspected, the forms also identify the specific issues to be evaluated and allocate responsibilities to correct deficiencies. In addition, the safety and environmental personnel conduct weekly visual inspections of all areas where cyanide is handled. Inspections include safety and environmental concerns, cyanide unloading and storage areas, pH readings, daily cyanide consumption, tanks, valves, pumps, pipelines, secondary containment, process flows, pond and pad leak detection systems, pond levels, wildlife mortality, leach pad cell areas, and others; also critical

generators are inspected weekly including startup of generator to ensure proper operation. The generator s is also included in the Pierina preventative maintenance program for regular oil changes and other maintenance.

Pierina uses a computer-based system (Oracle ®) for identifying, allocating responsibility, scheduling, and tracking the completion of the preventive maintenance activities. Maintenance and process personnel discuss priorities on a weekly basis (or sooner as required by health, safety and environmental concerns) prior to scheduling repairs. Work orders are written through the Oracle® system, the planners assign the work, and the mechanic or electrician completes the work creating a hard copy completion report. The Oracle ® system identifies future activities for regular preventive maintenance and includes information on the task requirements and completion.

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

The operation is

THIS PRACTICE DOES NOT APPLY TO THE OPERATION
√ in full compliance with
□ in substantial compliance with Standard of Practice 4.2
□ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

As described in Section 1, the scope of this audit was only for the heap leach operations performed by Pierina; therefore, this standard of practice does not apply.

2.4.3 ***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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in Full Compliance with Standard of Practice 4.3 which requires that the operation implement a comprehensive water management program to protect against unintentional releases. Pierina has developed a comprehensive probabilistic water balance model that tracks water flow throughout the heap leach and pond facilities. The original model was developed using the Goldsim® software. Additionally, Chapter 4 of the Pacchac Valley Operations Manual provides the methodology used to develop the model and the operational guidelines for periodically updating the model and for monitoring the water management systems.
The Pierina model incorporates precipitation, evaporation, moisture content of ore, height of ore heap, irrigation areas and rates, and power outages.

The model is frequently updated (at least monthly and daily or weekly during the rainy season) using meteorological data collected onsite, he water balance includes the evaluation of a 100-year, 24-hour design storm duration and return interval, which provides sufficiently conservative criteria to prevent the potential overtopping, the Pierina water balance does not specifically evaluate the effects of potential freezing and thawing conditions, this assertion was supported by the available climate records. Other variables used to update the model include daily ore tons placed on the pad, expected raincoat coverage, actual lined area of the pad, and the area of diverted lined area. The South Diversion Ditch (SDD) conveys all the rainfall runoff collected from the south side of the Pacchac Valley and the non- contact runoff from exposed liner and raincoats and discharges it offsite at the down gradient part of the valley once Pierina confirms that the water quality meets discharge standards. The last calibration occurred in October 2016. The model shows a very close correlation as observed during the document review.
The model tracks water flow through the cyanide destruction plant; the cyanide detoxification plant can treat 180,000m3/month at a rate of 400m3/h. If needed it is possible to increase irrigation rates of the pile to store additional fluid.
The control systems have intervention triggers when the ponds reach both the operating and maximum levels. Measures when reaching both capacities have been included in Decision Making Procedure for Water Management. Operation capacities of the ponds have been determined based on the response time to divert the flow from the ponds. Capacities are outlined below:

- PLS pond has a maximum capacity of 501,652 m3;
- Process Overfow Pond (POP from now onwards) has a maximum capacity of 47,065 m3;
- Collection pond has a maximum capacity of 667,807m3; and
- Polishing pond has a maximum capacity of 140,000 m3

Pierina monitors and inspects a number of key parameters and facilities to ensure the safe management of the water balance at the site. Such installations include flow meters for irrigation of the leach pile and pond level indicators, which have readouts and alarms in the plant central control room.

2.4.4 ***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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 4.4. Pierina has implemented measures to protect birds, wildlife and livestock. The mine has restricted access to open cyanide solutions with closed conduits, and netting.

The auditors reviewed the monitoring information and verified that the concentrations are less than 50 mg/l Wad cyanide in the POP, as well as the collection pond and polishing pond do not contain cyanide solutions greater than 50ppm CN wad, and the transport of the cyanide concentrations are performed by means of a closed system (closed pipes) no leaching facilities are located in the open air.

Review of the leach facility indicated that during the dry season, ponding is not generally an issue. Rainy season leaching can locally create ponding and Pierina has the procedures and appropriately trained individuals to minimize its occurrence. All leach lines are inspected daily and wildlife monitoring information is recorded, based on procedure Control of Irrigation Density in Leach Pad (OPR-IPR-040) when a ponding is created, the event has to be reported to the leach supervisor using format OPR-FPR-044.
No cyanide-related wildlife mortalities have occurred at the site since the 2014 re-certification Audit. Additionally, a review of the open water ponds WAD cyanide data indicated that the water quality is maintained below 50 mg/l WAD cyanide.

2.4.5 ***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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 4.5. Concentrations of WAD cyanide were reviewed for the period between 2014 and March 2017 and they were noted not to exceed 0.5 mg/l at any of the monitoring points. Pierina has implemented measures to protect fish and wildlife from discharges to surface water. Pierina has authorization to discharge treated barren solution to the River Santa at discharge point E-2B. The discharge occurs via a pipeline that conveys the treated solution from the Polishing pond to the river approximately 5 km away. The standard in receiving water downstream of the point of discharge (Peruvian Ministerial Resolution N° 011-96) allows CN WAD to be discharged at a concentration of <0.2 mg/l . Based on the General Water Law, the standard in receiving water downstream of the point of discharge is <0.08 mg / l WAD cyanide. Monitoring of WAD cyanide at point E-2B is conducted monthly; concentrations of WAD cyanide were reviewed for the period between 2014 and 2017 and the maximum recorded value of cyanide WAD occurred in March 2015 where a concentration of 0.078 mg/l was exhibited still below 0.2 mg/l and 0.5 mg/l. Two compliance points are defined in the approved Environmental Monitoring Program submitted to the authority and concentrations of free

cyanide were reviewed for the period between 2014 and 2017; the concentration of free cyanide did not exceed the detection level of 0.01 mg/l.

The water quality in the receiving waters meets the requirements of the Peruvian General. Pierina does not have indirect discharge of cyanide solutions to surface waters. No impact to beneficial uses has occurred according to the data presented and reviewed in the monitoring reports.

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

The operation is

- √ in full compliance with
- □ in substantial compliance with Standard of Practice 4.6
- □ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 4.6. Pierina has implemented measures to manage seepage to protect groundwater.
Pierina has implemented solution management and seepage control systems to protect groundwater below and down gradient of the operation. All of the leach and pond facilities have been constructed with liners to minimize seepage and protect potential beneficial uses. The Pacchac Valley heap leach facility has been constructed as a valley fill type impounding structure with an internal pregnant solution pond (PLS).
The impoundment area has a leak detection and collection system installed between the two geomembranes. The solution is directed to a leak collection sump and is automatically pumped to the leach pad. Outside of the impoundment area, the liner system is a single 80 m HDPE (high-density polyethylene from now onwards) geomembrane with underlying clay liner.
The Emergency Pond consists of a double lined geomembrane with a leak collection and recovery system.
There is no designated down gradient beneficial use, nor any actual point of groundwater use identified by the Water National Authority (ANA by its initials in Spanish), nor any applicable groundwater standard. Nonetheless, Pierina monitors three groundwater monitoring wells downgradient of cyanide facilities (MW (+/-), MW 40 and MW-41).
All results of monitoring for WAD cyanide between 2014 and 2017 are below detection level of 0.001 mg/l.

2.4.7 ***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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 4.7. Píerina has implemented procedures and physical measures for spill prevention at all cyanide unloading, storage, mixing, and process solution tanks.

The physical measures consist of alarms, secondary containment connected to a principal sump, and a Plant Emergency Pond. The secondary containment is sized for 110% of the single largest tank plus precipitation. Pierina has automated the collection sumps in the containment areas to automatically pump any cyanide solution to the process circuits, the solutions that reach the sumps are directed to the pumps, which recirculate the solution through the pipes and reach the pad, generating a closed circuit. The Operation Pre-Plans and SOPs (e.g. "Cyanide Spill Cleanup" SOP) address and evaluate potential scenarios where solution is collected in the secondary containments and provide contingency planning. The Pierina operating procedures require that all spills be addressed immediately.
Inspections of tanks condition are performed by work shift (Twice a day), the operator performs the inspection, this inspection is supervised by the shift chief, and if any damage is observed, the shift chief generates a WO (Work order) to conduct the corresponding actions.
Also there are no tanks without secondary containment. All pipelines to and from the leach pad are installed within concrete bunding or within an HDPE lined conveyance channel; based on the audit review Pierina does not have any perennial or ephemeral surface water bodies that require special protection needs for pipelines over and above the secondary containment measures already taken. All pipelines, tanks, and valves are constructed of materials compatible with high cyanide solutions.

2.4.8 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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 4.8.Pierina was recertified as fully compliant with the Code between 2011 and 2014 indicating that all previous works had undergone adequate quality control and quality assurance.

Since the re-certification audit, the following cyanide facilities works have been undertaken:

- Leach Pad (Phase 7);

The phase 7 consists the expansion of the leach pad; installation of geomembrane raincoat liners, associated pipelines, and improvements made in the South Diversion Ditch (SDD)
Ausenco Vector undertook the design, specification and construction quality assurance of facilities constructed as a result of the expansion works (Phase 7) and Cosapi undertook the construction of the expansion facilities. Pierina has implemented CQA (quality control from now onwards) programs for all earthworks projects related to tank foundations, compacted subgrades, clay liners, geomembrane liners for ponds, heap leach facilities and for the Phase 7 Leach Pad expansion, which includes improvements made in the South Diversion Ditch. CQA documentation is available for review and it includes quality dossiers of earth works, civil works, pipelines and geomembrane installation. These dossiers include approving signatures from all Ausenco, Cosapi and MBM.
The site retains all CQA records; including the field notes, sampling records, and test records. The volume of material available onsite fills several filing cabinets. CQA reports for the following facilities were reviewed:

- New Leach pad;
- Raincoat liners; and
- Pipelines

The CQA reports for the construction of the leach pad including as-built plans have been prepared by Vector, a respected engineering design company. The reports have been signed off by Ausenco and MBM. The person in charge of the design is Mr. Scot Elfen of Ausenco. Mr. Elfen is a senior geotechnical engineer graduated from the University California in the USA and a postgraduate from the University of Queensland in Australia. Mr Elfen is registered with the American Society of Civil Engineering.

2.4.9 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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 4.9. Pierina has implemented monitoring programs for wildlife, surface water and groundwater. Pierina has environmental monitoring programs developed to evaluate the performance of the cyanide management systems on wildlife, process ponds, leak detection systems, and surface and groundwater quality. Pierina has prepared a map of surface water and groundwater sampling locations, and monitors cyanide, in which monitors sites E2A and E2B, which represent the treated barren solution quality from the polishing pond discharge, for Total, WAD and Free cyanide with a weekly frequency.
monitoring programs are governed by standard operating procedures and monthly schedules. The protocols were prepared by properly qualified

consultants and mine staff. Pierina uses a certified laboratory for chemical analysis. Sampling procedures specify field and laboratory methods, lists of constituents, chain of custody requirements and shipping protocols. Field conditions are documented on field forms by the sampler. Wildlife mortalities are observed and investigated. Surface water is sampled monthly and groundwater is sampled quarterly, in addition, Pierina monitors water quality (including WAD and Free cyanide) monthly in the Rio Santa, both up and downstream from the pipe discharge point and is augmented by daily monitoring of field parameters and of the wildlife mortality (part of daily inspections).
The plans have also been reviewed and approved by MEM. Finally, the periodic sampling, in conjunction with daily monitoring of field parameters and flow rates, is sufficient to identify changes in a timely manner.

2.5 *DECOMMISSIONING: PROTECT COMMUNITIES AND THE ENVIRONMENT FROM CYANIDE THROUGH DEVELOPMENT AND IMPLEMENTATION OF DECOMMISSIONING PLANS FOR CYANIDE FACILITIES.*

2.5.1 *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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 5.1, which requires that, the mine plan and implements procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock. The mine is currently in active closure stage, where the mining pit slopes are being stabilized; as a result additional (incidental) mineral is being recovered and processed. In addition an updated Mine Closure Plan was produced in 2016 and approved by the Ministry of Energy and Mining the same year. This closure plan includes for the decommissioning and dismantling of cyanide facilities.
The mine closure plan also includes GANTT charts for the closure planning, closure works and post closure periods. These incorporate the activities relevant for a comprehensive mine closure plan such as rehabilitation of the heap leach piles, plant demolition and ongoing monitoring and maintenance works. In addition includes demolition and decontamination of plant and pipes, closure of heap leach operation of detox and water treatment plants.
As previously mentioned Pierina obtained the approval of the updated closure plan in 2016 and is currently developing detailed engineering plans and procedures for the subsequent closure activities. It is expected that cyanide handling facilities would continue operations until 2021-2023.

2.5.2 *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

Summarize the basis for this Finding/Deficiencies Identified:

Pierina is in full compliance with Standard of Practice 5.2 which requires that the mine establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.
The Pierina Mine Closure Plan contains a cost estimate that assumes that all closure activities will be carried out by a third-party civil contractor at market costs, the closure plan was last updated in 2016; the previous version dated from 2013. Additionally, Pierina has updated its internal PER (Provisions for Environmental Reclamation) closure cost estimates annually.
The total budget for the closure is approximately US$450 million of which approximately 210 have been spent in the installation of the detox and wastewater treatment plans, among other activities. Closure bonds have been issued by the Banco de Crédito de Perú, BBVA Continental and Scotia Bank on behalf of Pierina to a total of US$179 million. Based on MEM closure requirements the financial assurance amount is sufficient to cover cyanide-related decommissioning activities.

2.6 WORKER SAFETY: PROTECT WORKERS' HEALTH AND SAFETY FROM EXPOSURE TO CYANIDE.

2.6.1 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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 6.1. Pierina has identified potential cyanide exposure scenarios and developed procedures and plans to eliminate, reduce and control exposure.

Pierina's operating plans and individual task specific SOPs provide details for safe operation of cyanide equipment, risk analyses, personal protective equipment requirements and inspection requirements. Pierina has successfully implemented a program where job safety assessments are completed and documented prior to every cyanide related task. These written procedures include work in confined space and equipment decontamination prior to maintenance. Pierina has safety meetings to provide information and

training to employees as well as solicit input from employees and subcontractors on worker safety issues.

Prior to any process, operation, change or modification, Pierina follows these two procedures related to change management:
• Management of Change (MoC) Procedure prepared by Barrick's South America Region Business Unit (Procedimiento de Gestión de Cambios); and
• Formal Risk Assessment Procedure (Procedimiento de Evaluación Formal de Riesgos) BCG-RM-00-02.

When changes to operations or processes are required, the department that proposes the change meets with the Environmental and Health and Safety Department and discusses the change. The Change Management procedure outlines how to apply a risk assessment to the proposed changes.

2.6.2 ***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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 6.2.
Pierina has established the minimum pH level for limiting the evolution of hydrogen cyanide gas during mixing and production activities at 9.3 this level was based on metallurgical laboratory tests.
The solution pH levels are measured continuously at the Barren Tank and at the Unclarified Tank with probes and results are monitored online in the Merrill Crowe plant control room. A visual alarm is set up at 9.3 in the plant control room. Hydrogen peroxide is added at the Barren Tank and lime at the crushing facility to maintain the pH level. The procedure for entering the cyanide storage building includes using a hand-held portable monitor to verify that HCN (Hydrocyanic acid from now onwards) levels are safe prior to entering the building. HCN levels at the mixing room are permanently recorded. The monitors have a digital readout and a high level and high-high level alarm system. In addition to an audible alarm, there are warning lights and an alarm display in the control room and in the areas where potential of generation of HCN exists. The high level and high-high alarm settings are 4.7 ppm and 10 ppm, respectively. When high and high-high alarms are triggered, personnel are required to evacuate the affected area immediately, solution flow is interrupted and after HCN levels are back to normal, trained personnel wearing specific PPE enter the area to clear the area.
HCN levels in the cyanide storage warehouse are measured prior to entry with a portable hand-held monitor, which was verified by the auditors.
Pierina has seven (7) cyanide fixed sensors (Ultima ® XA) in the cyanide mixing room and the refinery. These monitors are inspected monthly and

calibrated every 15 days by maintenance department personnel that have been trained and certified by the safety company called MSA Peru and records are held for a minimum of one year, also Pierina uses four (4) operating personal hand-held HCN monitors which are calibrated by Industrial Scientific, annually, according to the manufacturer's specification.
High-risk areas are identified in an employee induction presentation given to all workers and contractors. At the end of the presentation all assistants are given a test to assess their understanding.
Warning signs are posted 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. In addition pipes and tanks containing cyanide are marked as containing cyanide solution and show flow direction, Pierina also uses a color-coded piping system to further identify pregnant solution, barren solution, makeup water; and the cyanide storage, mixing and process tanks are marked have hazardous material risk diagrams, NPFA diamond according Material Safety Data Sheets (MSDS from now onwards) and signage for confined areas at the tank entry points. The Pierina Emergency Response department has developed a map showing locations of all emergency response equipment including showers, low pressure eye wash stations and non-acidic sodium bicarbonate fire extinguishers (The annual recharge fire extinguishers are performed by the supplier Solusegur SAC), are located at strategic locations throughout the operation including the cyanide storage building, refinery, and process plant.
Pierina provides the cyanide safety information (MSDS and first aid procedures) at all key process locations. Pierina has a procedure for the investigation of incidents which gives guidelines on finding root causes of accidents and to determine corrective actions and communications to prevent similar reoccurring events. Pierina uses the tap root tracking system, which allows a safety incident and near miss to be recorded, evaluated and followed through to remediation.
In the past three years, Pierina has only had one cyanide related incident. The incident occurred on 3 February, 2016, a Minera Barrick Misquichilca operator ("MBM" from now onwards) shut off one Royal box valve, which caused that pregnant leach solution (PLS) in the Royal Box overflowed and reached the South Diversion Ditch (SDD), this was immediately detected by process personnel who diverted the flow to the polishing pond as preventive measure. This incident was reported to ICMI and to the environmental agency. Correction measures included improvements in the Royal Box valves and the SDD.

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

The operation is

- √ in full compliance with
- □ in substantial compliance with Standard of Practice 6.3
- □ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 6.3. Pierina has developed an Emergency Response Plan and implemented the Plan through training and installation of emergency response equipment.
Pierina has first aid kits in strategic areas (cyanide storage, Merrill Crowe control room, and refinery), also all the employees that work in the areas where cyanide is present receive training to use these first aid kits.
Additionally, Pierina has antidote kits located in the medical clinic (Topico) which contain intravenous antidotes (sodium nitrite and sodium thiosulfite). The Pierina nurses perform monthly inspections of first aid equipment and antidote kits. Antidotes are replaced three months prior to their expiration dates.
Pierina has an onsite medical facility (Topico); which is located near the office area; their personnel participates in emergency drills and treats exposed personnel, Pierina has 2 physicians, nurses and paramedics. One of the physicians is onsite at all times along with two nurses, one administrative supervisor, one paramedic, and one ambulance operator. Emergency Response equipment located at the Topico include one fire truck, one hazmat truck, one ambulance, a hazmat warehouse and a fire equipment warehouse.
In addition, Pierina trains personnel that work in the cyanide handling areas, in first aid related to cyanide exposure. Verification was through interviews and examination of training records. In addition, all operators carry a radio. Radio and telephone also are located in the control room, from which cyanide activities are visually monitored. The cyanide preparation room has two continuous monitors with an alarm system. The cyanide preparation room and the cyanide storage building each have emergency eyewash and shower stations. Additional emergency eyewash and shower stations are located throughout the Merrill Crowe plant.
Pierina has developed procedures for transporting workers exposed to cyanide to two off-site medical facilities (San Pablo Clinic and Victor Ramos Hospital) both are equipped with intensive care facilities. The mine would stabilize the exposed worker and apply the antidote and then take it to one of the hospitals for continual observations, therefore, the offsite facilities do not necessarily treat victims directly for cyanide exposure. Pierina has determined that the facilities have adequate, qualified staff, equipment and expertise to respond effectively.
Mock drills are conducted regularly as part of the Emergency Response Plan; lessons learned from the drills are incorporated into the ERP (Emergency Response Plan from now onwards). Mock drills have taken place on November 2014, November 215 and October 2016. The first two included in the scenario the event that an employee was intoxicated with cyanide. One of the drills was completed in the night shift. In addition Pierina has developed a Treatment Guide for cyanide intoxication, which is in addition to the General Emergency Plan (Plan General de Emergencias) that establishes that medical personnel is the one to supply antidotes. Additionally, Pierina has developed Pre Plans for the Cyanide Warehouse, Cyanide Preparation Room, Merrill Crowe Plant, Ponds, and Leach Pad. These Pre Plans include procedures to respond to cyanide exposures.

2.7 EMERGENCY RESPONSE: PROTECT COMMUNITIES AND THE ENVIRONMENT THROUGH THE DEVELOPMENT OF EMERGENCY RESPONSE STRATEGIES AND CAPABILITIES.

2.7.1 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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 7.1. Pierina has developed the General Emergency Plan and SOPs that address emergency response to potential accidental releases of cyanide. Pierina plans contain procedures for potential scenarios such as:

1. Potential HCN release scenarios from the storage and process facilities.
2. Transportation accidents
3. Releases during unloading and mixing
4. Releases during fires and explosions
5. Pipe, valve and tank ruptures
6. Overtopping of ponds and impoundments
7. Failure of heap leach and other cyanide facilities
8. Uncontrolled seepage
9. Failure of cyanide treatment, destruction or recovery systems
10. Failure of tailings impoundments, heap leach facilities and other cyanide facilities

Pierina has also developed a Treatment Guide for cyanide intoxication that includes first aid instructions to supply antidotes and establishes that medical personnel are the only ones authorized to supply antidotes. In addition the cyanide supplier for Pierina is Orica. Orica contracts DCR, the cyanide transporter. Both companies have been certified as fully compliant with the Code. Pierina keeps a copy of the 'DCR Contingency Plan for the Sodium Cyanide Transportation for Barrick Pierina' onsite dated November 2016. The plan has been prepared in line with the National Regulations and was reviewed by Pierina Emergency Response personnel.

2.7.2 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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 7.2. The General Emergency Plan has been designed to be implemented entirely by trained, onsite personnel. The plan was prepared and has been updated by Pierina's Emergency Response Personnel. Additionally, the personnel in charge of cyanide operations are trained in the emergency response procedures. Pierina holds information talks with the local communities and has a permanent information office in the city of Huaraz; the talks include awareness and preparation for emergencies at a local level. The mine also organizes meetings with firefighters and civil defense, to present their emergency response plan, information on hazardous materials (including cyanide). The latest one was performed in June 2017 included 32 participants from Local and National Firefighters, Civil Defense, Cross, Army, Regional Hospital, Regional and local Health Authorities. Similar were completed in November 2015.
Finally, every year Pierina organize a talk where they invite outside stakeholders (fire fighters, police, INACAL - the Peruvian agency that reviews and certifies laboratories, hospitals) and give a presentation on the emergency plan. Additionally the have meetings with the communities to present the protocol to attend emergencies that could affect the communities.

2.7.3 *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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 7.3. Pierina has committed, in the General Emergency Plan, Pre Plans and training SOPs, the necessary emergency response equipment and first aid to manage all cyanide incidents at the operation and to coordinate transportation to the nearest medical facilities.
The emergency response systems in place at Pierina designate Incident Commanders and the establishment of the Incident Commander Team. The Incident Commander (IC) has the authority to commit the necessary resources to implement the Plan. The IC, normally the operations managers, defines the primary and alternative response coordinators for the Incident Commander Team (ICT), training for the emergency personnel includes first aid, hazardous materials, fire, ropes, confined spaces, road traffic accident response, and Incident command system, the General Emergency Plan includes office and 24-hour cell phone numbers for the ICT and Brigade Members, the plan contains a list of emergency response equipment, all emergency equipment and supplies are inspected on a regular basis by safety and emergency response personnel.
Pierina has established formalized arrangements with the medical facilities located in Huaraz (Clinica San Pablo, Hospital Victor R. G.) regarding the potential to treat patients for cyanide exposure, under the Response

Procedures in the ERP it is stated that the incident team is to coordinate outside responders and external support. Annually the Occupational Health Main Physician visits both off-site hospitals to assess the facilities and the understanding of the staff for the treatment of patients exposed to cyanide.

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

The operation is

- √ in full compliance with
- □ in substantial compliance with Standard of Practice 7.4
- □ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 7.4. Pierina General Emergency Plan and related facility plans detail the procedures for internal and external emergency notification and reporting.
The ERP, Section 7.2.6, details regulatory authorities' and outside responders' contact details as follows: Government Mining Department, Government Health Department, Civil Defense Department, INDECI (National Safety Civil Defense Institute as per its Spanish acronys) , Huaraz Fire Department, Caraz Fire Department, Government Department for Permitting Explosives, Regional Police (XIII Regional Division), OSINERGMIN (Organismo Supervisor de la Inversion en Energia y Mineria) (Supervisory Body in the Investment in Energy and Mining), the Attorney General's office, Jangas Local Government, Hidrandina-Huallanca (Pierina's electricity provider), Environmental Affairs General Division of Peru. DICSCAMEC - Ancash and Regional Director of Transportation and Communication; contact information for the police, army and medical centers are detailed in Sections 7.2.2 and 7.2.3 of the Emergency Response Plan, and in addition Chapter 7.2.7 of the ERP has contact information for village authorities within the area of influence.
The Response Procedures determines that if surface waters are contaminated with cyanide then the incident is considered a "high" level incident, and details give a number of communication steps to be taken which include of when to contact local communities. As part of the ERP Pierina has a section titled "Roles and responsibilities for community relations and the media". This specifies a chain of command for media relations.

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

The operation is

- √ in full compliance with
- □ in substantial compliance with Standard of Practice 7.5
- □ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 7.5. Pierina has prepared cyanide response and remediation plans that address appropriate uses and situations for cyanide treatment chemicals. All contaminated soils are to be excavated, loaded, hauled and disposed of in the heap leach facility. Liquid spills are to be contained by perimeter berms and spilled solution is to be pumped to 55-gallon drums with sealed lids returned to the process facilities. Hypochlorite, ferrous sulphate and hydrogen peroxide are prohibited from use in surface water. Sodium hypochlorite is only to be used in cases where the solution is fully contained on site and will not enter surface waters, sodium hypochlorite is in custody of the emergency response brigade, it is in solution ready for use. In additional Pierina has a procedure in place to use bottled water for its alternate drinking water supply.
Within the Operations Manual of the Pacchac Valley (OMPV) details are given regarding the requirement to take samples up-stream and down-stream of a cyanide related incident. The Procedure for emergency soil sampling details the soil analysis that will be undertaken, the sampling methodologies and parameters.

2.7.6 ***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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 7.6. Pierina has committed to annual evaluation and update of the General Emergency Plan, if needed based on review of the incidents and drills.
The Emergency Response Plan is reviewed annually and following mock drills and actual incidents as needed. The plan includes a list of the changes/modifications made to this document since its original version. Pierina has conducted three cyanide related mock drills since the Re-Certification Audit.

2.8 ***TRAINING: TRAIN WORKERS AND EMERGENCY RESPONSE PERSONNEL TO MANAGE CYANIDE IN A SAFE AND ENVIRONMENTALLY PROTECTIVE MANNER.***

2.8.1 ***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

Summarize the basis for this Finding/Deficiencies Identified:

Pierina 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. All employees and contractors with the potential to be exposed to cyanide receive three different cyanide related training courses (Cyanide I, Cyanide II and Cyanide III), also on the hazards of cyanide and provides annual refresher training. In addition to these three training courses, all employees working in process areas are required to undergo task specific training. Task specific training includes safety cyanide, MSDS, general emergency plan, Pre Plans. Additionally, SOPs are reviewed periodically and each time there is a change, the workers are re-trained.

Pierina retains hard and electronic copy (scans from attendance lists) of employee training records. Given the reductions in man power related to the active closure process. Training records are currently retained by the area that is responsible to provide them.

2.8.2 ***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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 8.2. All personnel in job positions that involve the use of cyanide and cyanide management (including unloading, mixing, production and maintenance) receive training on how to perform their assigned tasks with minimum risk to worker health and safety.
Pierina has implemented a training program to ensure that staff is trained adequately prior to working with cyanide. The training program requires staff to undergo inductions, task specific training and to work under supervision before being permitted to work alone; individual training is provided for each specific task an operator will perform related to cyanide management. Task specific training includes cyanide task SOPs described in Section 6.1.1 and cyanide transfer, cyanide bags and boxes management and disposal, critical valves management, equipment decontamination, valves and interconnections management for containment zones, plant emergency stop, new version of MSDS, cyanide preparation and others. Verification was conducted through interview with process personnel, and review of training records, the operation requires written tests to evaluate the effectiveness of cyanide training and those training records are retained throughout an individual's employment, documenting the training received, the records include the name of the employee and the trainer, the date of training; the topics covered, and test results demonstrating an understanding of the training materials.
Task training related to cyanide is provided to the operations personnel by experienced and qualified supervisors, to the emergency response brigade either by an internal competent trainer or through external specialized

companies. In additional Pierina requires and provides annual for all staff refresher for safety cyanide management, first aid for cyanide intoxication and cyanide emergency response to assure that employees and contractors continue to perform their jobs in a safe and environmentally protective manner.

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

The operation is

- √ in full compliance with
- □ in substantial compliance with Standard of Practice 8.3
- □ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 8.3. which requires that the operation train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.
Personnel responsible for unloading, mixing, production, and maintenance are trained in decontamination and first aid procedures for cyanide release incidents, Pierina undertakes training of workers to identify cases of cyanide exposure and provide first aid the victim, the training covers, use of PPE to ensure their own safety, use of the first aid kit (oxygen tank and respirator); This training is provided every year.
Training for the emergency response personnel includes first aid, hazardous materials and firefighting. Training records were viewed for the different trainings provided from 2014 to 2017. Additionally, the site identified that changes in the emergency brigade had taken place as a result of the man power reduction derived from the closure process; the site defined the minimum number of brigade members to have sufficient response capacity 24/7 and provided additional training in July and August to make sure that all members were properly trained.
Mock drills are conducted regularly as part of the Emergency Response Plan; cyanide emergency drills are evaluated from a training perspective to determine if personnel have knowledge and skills required for effective response. Three mock drills related to cyanide have taken place in the last three years. Drills planning are not communicated to employees; drills take place in cyanide process and storage area to assess the preparedness of the respective employees.
Pierina retains hard and electronic copy (scans from attendance list) of employee training records. Auditor verified that these records are retained. As part of this audit we reviewed a number of training record files for 2014 to 2017. Training records include the names of the employee and the trainer, the date of training; the title of the training session, and test results demonstrating an understanding of the training materials. In addition Pierina has established formalized arrangements with the medical facilities located in Huaraz regarding the potential to treat patients for cyanide exposure; every year the physician in charge of the on-site medical facility (Topic) visits both off-site medical centers to assess their facilities. A letter is written to the hospital

stating that the mine is satisfied with the facilities they have. The letter is signed by the hospital and returned to Pierina.

2.9 DIALOGUE: ENGAGE IN PUBLIC CONSULTATION AND DISCLOSURE.

2.9.1 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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in fully compliant with Standard of Practice 9.1 which requires that provide stakeholders with the opportunity to communicate issues of concern. Pierina provides numerous opportunities for stakeholders to communicate issues of concern regarding the management of cyanide. These include community workshops, site visits, a formal grievance mechanism and regular community liaison meetings. Additionally, the mine has a permanent information office in the city of Huaraz.

2.9.2 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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 9.2. which requires that the operation initiate dialogue describing cyanide management procedures and responsively address identified concerns.
Pierina has produced and distributed two leaflets on cyanide management: These documents are updated every 2 to 3 years, in addition to the interactions described in Standard of Practice 9.1; Pierina organizes educational visits to the mine for about 1,500 people per year. These incorporate all aspects of the mine and processing plant and are free of charge. They are conducted in both Spanish and Quechua. The records maintained by the Department of Communications and Public Relations show a diverse range of attendees including universities, schools, government officials and community representatives from around the country.

2.9.3 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

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 9.3. which requires that the operation make appropriate operational and environmental information regarding cyanide available to stakeholders.

Pierina has produced and distributed two leaflets on cyanide management; these documents are updated every 2 to 3 years (Cyanide Management and Controls for cyanide handling), this leaflets, and others covering different topics, are distributed during the community workshops, site visits, and regular community liaison meetings organized by the mine. Due to a degree of illiteracy in the local population the program uses images/drawings photos to explain, in addition Pierina has made a number of presentations to local communities in Spanish and Quechua as necessary at local trade shows, community meetings, and rural theater. There is a rolling program of site visits by community organizations, educational establishments and the general public during which topics like the use of cyanide in the gold extraction process, its dangers and how it is managed safely are discussed. Pierina has a legal obligation to report any cyanide related accidents and incidents to the Peruvian authorities; as the incident described in section 6.2.9 which was reported to OEFA by its initials in spanish (the Peruvian Environmental Agency) on February 5th, 2016 and to ICMI on February 8, 2016. This information is in the public domain and can be accessed by the public on demand.

In addition, the event did not result in significant adverse effects to health or the environment and it did not cause an exceedance of applicable limits for cyanide due to the rapid reaction of MBM. In addition Barrick publishes a number of documents which report their safety, environmental and social performance, including annual sustainability reports and Barrick beyond Borders magazine. These are available on the company website and as hard copy at the operations.