



# *Gold Mining Operations*

## *Summary Audit Report*

*(03/04/2012)*

*for*

*Recertification of*

*Kinross Paracatu/MG/ Brazil.*

*May & August/2011.*

[www.cyanidecode.org](http://www.cyanidecode.org)

The International Cyanide Management Code (hereinafter "the Code"), this document, and other documents or information sources referenced at [www.cyanidecode.org](http://www.cyanidecode.org) are believed to be reliable and were prepared in good faith from information reasonably available to the drafters. However, no guarantee is made as to the accuracy or completeness of any of these other documents or information sources. No guarantee is made in connection with the application of the Code, the additional documents available or the referenced materials to prevent hazards, accidents, incidents, or injury to employees and/or members of the public at any specific site where gold is extracted from ore by the cyanidation process. Compliance with this Code is not intended to and does not replace, contravene or otherwise alter the requirements of any specific national, state or local governmental statutes, laws, regulations, ordinances, or other requirements regarding the matters included herein. Compliance with this Code is entirely voluntary and is neither intended nor does it create, establish, or recognize any legally enforceable obligations or rights on the part of its signatories, supporters or any other parties.

## SUMMARY AUDIT REPORT FOR GOLD MINING OPERATIONS

### *Instructions*

1. The basis for the finding and/or statement of deficiencies for each Standard of Practice should be summarized in this Summary Audit Report. This should be done in a few sentences or a paragraph.
2. The name of the mine operation, lead auditor signature and date of the audit must be inserted on the bottom of each page of this Summary Audit Report.
3. An operation that is in substantial compliance must submit a Corrective Action Plan with the Summary Audit Report.
4. The Summary Audit Report and Corrective Action Plan, if appropriate, with all required signatures must be submitted in hard copy to:

**International Cyanide Management Institute (ICMI)**  
**888 16th Street, NW, Suite 303**  
**Washington, DC 20006, USA**

5. The submittal must be accompanied by 1) a letter from the owner or authorized representative which grants the ICMI permission to post the Summary Audit Report and Corrective Action Plan, if necessary, on the Code web site, and 2) a completed Auditor Credentials Form. The lead auditor's signature on the Auditor Credentials Form must be certified by notarization or equivalent.
6. Action will not be taken on certification based on the Summary Audit Report until the application form for a Code signatory and the required fees are received by ICMI from the applicable gold mining company.
7. The description of the operations should include sufficient information to describe the scope and complexity of the gold mining operation and gold recovery process.



## SUMMARY AUDIT REPORT

Name of Mine: Rio Paracatu Mineração S.A  
Name of Mine Owner: Kinross Gold Corporation  
Name of Mine Operator: Rio Paracatu Mineração - RPM.  
Name of Responsible Manager: Juliana Esper/ SHE Manager  
Address: Estrada do Machado S/N, Morro de Ouro  
Cx. Postal 168 CEP 38600-000  
State/Province: Minas Gerais/ Paracatu Country: Brazil  
Telephone: 55 38 3679-1174 Fax: 55 38 3679-1000  
E-Mail: juliana.esper@kinross.com

### Location detail and description of operation:

The Kinross Paracatu Mineração mine is an open-pit gold mine, located approximately 4 kilometers outside of Paracatu, Minas Gerais State, Brazil. The mine currently produces 19 Mta of a low grade ore (0.4 g/t) with production of about 6 ton of gold annually. The mine site is located primarily on lands owned by Rio Paracatu Mineração.

RPM has mined over 288 million tons of material from the RPM pit, with an average production rate of about 53,000 tons per day. The mine is currently seeking permits for expansion which will allow mining of an additional 1,35 million tons of material, and require eventual construction of a new tailings dam.

### Circuit:

#### Crushing:

Typical run of mine ore is about 80% passing 70mm. The current plant features four separate crushing lines, three of which are operated at one time while the fourth is on standby. Three crushers provide a crushing rate of 800 tons per hour (tph). Each circuit consists of a primary impact crusher followed by a secondary cone crusher. The final crushed product has a specification of 80% passing 10 mm.

The crushed product feeds to a 5000 tons fine ore bin. Two feeders from the fine ore bin transfer the ore to one of two grinding bins that feed into the grinding circuit.

#### Grinding Circuit:

The existing grinding circuit features four separate process streams consisting of a single stage ball mill (1800 kW) which are fed at a rate of 600 tph from the two grinding bins. The ball size is 75 mm diameter with consumption of 260 g/t. The ball mills operate in closed circuit with 500mm hydro cyclones. A fifth ball mill is used for regrinding a portion of the circulating load. The final product specification from the grinding circuit is 80% passing 75 microns (200 mesh).

#### Gravity Circuit:

The current mill circuit includes sixteen jigs that are set up as part of each grinding line. The jigs are fed with a portion of the circulating load from the grinding circuit.

## SUMMARY AUDIT REPORT

### Flotation:

The flotation circuit features two stages, scavenger and cleaner. Product from each grinding line is fed to cyclone batteries. Cyclone overflow goes to scavenger flotation circuit and cyclone underflow back to the mill as a circulating load. Scavenger concentrate feeds a cleaner flotation circuit and scavenger tails goes to tailings dam. Cleaner concentrate feeds the Hydrometallurgy regrinding circuit and cleaner tails back to the scavenger by mill discharge pumps. All flotation reagents are added 60% in the head scavenger flotation stage and 40% in the circulating load that includes: Cytec Aero Promoter 3473 (a mix of dithiophosphate, dithiocarbamate and sulphides), MIBC and Cytec Aero Promoter 7249 A (a mix of dithiophosphate, ethylhexanol and Sodium Hydroxide). 25% of the flotation tails are thickened to 42% solids in one 75m -diameter thickener, which joins with the other 75% at 34% solids and are sent to the main tailings pond.

### Hydrometallurgy Plant:

Two separate concentrate products are sent to the hydrometallurgical plant, a jig concentrate and a cleaner concentrate. Both average roughly 20-30 g/t gold.

Concentrates are first reground in two parallel mills to a size of 90% passing 325 mesh. The concentrates are then processed in a Knelson concentrator in line with the regrind mills, recovering approximately 20% of the contained gold. The Knelson concentrate is directed to a bank of shaking tables (was replaced by ACACIA reactor in 2008) and then on to the smelting furnace.

The reground sulphide concentrate is thickened to 45% solids in two 15m-diameter thickeners prior to leaching. The thickened concentrate product is leached in eight, 300-m<sup>3</sup> CIP tanks. Oxygen is injected into the first tank to reduce cyanide consumption. Activated carbon is added to the leaching tanks (configuring a CIL circuit) to collect gold from the solution. Loaded carbon is produced from the first CIL tank. The loaded carbon is stripped in two, 3 tonne Zadra process elution columns at 1300 C using a caustic soda solution. Gold is precipitated onto steel wool by electro winning. The carbon is reactivated in a 200-kg/hr kiln.

### Smelting:

The process plant produces gold bullion using two induction furnaces. Typically, the bullion averages 60-80% gold content with 20-40% silver and minor copper and iron content.

# SUMMARY AUDIT REPORT

## *Auditor's Findings*

This operation is

- in full compliance
- in substantial compliance \*(see below)
- not in compliance

with the International Cyanide Management Code.

- \* 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: NOSA Certification Authority Brasil Ltda.

Audit Team Leader: Celso Sandt Pessoa

Acting Lead Auditor: Eberson Cassio de Andrade

E-mail: [eberson.cassio@nosa.com.br](mailto:eberson.cassio@nosa.com.br) (ICMI qualified lead auditor and TEA).

Names and Signatures of Other Auditors:

Celso Sandt Pessoa (ICMI qualified lead auditor and TEA) → only 15~17/08/2011.

Luiz Eduardo Ferreira (qualified SHE auditor and chemical expert)

Date(s) of Audit: 08~12/05/2011 (on-site), 15~17/08/2011 (on-site) and 02~05/01/2012 (off-site).

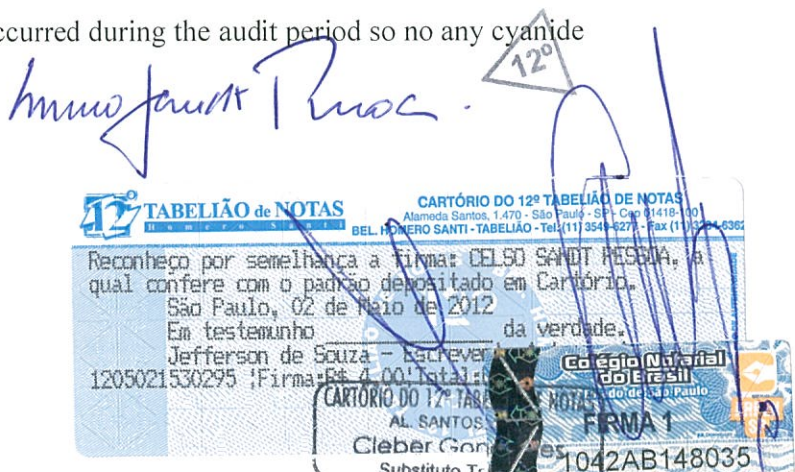
I attest that I meet the criteria for knowledge, experience and conflict of interest for Code Verification Audit Team Leader, established by the International Cyanide Management Institute and that all members of the audit team meet the applicable criteria established by the International Cyanide Management 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 Gold Mine Operations and using standard and accepted practices for health, safety and environmental audits.

I attest that no significant cyanide incidents occurred during the audit period so no any cyanide exposures or releases that required disclosure.

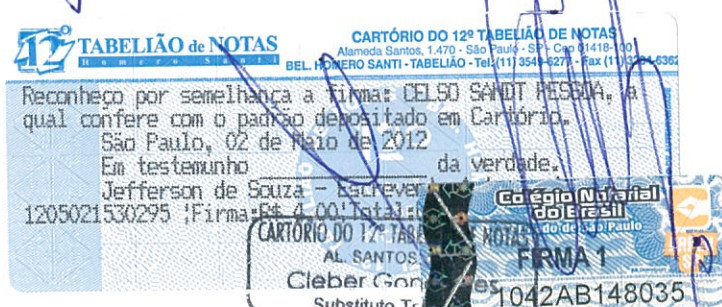
*Imunofant Ruc*

12º



The image shows a blue notary stamp from the 'CARTÓRIO DO 12º TABELIÃO DE NOTAS' in São Paulo. The stamp includes the name 'CELSO SANDT PESSOA' and the date '02 de Maio de 2012'. There is a handwritten signature in blue ink over the stamp, and a small triangle with the number '12º' is also present.

Kinross Paracatu/2011



## SUMMARY AUDIT REPORT

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

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

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

*Summarize the basis for this Finding/Deficiencies Identified:*

The operation maintained an agreement with DuPont USA, since 2007. This agreement clearly states that the NaCN shall be produced by an ICMI certified DuPont operation. Was evidenced, through the NaCN documentation provided by DuPont that the sold solid NaCN was produced at Memphis/TN facility, which is certified by ICMI in accordance with the information available at ICMI's website ([www.cyanidecode.org](http://www.cyanidecode.org)).

The operation also developed and implemented a documented procedure, PSSMA-CN-RPM-130, which defines the system for cyanide acquisition from distributors (spot purchasing), where this Code requirement is clearly addressed (including required chain of custody records) at purchase orders, as a default. This procedure is supported by a systemic procedure (PSSMA-CN-RPM-043) implemented to evaluate and select cyanide related suppliers (distributors and transporters). It was observed that the operation bought, only in a few cases, NaCN from only one distributor. The NaCN documentation brought to the operation showed that the cyanide was produced by DuPont/ Memphis facility and brought to the operation using qualified transporters (DuPont Supply Chain and Niquini) which are certified in compliance with the Code. Anyway, the mentioned distributor does not belong to the DuPont certified supply chain. It was observed that the operation proceeded like that because its main (DuPont) and alternate (Proquigel) suppliers were not able to provide the necessary solid cyanide required by the operation. On the other hand, the operation, in good faith, ensured that the solid cyanide bought from the distributor, was manufactured and transported by certified suppliers.

**2. TRANSPORTATION:** *Protect communities and the environment during cyanide transport.*

Standard of Practice 2.1: *Establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.*

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

*Summarize the basis for this Finding/Deficiencies Identified:*

It was observed that agreement between the operation, the cyanide producer, distributor, and transporter clearly defined the applicable responsibilities for each involved stakeholder. The packaging responsibilities are clearly defined in accordance Brazilian and International legal requirements (UNO). The labeling responsibilities in languages necessary to identify the material are clearly defined as applicable legal requirements (English & Portuguese, beyond other languages). Storage prior to shipment

## SUMMARY AUDIT REPORT

and storage and security at ports of entry responsibilities are clearly defined as applicable legal requirements. The agreements among the stakeholders extend to any subcontractor used by the producer, by the distributor and by the transporter all the established and formally agreed responsibilities. The NaCN is transported by ICMI certified transporters (DuPont Consignor supply chain and Niquini (when bought from a distributor)).

*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:*

The contract between the operation and DuPont requires that the cyanide transporters shall be certified in accordance to ICMI protocol for transporters. Was evidenced that the DuPont Consignor Supply Chain is certified in accordance with the Code, as evidenced at ICMI's website. The purchasing documentation brought to the site (supply chain records), showed that all transporters used to bring NaCN to the operation belongs to the DuPont Consignor supply chain.

When the operation buys solid NaCN from a distributor, the transport to the operation is made by Niquini Transportes, an ICMI certified cyanide transporter in Brazil.

It was observed that Kinross Paracatu bought (in three isolated situations since 2007) solid cyanide from Brazmo, which is an independent DuPont distributor. Brazmo provided objective evidence (product certificates and transportation records) that the cyanide sold to Kinross was manufactured by DuPont Memphis and brought to the operation using qualified transporters (DuPont Supply Chain and Niquini) which are certified in compliance with the Code. Anyway, the mentioned distributor does not belong to the DuPont certified supply chain. It was observed that the operation proceeded like that because its main (DuPont) and alternate (Proquigel) suppliers were not able to provide the necessary solid cyanide required by the operation. On the other hand, the operation, in good faith, ensured that the solid cyanide bought from the distributor, was manufactured and transported by certified suppliers.

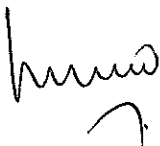
**3. HANDLING AND STORAGE: Protect workers and the environment during cyanide handling and storage.**

*Standard of Practice 3.1: Design and construct unloading, storage and mixing facilities consistent with sound, accepted engineering practices, quality control/quality assurance procedures, spill prevention and spill containment measures.*

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

*Summarize the basis for this Finding/Deficiencies Identified: (Due to the sensitivity of security issues regarding storage of cyanide, no descriptions of substantial or non-compliance with this aspect of the Standard of Practice should be provided).*

The facilities for unloading, storing and mixing cyanide were designed and constructed in accordance with sound and accepted engineering practices for these facilities. No major changes were performed



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in such facilities since the initial certification audit. The unloading and storage areas for solid cyanide are duly established and well maintained as required. It was observed a security procedure which defines that only authorized people are allowed to work at the sodium cyanide warehouse. The sodium cyanide has an isolated storage, well separated from incompatible materials. The sodium cyanide is stored in its original packages at the warehouse. Preparation and storage tanks are located on a concrete floor, that is sufficient to prevent seepage. It was observed that tank level indicator and high-level alarm are in place. It was also observed, during the field audit, that the area is far from surface waters and people, not being a risk for that. The entire area has a concrete floor and the solid cyanide is stored under roof.

It was observed that secondary containments for cyanide preparation and distribution tanks were constructed in accordance to Brazilian engineering standards and were constructed with HDPE (high density poly-ethylene) membrane and concrete, offering an effective barrier to seepage. Cyanide preparation and distribution tanks are located inside these contained areas, as observed in the field audit. Also observed that these areas are well maintained and dry.

It was observed, during the field audit, that sodium cyanide storage area has adequate ventilation (natural one). Also observed that the NaCN boxes remains over their original pallets.

*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:*

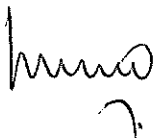
The operation did develop, document and implement operational procedures in order to receive, store, prepare and distribute cyanide. Evidences were available (such as specific work instructions and installations) showing that the company prevents exposures and releases during cyanide unloading and mixing activities. The operation has all critical valves inside the preparation area identified, tagged and locked. The operation has an operational procedure for mixing (PPROC-HDM-KBM-006) that addresses the cares and controls that shall be considered in order to avoid spills. The operation handles NaCN boxes with the aid of fork-lifters and lifting cranes. The NaCN boxes are piled in three boxes maximum. All cyanide solutions are automatically mixed.

The procedure for neutralization of big-bags (PPROC-HDM-KBM-009) establishes the controls for avoiding spill from residual cyanide in the bags. The workers have to proceed neutralization three times each bag. All containment basins have electrical and pneumatic floor pumps to recover any contained spill back to the tanks. All neutralized NaCN big-bags are sent to qualified suppliers to be thermally destructed, in accordance with Brazilian environmental laws.. Before being sent back to the supplier, the sea containers are inspected, cleaned (if necessary) and sealed.

**4. OPERATIONS: Manage cyanide process solutions and waste streams to protect human health and the environment.**

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

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





## SUMMARY AUDIT REPORT

### *Summarize the basis for this Finding/Deficiencies Identified:*

The operation did design, document and implement several management and operational procedures, based on the risk evaluation linked with their activities. A systemic procedure (PSSMA-CN-RPM-044), which defines the system to develop operational procedures is in place. Also evidenced a master list of operational procedures (PSSMA-PLAN-POS). Evidenced several operational and management procedures clearly defining process operational criteria (including design parameters), PPEs, pre-activity inspections. Some of these reviewed procedures were: PGSUP-ALMX-KBM-001 (receiving, handling and storage of NaCN), PPROC-HDM-KBM-006 (NaCN solution preparation), PPROC-HDM-KBM-009 (NaCN bigbags handling, neutralization and disposal). It was observed that the design parameters were addressed at operational procedures. Reviewed the operation and maintenance manual RPM-20-GE-RT-001 (1) for the tailings dam. The minimum freeboard (design criteria) for the tailings dam is 2500cm. The operational criteria is minimum freeboard of 9700cm. Also reviewed tailing pond (specific tank # 8) as built drawing, GHT-31-RT-008-Q-001-DG(A), indicating a minimum freeboard of 100cm. Reviewed operational procedures addressing that.

The operation has documented operational procedures that describes the standard practices necessary for the safe and environmentally sound operation of the facility including standard procedures for inspections and preventive maintenance activities of the installations.

Maintenance plans (predictive and preventive) and inspection routines were established and implemented. In general terms, as observed in the field audit, the operation installations are well maintained. Records of inspections and maintenance are kept on file.

The operation designed, and documented a change management procedure, which is adequately implemented. Reviewed records of change management meetings. All proposed changes in the operation configuration are reviewed based on a risk evaluation process.

The operation have two cyanide related emergency plans, both covering any potential incident involving cyanide, including an upset in the operation water balance. The emergency plans resulted from risk evaluations.

The operation has operational procedures (Inspection Routes), where all aspects that shall be inspected are addressed, including the frequency. All inspection results are recorded in a system that saves the results. Required improvement actions are recorded in the same system. Several inspection records were reviewed and were promptly available.

Observed that the maintenance process developed and implemented specific checklists to perform routine inspections (inspection routes) and measurements at tanks (thickness, corrosion and leakage) and process plant installations such as secondary containments, drainage system and locks. There is a specific inspection route covering the TSF and ponds.

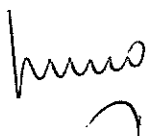
Evidenced that all inspectors were retrained on the fulfillment of inspections records. All inspection records are dated and signed by the inspectors.

The operation implemented a preventive maintenance program, and record activities to ensure that equipment, installations and devices are functioning as necessary for safe cyanide management.

Standby generators systems are in place. Preventive maintenance, including testing, is established. Weekly tests (system function and operation) are in place. The generators have 8 hours capacity for energy supply. The emergency system is connected in the lime tanks, for pH control, if necessary. Records of preventive maintenance were evidenced.

*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  in full compliance with  
 in substantial compliance with Standard of Practice 4.2  
 not in compliance with  
 not subject to



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*Summarize the basis for this Finding/Deficiencies Identified:*

Cyanidation tests are usually performed in order to identify opportunities to reduce the cyanide consumption. Pre-aeration process is implemented in order to reduce the cyanide use and the results were very positive. A cyanide automatic titration device is in place. The operation has an operational system for efficient controls of cyanide addition based on the gold concentrations. This automatic device has a set point control and is adequately calibrated. There is the pH control as well, with maintenance of pH between pH 10.2 to 10.5. The pHmeter is calibrated as well.

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

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

*Summarize the basis for this Finding/Deficiencies Identified:*

The operation did develop a comprehensive and probabilistic water balance management system, considering storm and rain history (100 and 50 years storm event/ 24 hours), incoming water, effluent discharge rate in the tailings dam and evaporation rates. Was observed that the water balance management procedure remains the same since the initial audit (2007). There were not any incident related to water balance in the last years.

The water balance study was updated and considered the solution addition in the system and the effluent rate at tailings dam.

The study considered the storm duration history and storm interval in the place, according the reports provide by GeoHydrotech, an engineering company that supported the operation to update the water balance management system. The data referenced in the GeoHydrotech report was included in the water balance management system of the operation (operational criteria).

The phreatic surface was considered in the initial study and is monitored and calculated on a daily basis. Inspection and monitoring programs are in place. Records of such inspections are kept by the operation and reviewed in this opportunity.

The site has a meteorological station. Records of meteorological data were verified for 2008, 2009 and 2010. The operation compares the results to design assumptions and revise operating practices, when necessary. No cases were evidenced (revised operational practices), confirming that the water balance management procedure is effective.

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 Standard of Practice 4.4  
 in substantial compliance with  
 not in compliance with

*Summarize the basis for this Finding/Deficiencies Identified:*

The operation adopts some practices for the protection of wildlife. Fences were evidenced in the perimeter of the tailings dam. It was evidenced that the operation did several improvements in order to ensure the CNw (wad cyanide) is maintained below 50ppm in all open waters (TSF and specific tanks/ ponds). Monitoring results showed that these improvements resulted in CNw below 50ppm. Any wildlife mortality, linked with cyanide, was observed in the last three years.

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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 does not directly discharge solutions containing cyanide to surface waters. All process effluents are stored at the TSF, after passing through the specific tanks/ ponds before, and returns to the process. There is no evidence (through field observations) that indicates indirect discharges from the RPM operations have caused any concentrations in surface waters. All monitoring results evidenced that there is no contamination of surface waters with cyanide.

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 TSF and the specific tanks/ ponds are made with HDPE (high density poly-ethylene) membranes in order to avoid seepage. The operation also installed several piezometers down gradient of the operation in order to monitor if this control is effective (HDPE membrane). The operation has several monitoring piezometers down-gradient of the operation where cyanide analysis are being performed with results below the detection limit. Monitoring piezometers are located in the area of the specific tanks/ ponds, downstream of the tailings dam, and also in the hydrometallurgy area (all area is concreted, providing a good barrier to seepage) that are monitored on a regular basis. Reviewed results showed that the underground water aspects are in compliance with the Brazilian standard for underground (drinkable) water (cyanide was not detected). In general terms, the process plant is kept dry, as observed in the field audit, and is well maintained.

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:*

Cyanide tank areas are surrounded by containment walls, constructed according to engineering specifications and according to Brazilian safety and environmental laws. Cyanide piping is protected against spilling, in order to protect the workers and the environment. Cyanide piping system is fully identified through color codes. The process plant pipelines (carbon steel and HDPE ones) that contains cyanide solutions, were identified and have a secondary protection. The operation floor is concreted. All evidenced in the field audit. the capacity of the secondary containment is 115% of the volume of the largest tank.

The operation implemented a pumping system that is used to pump any effluent (or after a rain) that is

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contained in the secondary containments. All the effluent is pumped back to the process. The plant also counts with a drainage system.

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 did implement a change management procedure in order to ensure that all modifications to the existing facilities will be performed on a structured way. During the audit, the Engineering Standard for construction of facilities were presented and reviewed (Manual de Engenharia da Kinross Paracatu, rev. 2009). In this document all details for QC/QA, presenting requirements as project design, as built and reviews. Were verified QC/QA to the construction of the specific tanks and others facilities. Records related to incoming inspection of materials (welding, steel plates, HDPE membrane, carbon steel pipes and elbows), in process inspection (welding and soil compaction) and final inspection/commissioning records(hydro-static tests , leak tests, NDT tests) were evidenced and are kept by the operation. All documented presented for facilities since the operation start up (1985), and appropriate as built drawings are kept by the engineering process.

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:*

There is a specific procedure in place that defines the monitoring programs, which list the monitoring stations, parameters, sampling frequency, sampling and preservation procedures, legal requirements such as conditions, and contain means to implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface, open and ground water quality. All sampling and analytical protocols were developed, by qualified technicians, in accordance with accepted international methodologies ("Standard Methods for The Examination of Water and Wastewater, 21st edition).

An inspection program for wildlife mortalities monitoring is in place. Few cases of wildlife mortality were reported. The investigation results showed that they were not linked with cyanide intoxication.

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**5. DECOMMISSIONING:** *Protect communities and the environment from cyanide through development and implementation of decommissioning plans for cyanide facilities*

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

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

*Summarize the basis for this Finding/Deficiencies Identified:*

According to the Brazilian environmental legislation, the operation must establish a general plan to close-out and recover the area where it was installed. This plan is entitled "degraded areas recovery plan (PRAD/ Plano de Recuperação de Áreas Degradadas)" and shall be updated every five years and presented to the local environmental agency. Observed the mentioned plan was developed and provided to the local environmental protection agency, as legally required. Also verified written procedures for decommissioning. Was evidenced that the mentioned plan was revised and updated, addressing the requirements related to reactivities disposal and the sequence of dismantling activities. Also reviewed the report "conceptual plan for closure of the Gold Hill Mine" RT-002-099-515-2007-03-J", which was performed by a mining engineering company and addresses the phases related to the operation closure and related costs. This plan is updated every five years or when there is a significant change in the operation circumstance.

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:*

An estimate of costs to fund the activities implemented by third parties that decommissioning is defined and updated annually. The site has established a self-insurance mechanism based on the requirements set forth in Chapter 40, Section 264 of the U.S. Code of Federal Regulations (40 CFR 264). An independent audit of non-consolidated financial statements of Rio Paracatu Mineração was conducted to demonstrate that the operation met the standard for financial strength.

**6. WORKER SAFETY:** *Protect workers' health and safety from exposure to cyanide.*

Standard of Practice 6.1: *Identify potential cyanide exposure scenarios and take measures as necessary to eliminate, reduce or control them.*

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

## SUMMARY AUDIT REPORT

### *Summarize the basis for this Finding/Deficiencies Identified:*

The operation defined and implemented a risk evaluation procedure where all safety, health and environmental hazards are identified and the associated risks evaluated. Based on the risk evaluation, the operation developed and implemented several management and operational procedures (as mentioned at SoP 4.1) documented procedures. These procedures were developed with the participation of internal stakeholders, such as process engineers, plant supervisors, process operators, maintenance technicians, laboratory technicians, among others). All procedures define the required PPE that shall be used in each activity as well as any prior inspection that shall be performed.

The operation employees participated effectively in the risk identification and evaluation and in the development of operational procedures being trained in such procedures, and are effectively re-trained on a regular basis. It was observed, during the field audit, that all interviewed personnel is aware about the cyanide related risks and perform their tasks in conformance with the defined operational procedures.

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:*

It was observed that the operation determined that the minimum pH value shall be equal or greater than 10.5. This value is addressed at the operational procedures for cyanide solution preparation and for leaching activities. Observed that the usual pH is kept around 12. Also observed during field audit and interview with operators. Areas where HCN concentration could be a risk were also identified. These areas have HCN sensors.

It was also evidenced that operators use portable HCN sensors which are previously calibrated against Brazilian or International Standards.

It was observed that the operation established, documented, implemented and maintains procedures for preventive maintenance as well as calibration plan which ensure that cyanide monitoring equipment is used as defined by the manufacturer. The retention time for the calibration records is one year.

The signage system is effective, covering the presence of cyanide and that eating, drinking and smoking is not allowed and also open flames are prohibited.

All required auxiliary installations, such as emergency showers, low pressure eye-washes and fire extinguishers, are in place and operational. They were tested during the audit and worked properly. Also evidenced controlled copies of NaCN MSDS in Portuguese, available for the operators.

All cyanide tanks and piping are clearly identified and painted (in conformance with a color code), identifying the flow direction, as evidenced in the field audit.

The operation has defined, documented and implemented a procedure to investigate and evaluate any kind of incidents or accidents. It was not evidenced the occurrence of any cyanide related incident/accident involving plant operators in the last four years.

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

## SUMMARY AUDIT REPORT

### *Summarize the basis for this Finding/Deficiencies Identified:*

It was observed that operation has an emergency facility, a health care center fully equipped with resuscitator, ambulances, antidote kits, telephone, radio and oxygen cylinders. These facilities were evidenced in the field audit.

All the first aid equipment is effectively inspected as required. Inspection records provide evidenced the duly implementation. The antidotes are stored under controlled conditions, into a refrigerator and their validity is monthly checked.

The operation developed specific emergency response procedures for cyanide exposures (see Principle 7 for more details).

The operation has also a health care center (three doctors and five occupational health nurses, available during the hole day, in shifts), equipped with oxygen center, antidotes, ambulances and two resuscitator. These installations and personnel were evidenced during the field audit. The transportation procedures (internal and external) are tested, at least, once a year.

The operation has agreements with local Hospital Municipal de Paracatu and Hospital São Lucas which have trained doctors to respond in case of emergency with cyanide.

It was evidenced that cyanide related emergency drills are effectively performed by the operation, including the local Hospitals team in the exercises, when applicable. Evidenced 2010 and 2011 annual emergency mock plans and related records. See Principle 7 for additional details.

### **7. EMERGENCY RESPONSE** *Protect communities and the environment through the development of emergency response strategies and capabilities.*

Standard of Practice 7.1: *Prepare detailed emergency response plans for potential cyanide releases.*

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

### *Summarize the basis for this Finding/Deficiencies Identified:*

The operation defined, documented and implemented an Emergency Plan in order to respond to cyanide related emergencies. The Kinross Paracatu and Niquini have an integrated Emergency Plan for emergencies during cyanide transport. Evidenced, through pertinent records that Niquini drivers have been trained as required.

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 Emergency Plans define responsibilities of several stakeholders (internal and external), including security and health authorities, public authorities, federal road policy, local hospitals, response suppliers (SOS Cotec/ emergency response qualified supplier), community representatives. The emergency response plans were reviewed, approved and communicated to several stakeholders (internal and external), including security and health authorities, public authorities, emergency response suppliers, community representatives.

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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 emergency response brigade members are voluntary but passed through a selection process (medical, theoretical and practical), to be assigned as a brigade member. It was evidenced that brigade members were trained as required. It was evidenced an available list emergency response equipment protection gear, available along transportation routes and/or on-site. The emergency response plan identifies the required resources (hardware) that are necessary to each situation. The basic emergency response hardware is consisted of two ambulances, one complete equipped emergency truck, one pick-up car 4X4, and auxiliary equipment (PPEs) for the brigade members, such as chemical/flame resistant overall, chemical gloves, oxygen masks and cylinders, chemical masks. The operation confirmed that outside entities included in the Emergency Response Plan are aware of their involvement and are included as necessary in mock drills or implementation exercises as required

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:*

It was observed that the Emergency plans were reviewed, approved and communicated to several stakeholders, including security and health authorities, public authorities, emergency response suppliers, community representatives. The plan clearly defines the communication procedures to be used during an cyanide related emergency including a list of emergency telephones (24h) of all emergency brigade members, leaders, managers and general manager), public authorities, hospital, response suppliers, cyanide supplier, cyanide transporter. The communication procedures also involve the security process of the operation. Necessary resources are clearly defined and provided.

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 reviewed emergency plans, PE-004 and PE-008, prohibit the use of chemicals such as sodium hypochlorite, ferrous sulfate and hydrogen peroxide to treat cyanide that has been released into surface or open waters. The Emergency Plans clearly defines the required monitoring procedures to be implemented in the event of soil and water potential contamination. An environmental monitoring plan is mentioned in the Emergency Plans which include sampling methodologies, parameters and, where practical, possible sampling locations as required.



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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:*

It was observed that cyanide emergency mock drills are planned and conducted periodically as part of the Emergency Response Plan evaluation process.

It was observed that after an emergency drill, the drill results are reviewed and discussed among the participants. The opportunities of improvement raised-up during the drill are considered as corrective or preventive actions and managed adequately. The emergency plans were found updated. Reports related to the drills and their review, were found in place.

**8. TRAINING:** *Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner.*

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

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

*Summarize the basis for this Finding/Deficiencies Identified:*

The operation train all personnel who may encounter cyanide hazard recognition according the procedure to control training. Evidences were available that the company retained cyanide training records according to the procedure. Evidence was available that the training effectiveness, through simulation tests, is verified by the operation. Planned job observations are also used to verify the effectiveness of the provided training. Records of planned job observations were reviewed.

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:*

Evidences (training program and associated records) were available that the company trains appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment through systemic training procedures. Plant operators are qualified based on education, training, experience and personal skills. The training material "Training PGR II Modified" deals with the integration, "Cyanide Management Training II". Some training material is provided by DuPont and clearly addresses the aspects related to cyanide handling and also first aid measures. Specific training material was established for specific functions, such as operators, laboratory technicians, warehouse keepers, emergency brigade members. A general introduction training, related to

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risks associated to cyanide is also provided. The cyanide related training record clearly addresses the date, the subject, the instructor name, the personnel being trained and the instructor perception about the trainee performance. Training records are kept while the employee is working and plus five years after the employee leaves the company, according Brazilian labor laws. Refresh training is provide on a regular basis. Records of such trainings are kept on file.

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:*

It was observed that the plant operators and maintenance employees were trained in the procedures to be followed if cyanide is released. The Emergency Response Coordinators and members of the Emergency Response Team were trained in the procedures included in the Emergency Response Plans regarding cyanide, including the use of necessary response equipment. Simulated cyanide emergency drills are periodically planned and conducted for training purposes. These mock drills cover the work exposures and environmental releases. The records of such simulations are retained by the operation, documenting the cyanide training, including the names of the employee and the trainer, the date of training, the topics covered, and how the employee demonstrated an understanding of the training materials.

### **9. DIALOGUE: Engage in public consultation and disclosure.**

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

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

*Summarize the basis for this Finding/Deficiencies Identified:*

The operation has several forms of media to provide stakeholders the opportunity to communicate issues of concern. The means showing an effectiveness contact with stakeholders (Internal and external) are: Kinross Paracatu website, Fale Conosco (Speak with us – 0800), Programa de Visitas (visit program), Jornal da Kinross (operation newspaper) Teor, Encontro Mercado, Comitê de Comunicação Interna (Internal Communication Committee). The Company informs in its website in the Chapter "Health and Safety and Environmental" the CYANYDE CODE, including the effects and care related to cyanide. The program "Programa de Visitas" allows the community representatives to visit the Plant and be aware of the risks of cyanide.

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

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*Summarize the basis for this Finding/Deficiencies Identified:*

The operation informs in its website, in the Chapter "Health, Safety and Environmental" the CYANYDE CODE, including the effects and care related to cyanide. The program "Programa de Visitas" allows the community representatives to visit the Plant and be aware of the risks of cyanide. This opportunity is used by the operation to dialogue with the community. The operation has also established communication channels with public authorities and other external stakeholders such as hospitals and emergency responders.

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  not in compliance with Standard of Practice 9.3

*Summarize the basis for this Finding/Deficiencies Identified:*

There were not any incident/ accident related to cyanide in the last 3 years. The operation has a documented communication procedure where is addressed the communication procedure, including responsibilities, to any cyanide related incident. Local public authorities, such as labor agency, local hospital and the environmental protection agency shall be communicated in the event of any confirmed accident involving cyanide.

In the event of such kind of cyanide related accidents, the operation will make information available through the TOLL FREE phone number (0800-0381051), which is available 24h/day or through the SHE Department phone (55+38) 3679-1174.

The stakeholders may also access:

Labor public authority DRT/ MG → <http://portal.mte.gov.br/delegacias/mg>

Environmental protection agency → [www.feam.br](http://www.feam.br)