
Cyanide Management Plan

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1 Introduction

This *Cyanide Management Plan* describes the measures Roşia Montană Gold Corporation (RMGC) will implement in order to minimize the risk to employees, adjacent communities, and the environment from the use of cyanide compounds in the precious metal recovery process for the Roşia Montană Project. This plan applies only to Roşia Montană Project ore processing activities; it addresses the necessary elements of design, construction and operation of facilities for unloading and storage of cyanide, its use in the recovery process, and, ultimately, its detoxification and safe disposal. Programs for employee and contractor safety and training are identified, as are the necessary plans and procedures for preventing (and responding to) any potential accidental cyanide exposures and releases. This plan emphasizes RMGC commitments to full public disclosure of cyanide-related information. It also requires that the manufacturer and transporter of the cyanide used at the operation also demonstrate that their activities are conducted in a safe and environmentally protective manner.

The *Cyanide Management Plan* conforms to the *International Cyanide Management Code for the Manufacture, Transport, and Use of Cyanide in the Production of Gold* (International Cyanide Management Institute, July 2005). RMGC has committed to become a signatory of the International Cyanide Management Code. Code implementation demonstrates that RMGC will employ internationally recognized best management practices (BMPs) for the management of cyanide.

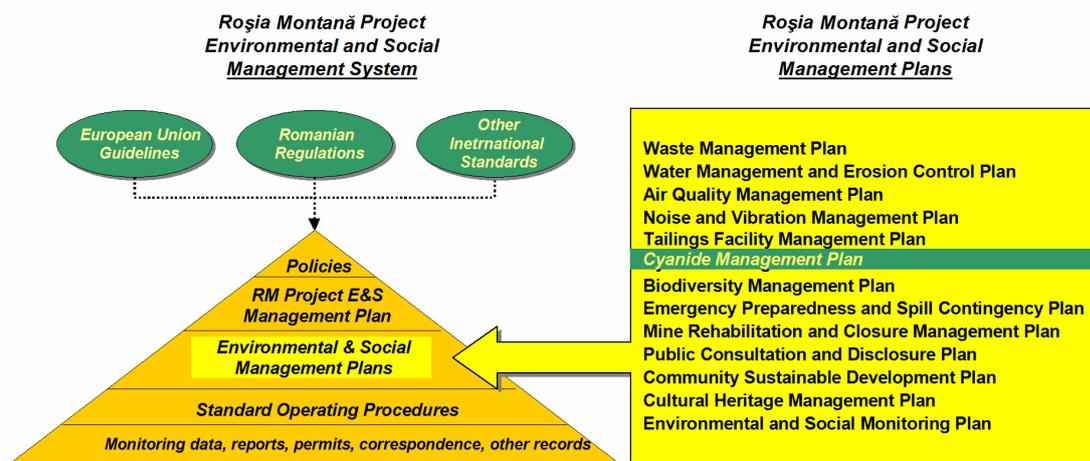
2 ESMS Considerations

As shown in Figure 2-1, this plan is one of a suite of environmental and social management plans that have been developed to support the Environmental and Social Management System (ESMS) separately described in the current version of the Roşia Montană Project *Environmental and Social Management Plan*. The ESMS considers current European Union and World Bank Group – International Finance Corporation guidelines, the “Equator Principles”¹, ISO 14001², the International Cyanide Management Code, and appropriate elements of other internationally recognized standards and best management practices as the basis for management system development and implementation.

Collectively, the *Cyanide Management Plan* and its companion plans address key operational control needs that have been established for those areas for which the Environmental Impact Assessment (EIA) process indicates that environmental or social impacts are either known to exist, or may occur in various phases of the mine life cycle.

The implementation of this *Cyanide Management Plan* is also supported by a number of detailed, lower-tier standard operating procedures. These procedures are compiled in the

Figure 2-1. Structural Relationship of Management Plans in Environmental and Social Management System



RMGC Standard Operating Procedures Manual, the development, review, approval, distribution, and update of which is controlled by the *Roşia Montană Project Environmental and Social Management Plan*. Other specific document distribution, change control, personnel training, and records management needs associated with the implementation of this management plan are likewise addressed through the processes and procedures defined in Sections 4.2, 4.4, 4.5, and 5.3 of the *Roşia Montană Project Environmental and Social Management Plan*. A summary list of all of the management plans and standard

¹ See <http://www.equator-principles.com/principles.shtml>

² ISO 14001:2004, *Environmental management systems – Requirements with guidance for use*; International Organisation for Standardisation, Geneva, Switzerland, 2004.

operating procedures referenced in this *Cyanide Management Plan* is included in the reference section located after Section 13.

The *Cyanide Management Plan* will be subject to periodic review and update over the life of the Roşia Montană Project, in response to internal and external reviewer comments, regulatory changes, changes in mining operations, any processing changes that may involve cyanide, stakeholder consultation, internal performance verification and management review results, and other factors, as discussed in Sections 4.5 and 4.6.3 of the *Roşia Montană Project Environmental and Social Management Plan*. Each version of this plan is subject to the controlled distribution protocols defined in procedure MP-05, “Review, Approval, Controlled Distribution, and Update of Environmental and Social Management System Documents.” Compliance with the requirements of this plan will also be periodically evaluated in accordance with Section 5.4 of the *Roşia Montană Project Environmental and Social Management Plan* and procedure MP-12, “Internal Environmental and Social Management System Performance Verifications.”

3 Regulatory Requirements and Codes of Practice for Cyanide Management

3.1 Regulatory Requirements

A general discussion of regulatory requirements, potentially applicable to the procurement and importation of sodium cyanide reagent and the management of process cyanide, is presented in this Section. It must be emphasized that as an EU accession state, Romania is in the process of transposing EU regulations to Romanian law, and the regulatory environment is therefore transitional. RMGC is committed to maintaining compliance with current regulations through this transition period and Section 3.2 of the *Roşia Montană Project Environmental and Social Management Plan* invokes a process for periodically identifying regulatory changes that must be reflected in the current management of the project. A register of currently applicable legal and regulatory requirements will be maintained, as noted in MP-02, "Identification of Legal and Regulatory Requirements." The *Cyanide Management Plan* will be periodically updated, as necessary, to reflect the applicable contents of the legal and regulatory requirements register. In the event conflicts between regulatory references appear between updates the requirements of the currently approved version of the register will be deemed to take precedence over the information provided in this Section.

3.2 Seveso II-based Reporting/Notification Requirements

Roşia Montană Project activities require the use and storage of chemicals, including sodium cyanide, that are defined as dangerous substances under European Commission Directive 96/82/EC, 9 December 1996 ("Seveso II"). Pursuant to European Commission Directive 2003/105/EC, 16 December 2003, RMGC is subject to the requirements of Seveso II to prevent major accidents and to limit their consequences for man and the environment. The major management actions that RMGC will take to implement these requirements are listed in Table 3.1.

Table 3.1 Regulatory Requirements Applicable to the Importation and Transportation of Sodium Cyanide Reagent and the Management of Process Cyanide

EU Regulations	Romanian Regulations/Transposition Documents
<p>European Commission Directive 96/82/EC, 9 December 1996 on the control of major-accident hazards involving dangerous substances ("Seveso II")</p> <p>Directive 2003/105/EC of the European Parliament and of the Council of 16 December 2003 amending Council Directive 96/82/EC on the control of major-accident hazards involving dangerous substances</p>	<p>Governmental Decision (GD) No 95/2003 on the control of the activities with major accident hazards in which are involved dangerous substances; this directive transposes the EU Seveso II Directive</p>
<p>Directive 2005/.../EC of the European Parliament and of the Council of [sic] On the management of waste from extractive industries and amending Directive 2004/35/EC</p>	<p>In transposition</p>
<p>Council Regulation (EEC) 793/93 on the Control and Evaluation of the Risks of Existing Substances</p> <p>Commission Regulation (EC) No 1179/94 of 25 May 1994 concerning the first list of priority substances as foreseen under Council Regulation (EEC) No 793/93</p> <p>Commission Regulation (EC) No 2268/95 of 27 September 1995 concerning the second list of priority substances as foreseen under Council Regulation (EEC) No 793/93</p> <p>Commission Regulation (EC) No 143/97 of 27 January 1997 concerning the third list of priority substances as foreseen under Council Regulation (EEC) No 793/93</p> <p>Commission Regulation (EC) No 2364/2000 of 25 October 2000 concerning the fourth list of priority substances as foreseen under Council Regulation (EEC) No 793/93</p> <p>Council Directive (EC) No 1488/94 of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances</p>	<p>Governmental Emergency Ordinance (GEO) No 200/2000 on the classification, labeling and packaging of dangerous chemical substances and preparations; this regulation set forth the legal framework for classification, labeling and packaging of chemical substances and preparations in the marketplace which are dangerous for the environment and human beings</p> <p>Law No. 451/2001 for the approval of the GEO No 200/2000 on the classification, labeling and packaging of dangerous chemical substances and preparations; this law approves and amends GEO No 200/2000.</p> <p>GD No. 490/2002 for approval the Methodological Norms for application of GEO No. 200/2000 regarding the classification, labeling and packaging of dangerous chemical substances and preparations; this directive provides details on the classification, labeling and packaging of dangerous chemical substances and preparations and the assessment of dangerous property of dangerous chemical preparations.</p> <p>GD No. 92/2003 for approval the Methodological Norms regarding the classification, labeling and packaging of dangerous chemical substances and preparations; this directive provides details on the classification, labeling and packaging of dangerous chemical substances and preparations, and the assessment of dangerous properties of dangerous chemical preparations.</p> <p>Law No. 360/2003 on the regime of dangerous chemical substances and preparations; this law establishes the general framework for effective control and efficient supervision of dangerous chemical substances and preparations, for the protection of public health and the environment against the negative impacts of such substances and preparations. (Amended by Law No. 263/2005)</p> <p>GD No 1.300/2002 on the notification of chemicals; this directive regulates the notification on chemicals in the marketplace, and is applicable both to the chemicals producers and to chemicals importing companies. The competent authority is the National Agency for Chemical Substances and Compounds.</p>

EU Regulations	Romanian Regulations/Transposition Documents
	(Amended by Law No. 396/2004) GD No 2167/2004 on laying down the principles for assessment of the risks to man and the environment of the notified substances; this directive establishes principles for assessment of the risk to humans and the environment with respect to notified substances.
Regulation (EC) 304/2003 concerning the export and import of dangerous chemicals	GD No. 697/2004 for approval of the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade (the PIC Convention) (Amended by MO 610/2005)

Table 3.2. Seveso II Requirements and Applicable RMGC Management Actions

Seveso II Requirement	RMGC Management Action
Provide the competent authority with information on its proposed activities, the quantity and physical form of the cyanide to be used, and the elements of the immediate environment at the Roşia Montană Project that are liable to cause or aggravate the consequences of a major accident	RMGC will include the requested information in a <i>Safety Report</i> to be submitted to appropriate local and regional authorities.
Prepare and implement a policy for the prevention of major accidents and make the policy available to the competent authority	The RMGC major accident prevention policy is defined in the Roşia Montană Project <i>Emergency Preparedness and Spill Contingency Plan</i> ; this plan specifically considers the United Nations Environment Programme (UNEP) Technical Report No. 41, <i>APELL for Mining: Guidance for the Mining Industry in Raising Awareness and Preparedness for Emergencies at Local Level</i> , and will be appended to (and submitted with) the aforementioned <i>Safety Report</i> .
Prepare and submit to the competent authority a Safety Report demonstrating that the facility will be designed, constructed, operated and maintained to prevent and respond to major accidents	The project-specific <i>Safety Report</i> will contain or reference the process plant and TMF design information developed as Section 2 of the project EIA ("Technological Processes").
Review and revise policies and procedures for accident prevention when the facility or characteristics associated with the use or storage of cyanide change significantly.	Such review and revision requirements are included in the document updating requirements presented in Section 2 of this <i>Cyanide Management Plan</i> and Section 2 of the <i>Emergency Preparedness and Spill Contingency Plan</i> .
Prepare an internal Emergency Plan and provide the competent authority with the information necessary for preparation of an external Emergency Plan	RMGC has prepared the Roşia Montană Project <i>Emergency Preparedness and Spill Contingency Plan</i> and will: 1) provide a copy to appropriate local and regional authorities with the <i>Safety Report</i> , as previously noted, and 2) collaborate with appropriate local and regional authorities in the update or development of external (community) emergency plans.
In the event of a major accident, provide the competent authority with information regarding the circumstances of the accident, the dangerous substances involved, the available information to assess the effects of the accident on man and the environment, the emergency measures taken, the measures to be taken to alleviate medium- and long-term effects of the accident and to prevent a recurrence	The <i>Emergency Preparedness and Spill Contingency Plan</i> fully addresses the documentation and reporting of major accidents; mandatory corrective/preventive action investigation processes are invoked for all significant spills, releases, or emergency situations for which RMGC is responsible, in accordance with the <i>Emergency Preparedness and Spill Contingency Plan</i> and Section 4.7 of the <i>Roşia Montană Project Environmental and Social Management Plan</i> .

RMGC will also be subject to European Commission Directive 82/501/EEC, 24 June 1982 as amended by Directive 88/610/EEC, 7 December 1988. These Directives require RMGC to provide the public with the following types of information:

- Company name, address and title of position giving the information;
- Confirmation that RMGC is subject to the regulations;

- An explanation in simple terms of the activity undertaken on the site;
- The common names of the substances on site which could give rise to a major accident, with an indication of their principal dangerous characteristics;
- General information relating to the nature of the major-accident hazards, including their potential effects on the population and the environment;
- Information on how the population concerned will be warned and kept informed in the event of an accident;
- Information of the actions the population concerned should take, and on the behaviour they should adopt, in the event of an accident;
- Confirmation that the company is required to make adequate arrangements on site, including liaison with the emergency services, to deal with accidents and to minimise their effects;
- A reference to one or more off-site emergency plans drawn up to cope with any off-site effects from an accident; and
- Details of where further relevant information can be obtained.

This information will be documented in the aforementioned *Safety Report*, this *Cyanide Management Plan* (which includes a detailed example of a Safety Data Sheet for sodium cyanide briquettes in Attachment 4), the *Emergency Preparedness and Spill Contingency Plan*, associated fact sheets, and other appropriate documents. This information will be communicated to the public via the mechanisms described in the *Public Consultation and Disclosure Plan* prepared for the Roşia Montană Project.

3.3 Industry Codes of Practice

The International Cyanide Management Code is a voluntary industry code of practice for the use of cyanide in the mining of gold. The Code was developed in 2001 under the auspices of United Nations Environment Programme (UNEP) and the International Council on Mining and Metals (ICMM). A multi-stakeholder Steering Committee with participants from the gold mining industry, governments, non-governmental organizations, labour, cyanide producers, and financial institutions, worked co-operatively toward the common goal articulated in the Code's Mission Statement: "To assist the global gold mining industry in improving cyanide management, thereby minimizing risks to workers, communities, and the environment from the use of cyanide in gold mining, and reducing community concerns about its use."

The Code consists of 9 "Principles" and 31 "Standards of Practice" that address BMPs for all aspects of the safe use of cyanide by gold mines, including production of cyanide and its transportation to the mine site, handling of reagent-strength cyanide, use of cyanide in the gold production process, decommissioning of cyanide facilities, worker safety, worker training, emergency response, and public dialogue. Implementation of the Code is overseen by the International Cyanide Management Institute.

Companies that become signatories to the Code demonstrate their compliance by having their operations inspected by independent third-party auditors meeting the criteria established by the International Cyanide Management Institute and using its Verification Protocol. Companies that do not wish to become signatories can still benefit from the Code by adhering to the Principles and Standards of Practice and incorporating the measures included in the Code's Implementation Guidance into the facility's design, construction, operation and closure.

3.4 RMGC Approach to Code Compliance and BMP Implementation

RMGC will be a signatory to the International Cyanide Management Code and is committed to employ BMP designs, construction techniques, and operating practices, policies and procedures into the Roşia Montană Project, as currently defined by the Code. More specifically, this *Cyanide Management Plan* has been developed to document the measures RMGC will take to comply with the Code's Principles and Standards of Practice in a manner consistent with the Code's Implementation Guidance. Adhering to the Code's guidance is meant ensure that RMGC employs internationally recognized BMPs in its management of cyanide and fulfils its obligations as a Code signatory.

4 Cyanide Production and Purchasing

As an end-user of sodium cyanide reagent, RMGC cannot directly control how the product is produced and managed during the manufacturing process. However, RMGC will use its procurement processes and procedures to encourage responsible production practices. RMGC shall purchase sodium cyanide only in solid form, manufactured exclusively by producers who are signatories to the International Cyanide Management Code, or who have otherwise demonstrated their commitment to limiting the exposure of their workforce to cyanide and to preventing, controlling, and/or rapidly and effectively responding to releases of cyanide to the environment. RMGC shall determine whether a cyanide producer meets its requirements as a responsible cyanide manufacturer by contractually requiring that the producer either be certified under the International Cyanide Management Code, or have a comprehensive external audit conducted for its health, safety and environmental programs and procedures for cyanide production, prior to the initial contract agreement and at least every three years thereafter. The required producer audit must be conducted by independent third-party auditors meeting the criteria for experience, expertise, and potential conflict of interest established by the International Cyanide Management Institute. Such audits must also follow the protocol for cyanide production facility audits established by the International Cyanide Management Institute (or otherwise address all of the protocol's questions and issues). Audit results are to be provided to RMGC for the life of the contract.³

These requirements shall be established as contractual provisions through the implementation of standard operating procedure MP-07, "Purchasing." As noted therein, RMGC may employ competitive tendering or other appropriate procurement approaches in the evaluation, selection, and contracting of a qualified producer. RMGC shall also reserve the right to conduct its own inspections of contractor operations in accordance with MP-08, "Surveillance Inspection." The technical requirements of this Section and such other controls as RMGC deems appropriate shall be incorporated into tenders and subsequent procurement documents. RMGC shall retain record copies of the contract and all producer audit results in accordance with procedure MP-11, "Management of Environmental and Social Management System Records." At RMGC's discretion, copies of producer audit results and other related information may be made available in response to external information requests, via the communications processes defined by the *Public Consultation and Disclosure Plan*.

³ If a facility producing cyanide for the Roşia Montană Project is certified under the International Cyanide Management Code, a Summary Report Form and Auditor Credentials Form will be available for public review on the International Cyanide Management Institute's web site, www.cyanidecode.org.

5 Transportation of Reagent Cyanide

5.1 Contractual Requirements for Cyanide Transport Contractor

Solid sodium cyanide shall only be transported in UN-approved ISO (or similar) containers that are dedicated to such service, and are designed to be used for controlled dissolution upon delivery. All containers shall be returned to the supplier for re-use.

RMGC recognizes that it has an important role in ensuring the safe and environmentally sound transport of sodium cyanide reagent to the Roşia Montană Project mine site, even though RMGC has no direct legal responsibility for such transport. RMGC will therefore contract exclusively with cyanide transportation companies that are reliable, have well trained drivers, modern and well-maintained vehicles, and have demonstrated a commitment not only to limiting the exposure of its work force to cyanide, but also to preventing, controlling, and/or responding to releases of cyanide to the environment. RMGC shall determine whether a transportation company meets its requirements as a responsible cyanide transporter by contractually requiring that the transporter also either be certified under the International Cyanide Management Code, or have an independent third-party audit conducted of its health, safety and environmental programs and procedures for cyanide transport at least every three years. The required audit must also be conducted by independent third-party auditors meeting the criteria for experience, expertise and lack of conflict of interest established by the International Cyanide Management Institute. The audit must follow the protocol for transporter audits established by the International Cyanide Management Institute (or otherwise address all of the transporter audit protocol's questions and issues). Certification of transporters under alternate, widely recognized schemes [e.g., the Safety and Quality Assessment Systems (SQAS) program implemented under the Chemical Manufacturers Association's voluntary Responsible Care® initiative by the European Chemical Industry Council (CEFIC)]⁴ may be considered if an equal or greater level of care and control over cyanide transportation services can be adequately demonstrated.

The transporter contract will also be prepared and issued in accordance with procedure MP-07, "Purchasing", and will require that records of third-party audit results be provided to RMGC for the life of the contract.⁵ RMGC will also reserve the right to conduct its own inspections of contractor operations in accordance with MP-08, "Surveillance Inspection." RMGC will retain record copies of the contract and all producer audit results in accordance with procedure MP-11, "Management of Environmental and Social Management System Records." At RMGC's discretion, copies of transporter audit results and other related information may be made available in response to external information requests, via the communications process defined by the *Public Consultation and Disclosure Plan*.⁶

⁴ See www.sqas.org and www.cefic.be

⁵ If the cyanide transport contractor is certified under the International Cyanide Management Code, a Summary Report Form and Auditor Credentials Form will be available for public review on the International Cyanide Management Institute's web site, www.cyanidecode.org.

⁶ RMGC may, at its option, select a sodium cyanide producer with demonstrated capabilities in managing cyanide transportation and delivery in addition to its reagent manufacturing services. If transportation responsibilities are contracted through the cyanide producer, the requirements of Section 5.1 and 5.2 will be incorporated as definitive requirements in the producer's contract.

5.2 Responsibilities During Transport

As part of its contractual arrangements, RMGC shall prepare written agreements with the cyanide manufacturer and transporter, which will outline which party will be responsible for the following health, safety and environmental issues during each phase of cyanide transportation, as applicable:

- Driver/operator qualifications and vehicle operation training;
- Accident prevention, emergency response, and safety training for transporter drivers/operators throughout the transportation process (including responsibilities for strict maintenance of driver/operator sobriety during transport; see EM-04, “Alcohol Testing for Drivers/Equipment Operators”);
- Packaging (see Section 5.3);
- Labelling (see Section 5.5);
- Storage prior to shipment;
- Evaluation and selection of routes to reduce risks, including community consultation and disclosure;
- Establishment of protocols for driver/RMGC communications and automated shipment tracking via global positioning systems (GPSs) or other automated methods;
- Storage and security at ports of entry and cargo transfer points;
- Interim loading, storage and unloading during shipment;
- Transport to the Roşia Montană Project process plant;
- Unloading at the process plant (in accordance with the checklists included in CN-01, “Unloading and Storage of Reagent Cyanide”);
- Proper maintenance and operation of transportation vehicles throughout each delivery;
- Coordination of security and emergency response actions throughout the transportation process; and
- Preparation and submittal of trip reports and immediate reporting of transportation hazards or unsafe roadways or driving conditions (see Section 5.4).

These agreements shall also specify that any designated responsibilities that apply to RMGC, the cyanide manufacturer, and the cyanide transporter extend to any subcontractors used by these parties for any activities related to cyanide transportation, and that all affected parties are required to inform subcontractors of their designated responsibilities. Copies of these agreements shall be retained in accordance with procedure MP-11, “Management of Environmental and Social Management System Records.” RMGC and contractor personnel assigned specific responsibilities as a result of these agreements shall receive training in the agreement requirements, in accordance with procedure MP-03, “Environmental and Social Management System Training.” At the discretion of the Managing Director, copies of training records and other related information may be made available in response to external information requests, via the communications process defined by the Roşia Montană Project Public Consultation and Disclosure Plan.

5.3 Cyanide Packaging

Cyanide packaging container requirements shall be contractually defined, as noted in Section 5.2, and shall conform to the requirements of the International Cyanide Management Code and Packaging Group 1 (PG1) under the UN's *Recommendations on the Transport of Dangerous Goods: Model Regulations* (UN, 2003). Strict compliance with these requirements are meant to ensure that the packaging containers undergo rigorous maintenance and testing, and that they are robust enough to withstand transport incidents and minimize the risk of product release.

5.4 Road Survey

A detailed road route survey from the appropriate railhead(s) or seaport terminal to the Roşia Montană Project site shall be conducted no less than one year prior to the initiation of the operational phase of the project, and periodically thereafter at RMGC's discretion and as circumstances warrant. As noted in Section 5.2, transporters shall submit brief reports from each trip to the project site, and shall be required to contact RMGC logistics and Environmental Department staff if unsafe driving conditions or significant hazards are observed on any major site access road.

5.5 Labelling of Cyanide

Cyanide container labelling shall be the responsibility of the transporter. Labelling protocols shall conform to UN standards as defined in *Recommendations on the Transport of Dangerous Goods: Model Regulations* (UN, 2003) as well as applicable Romanian regulations [i.e., *Law No. 451/2001 for the approval of the GEO No 200/2000 on the classification, labeling and packaging of dangerous chemical substances and preparations* and *Governmental Emergency Ordinance (GEO) No 200/2000 on the classification, labeling and packaging of dangerous chemical substances and preparations*].

6 Management of Reagent Cyanide

RMGC shall design, construct, operate, maintain, and monitor/inspect its facilities for the handling of reagent cyanide in order to prevent cyanide releases and exposure of its workers and the public, and shall minimize their impacts to the extent possible if they do occur. Information demonstrating that the process plant is being designed, constructed, operated, monitored, and maintained to prevent major accidents shall be included in the *Safety Report* that shall be provided to the competent authority pursuant to the Seveso II Directive discussed in Section 3.2. Detailed written standard operating procedures and training programs for workers managing reagent-strength cyanide shall be implemented as described herein, to further minimize the potential for (and impacts of) any cyanide releases or exposures. In addition, emergency medical procedures will have been established and antidote kits will be made available in the event that workers suffer any toxic health exposures to cyanide. Administration of cyanide antidotes shall be performed only by qualified physicians, nurses, medical technicians, or trained emergency response team personnel. RMGC Emergency Response Teams shall include or have immediate access to qualified medical personnel.

Off-loading and storage facilities at the Roşia Montană Project process plant shall be designed and constructed to technically acceptable engineering specifications and standards consistent with the cyanide producer's technical guidelines, the International Cyanide Management Code, the *Reference Document and Best Available Techniques for Management of Tailings and Waste-Rock in Mining Activities* (EU, July 2004), other international BMPs, and all applicable local, regional, and national regulatory requirements. The minimum requirements described in Sections 6.1 through 6.4 shall also be considered.

6.1 Cyanide Off-Loading and Storage Facility Design and Solution Containment Requirements

Trucks delivering solid sodium cyanide to the facility will park on a bermed concrete pad. High pH water will then be pumped into the truck's container tank to dissolve the cyanide. The parking pad will be sloped towards a concrete secondary containment area with sufficient capacity to contain at least 110% of the truck's entire load of dissolved sodium cyanide, and with additional capacity as necessary to accommodate the design storm event. Once the sodium cyanide has been dissolved, the truck's contents will be pumped into an insulated steel storage tank located within a concrete secondary containment structure adjacent to the reagent building. Alternately, containers of solid sodium cyanide may be off-loaded from the truck and stored within a fenced and bermed concrete compound with locked gates. When required for metals processing, containers would be moved near the storage tank, high pH water added to dissolve the solid cyanide, and the solution then pumped into the storage tank. Environmentally benign fluorescent dye may be added upstream of the process circuit to facilitate routine leak detection inspections in the process plant. Both the unloading and storage area containment structures will include sumps and other engineered features to facilitate the recovery of any spilled materials by pumping them back to the process circuit.

The storage tank will be located within a secondary containment area constructed with concrete walls and floor providing sufficient capacity to hold at least 110% of the largest tank within the containment in addition to any piping that drains back to the tank. The secondary containment area for the off-loading pad and storage tank will not have any drains or other outlets. Sumps within the containment areas will be equipped with dedicated suction pumps to return any released cyanide solution to the processing circuit. All fixed piping for reagent cyanide solution will be constructed from stainless steel, high-density polyethylene (HDPE), or other materials known to be compatible with cyanide solution; however, in process areas

involving cyanide solutions with 5% or greater concentrations, stainless steel piping system components shall be required.

Contractual conditions for the construction management contractors responsible for the design and the construction of cyanide off-loading and storage facilities will specifically include requirements for the implementation of quality assurance/quality control programs to recognized international standards, in order to provide a high measure of confidence that the facilities will function as designed. Design and construction quality assurance/quality control records and as-built certifications of these facilities will be retained in accordance with procedure MP-11, "Management of Environmental and Social Management System Records", and at RMGC's discretion may be made available in response to external information requests via the communications processes defined by the Roşia Montană Project *Public Consultation and Disclosure Plan*.

6.2 Off-Loading and Storage

Cyanide off-loading and storage facilities will be located away from surface waters, within the fenced and access-controlled boundaries of the process plant area. All offloading activities will be supervised by trained and authorized personnel. The cyanide offloading and storage facility will itself be enclosed by locked security fencing, accessible only to authorized personnel. No acids, oxidizers or other reagents that may be incompatible with cyanide may be stored within cyanide off-loading and storage containment system areas. Storage areas will be well ventilated.

A hydrogen cyanide gas detector will be located at each end of the off-loading and storage area. The detector will be designed to sound a highly audible evacuation alarm and initiate a flashing beacon if the airborne cyanide concentration reaches the most stringent of the worker exposure limits established by the Romanian government or the EU, or recommended by the International Cyanide Management Institute. It also will send an electronic alert signal to the appropriate operations control room. Dual-language signs will be posted at the necessary facilities detailing the procedures for operation of the dissolution transfer equipment and requirements for response to releases and first aid in the event of an emergency.

The cyanide storage tank will be equipped with a visible level gauge and a high level alarm that will sound in the control room to prevent over-filling. Any cyanide solution accidentally released during off-loading will be captured in the sump and pumped back to the production circuit; no spill kits (i.e., neutralizers and dry absorbent materials) will be required and no spill cleanup waste will be generated. In addition to the general emergency response equipment specified by the Roşia Montană Project *Emergency Preparedness and Spill Contingency Plan*, medical oxygen, a resuscitator, a cyanide antidote (to be administered only by medical personnel or trained emergency response team members), a source of potable water, an eye wash/safety shower station, a non-acidic (dry chemical) fire extinguisher, and portable self-contained breathing apparatus (SCBA) equipment will be available in close proximity to the off-loading and storage tank area for use in the event of a cyanide release. A manually activated alarm will also be located at the dissolution area. Authorized personnel will also be required to have a two-way radio or cellular telephone with them during off-loading and dissolution activities if it becomes necessary to summon assistance in any emergency situation.

Standard operating procedure CN-01, "Unloading and Storage of Reagent Cyanide" provides specific instructions for cyanide dissolution and transfer to the storage tank. This procedure contains the specific checklist to be completed prior to the dissolution of solid sodium cyanide, discusses personal protective equipment requirements, describes the method to ensure that the solution is at the appropriate pH, and includes a requirement that a trained observer be present during these activities to respond in the event of an emergency. Pre-work inspections will also be conducted prior to each shift, in accordance with HS-16, "Routine Safety Inspections"; CN-01 provides general contingency plans for

responding to accidental exposures and releases. More detailed plans for emergency response to cyanide releases and exposures at the off-loading and storage facilities are provided in the Roşia Montană Project *Emergency Preparedness and Spill Contingency Plan*, and are summarized in Section 13 of this plan.

The training program for personnel involved in management of reagent cyanide is discussed in Section 4.2 of the *Roşia Montană Project Environmental and Social Management Plan*, the *RMGC Occupational Health and Safety Plan*, and will be further addressed in standard operating procedure MP-03, "Environmental and Social Management System Training." Elements of the training program related specifically to the handling of cyanide are discussed in Sections 11 and 12 of this plan. Additionally, documented pre-work inspections will also be conducted prior to each shift, in accordance with HS-16, "Routine Safety Inspections."

6.3 Preventive Maintenance

All pumps, hoses, and other critical equipment for cyanide dissolution and storage will be included in the Roşia Montană Project preventive maintenance program. The preventive maintenance program will generate work orders on a predetermined schedule so that this equipment can be inspected and maintained or replaced as necessary to assure its continued proper functioning and to prevent cyanide exposures and releases. Standard operating procedure CN-07, "Decontamination of Cyanide Handling Equipment," describes the necessary measures for decontamination of this equipment prior to maintenance, sale, or disposal. All decontamination rinseate will be routed to the detoxification circuit and detoxified to current EU regulatory limits (≤ 10 mg/L) prior to disposal in the Tailings Management Facility (TMF); see section 8.1.

6.4 Cyanide Off-Loading and Storage Facility Inspections

Formal inspections of the cyanide off-loading and storage facilities will be conducted monthly in accordance with the inspection requirements matrix included in standard operating procedure CN-04, "Inspections of Cyanide Tanks, Pipelines and Other Cyanide Facilities." Procedure CN-04 describes how these inspections are to be conducted and documented on the inspection checklist (see Attachment 1 of this plan) and how follow-up corrective actions are to be initiated and tracked. Use of a detailed checklist is meant to focus the attention of the inspector on the specific items that must be observed. Tank and pipeline inspections will focus on structural integrity, signs of corrosion and leakage, and legibility of labels indicating piping or tank contents and the direction of flow in pipelines. Secondary containment systems and associated supply and discharge piping components will be inspected for their integrity, the presence of fluids or evidence of leakage, cracks, and available capacity. At RMGC's discretion, reagent cyanide solution may also be coloured with an environmentally benign fluorescent dye to aid in inspections and make it easier to identify any leakage.

Any noted releases of cyanide solution or suspected unsafe conditions will prompt immediate corrective and preventive action, as appropriate for the observed condition. Examples of such actions could include pumping the solution to the production process, repairing leaking equipment (and inspecting similar equipment to prevent like occurrences), increasing testing/inspection frequencies, conducting more rigorous types of leak detection tests, or other measures commensurate with the nature and significance of the observed release. Because of the critical nature of these systems to the safe operation of the facility, any such occurrences will be documented as non-conformances and formal corrective and preventive actions undertaken in accordance with MP-10, "Corrective and Preventive Action for Environmental and Social Management System Non-conformances."

Cyanide off-loading and storage area security fencing will also be inspected at monthly to evaluate its integrity, to ensure that access restriction signs are legible, and that access to this area is restricted to authorized personnel only.

All inspection records will be retained in accordance with procedure MP-11, “Management of Environmental and Social Management System Records.”

7 Management of Cyanide in the Production Process

RMGC will design, construct, operate, monitor, inspect, and maintain its production facilities to prevent unplanned cyanide releases and exposure of its workers and the public, and to minimize the impacts from such releases if they do occur. Information demonstrating that the facilities are being designed, constructed, operated and maintained to prevent major accidents will be included in the *Safety Report* provided to the competent authority pursuant to the Seveso II Directive (see Section 3.2). Detailed written operating procedures and training programs for workers managing cyanide in the production process will be implemented to further minimize the potential for and impacts of cyanide releases and exposures. These measures are addressed in greater detail in the following paragraphs.

7.1 Process Plant Design, Solution Containment, and Spill Contingency Considerations

Roşia Montană Project production facilities will be designed and constructed to accepted engineering specifications consistent with the International Cyanide Management Code, the *Reference Document and Best Available Techniques for Management of Tailings and Waste-Rock in Mining Activities* (EU, July 2004), other international BMPs, and all applicable local, regional, and national Romanian regulatory requirements (see Section 3). All tanks and pipelines for process solutions will be constructed of steel, HDPE, or other materials known to be compatible with slurry containing cyanide. Such vessels and piping will be coloured and marked to comply with necessary code requirements.

The sections of the processing plant where any slurry containing cyanide (or cyanide solid or solution) is used will be located within concrete secondary containment areas, with sufficient capacity to hold at least 110% of the largest tank within the containment as well as any piping that drains back to this area. Secondary containment structures for any tanks that are external to buildings will have additional capacity for the design storm event. Sumps within the containment areas will be equipped with dedicated suction pumps to return any released slurry or solution to the processing circuit. Float switches or other high level indicators will be placed at key locations within the secondary containment areas to identify the presence of slurry or solution, and to alert operators in the process control room. Process pumps will be interlocked to automatically shut down to prevent a potential release if a downstream pump should fail.

RMGC will maintain portable electrical generators on site to supply back-up power to critical pumps, motors and control systems in the event of a power failure. Standard operating procedure CN-8, "Emergency Power Generation for Cyanide Handling Equipment," discusses the frequency for generator maintenance and testing, and describes the procedures for automatically starting and supplying back-up power to keep critical pumps and equipment operating during a power outage.

The processing plant will be fenced and access will be controlled to prevent the potential for unauthorized exposure to cyanide and other hazardous conditions on site. The process plant is itself within the security perimeter of the overall site; access to the process plant and other critical areas of the operation will be strictly controlled in accordance with procedure EM-07, "Site Security." Perimeter fencing and security practices will be inspected at least monthly to ensure that it is secure and that access restriction signs are legible.

Contractual conditions for the construction management contractors responsible for the design and the construction of processing facilities will specifically include requirements for the implementation of quality assurance/quality control programs to recognized international standards, in order to provide a high measure of confidence that the facilities will function as designed. Design and construction quality assurance/quality control records and as-built

certifications of these facilities will be retained in accordance with procedure MP-11, “Management of Environmental and Social Management System Records.”

7.2 Management of Cyanide Solutions in the Production Process

Standard operating procedure CN-02, “Carbon-in-Leach Facility Operation,” provides specific instructions for operation of the Carbon-in-Leach facility within the process plant. In addition to describing how the facility is to be operated, this procedure identifies cyanide-related risks, lists the necessary personal protective equipment, requires pre-work safety inspections, and references employee-training requirements. Contingency actions for upsets in process plant operations are also discussed in the procedure.

As noted in CN-02, it is RMGC policy that no physical or operational changes may be made to any portion of the cyanide circuit without first informing the Environmental and Health and Safety Departments and determining: 1) if the proposed change is allowed under applicable permits and licenses; and 2) if such changes may increase the potential for cyanide exposure or release. This includes any proposed changes in the handling both of reagent cyanide and process solutions, as well as the SO₂/air tailings detoxification facility. Routine maintenance activities, equipment replacement and changes in processing rates that are within design parameters and permit limits do not require this notification. Approval of any process plant changes involving the cyanide circuit will prompt a review of this *Cyanide Management Plan* and the *Emergency Preparedness and Spill Contingency Plan* for adequacy and accuracy.

Airborne cyanide gas detectors will be located in the following areas within the processing plant:

- Carbon-in-Leach tank tops;
- Thickener area;
- Detoxification facility;
- Carbon desorption area; and
- Cyanide unloading/storage area.

The detectors will sound an evacuation alarm and initiate a flashing beacon if the hydrogen cyanide concentration reaches the most stringent of the worker exposure limits established by the Romanian government or the EU, or as recommended by the International Cyanide Management Institute. These detectors will also send an alert signal to the operators in the process control room. A cyanide antidote kit as well as medical oxygen and resuscitators (to be administered only by medical professionals or trained staff on RMGC’s emergency response teams) will be available at the processing plant in the event of any such occurrence. Potable water sources, eye wash/safety shower stations, and dry powder fire extinguishers will also be located at strategic locations throughout the plant.

Personnel working in processing areas that involve cyanide handling or management will be trained on how to perform their assigned tasks in a manner that minimizes the potential for exposure to and release of cyanide. Training sessions will be conducted and documented in accordance with MP-03, “Environmental and Social Management System Training.”

Procedures for emergency response to cyanide releases and exposures at the processing facilities are discussed in Section 12 of this plan and the Roşia Montană Project *Emergency Preparedness and Spill Contingency Plan*.

7.3 Control of Cyanide Addition Rates

As noted in CN-02, “Carbon-in-Leach Facility Operation”, RMGC will use conventional bottle roll tests to determine the optimum cyanide addition rates, based upon bench-scale testing of pre-operational run of mine (ROM) ore samples. During operations, RMGC will also account for changes in ore characteristics with an automated system to monitor the use of cyanide in the leach process and to adjust cyanide addition rates accordingly. The design goal of including such a system is to maximize the efficiency of the leaching process and reduce the potential for use of excess cyanide. This will lower overall cyanide requirements, minimize the amount of cyanide being transported to the site and used at the operation, and reduce overall risks to human health and the environment.

7.4 Wildlife Protection - Production Facilities

Wildlife mortality from exposure to cyanide does not typically occur at properly designed and managed processing facilities, because access to cyanide solutions is strictly limited. In order to further minimize any exposure possibility, RMGC will expedite the capture and cleanup of any releases of cyanide solution, including any solutions released to secondary containments that are not within buildings, as noted in Section 6 and in the Roşia Montană Project *Emergency Preparedness and Spill Contingency Plan*. RMGC will also train employees in the process area to observe their workplace for incidents of wildlife mortality and to immediately report any such observations to their supervisors in accordance with standard operating procedure CN-05, “Wildlife Mortality Reporting - Cyanide Facilities.” This procedure ensures that such inspections are part of the process plant operator’s daily routine; it requires a daily notation of such observations, includes specific, formal investigation and corrective and preventive action procedures to be followed in the event that a mortality is observed (see MP-10, “Corrective and Preventive Action for Environmental and Social Management System Non-conformances”), and specifies that records are to be retained in accordance with procedure MP-11, “Management of Environmental and Social Management System Records.”

7.5 Preventive Maintenance - Production Facilities

The Roşia Montană Project preventive maintenance program will include all primary and backup pumps and power generators, and other critical equipment for handling cyanide solution. The preventive maintenance system will generate work orders on a predetermined schedule so that such equipment can be inspected and maintained or replaced as necessary to assure its continued proper functioning and thereby prevent cyanide exposures and releases. Standard operating procedure CN-07, “Decontamination of Cyanide Handling Equipment” describes the necessary measures for decontamination of any such equipment that has been in contact with cyanide solution prior to its maintenance, sale, or disposal.

7.6 Processing Plant Cyanide Inspections

The processing plant will be subject to regularly scheduled inspections. Pre-work inspections will be conducted prior to each shift in accordance with HS-16, “Routine Safety Inspections.” As previously noted, any observed wildlife mortality will be immediately reported to supervisory personnel and documented as noted in CN-05, “Wildlife Mortality Monitoring – Cyanide Facilities.” Any observed releases of cyanide solutions or unsafe conditions will receive immediate corrective action to address the deficiency. Because of the critical nature of such systems, the observation of any such conditions will also be documented as a non-conformance and formal corrective and preventive actions taken in accordance with MP-10, “Corrective and Preventive Action for Environmental and Social Management System Non-conformances.”

All tanks, piping, valves, and secondary containment structures in the processing area will be subject to periodic formal inspections in accordance with CN-04, "Inspections of Cyanide Tanks, Pipelines, and Other Cyanide Facilities." These inspections will employ a detailed checklist to focus the inspector on the specific items to be observed; see Attachment 2 of this plan. Tank and pipeline inspections will focus on structural integrity, signs of corrosion and leakage and legible labels indicating their contents and the direction of flow in pipelines. Secondary containment structures and associated supply and discharge piping systems will be inspected for their integrity, evidence of cracks or leakage, the presence of fluids, and their available capacity. As previously noted, reagent cyanide solution may be coloured with an environmentally benign fluorescent dye to aid in inspections and make it easier to identify any leakage. The procedure also describes how follow-up corrective and preventive actions are to be initiated and tracked in accordance with MP-10, "Corrective and Preventive Action for Environmental and Social Management System Non-conformances." Perimeter fencing and security practices will also be inspected periodically in accordance with EM-07, "Site Security" to ensure that access to the processing area remains restricted to authorized personnel only. All inspection records will be retained in accordance with procedure MP-11, "Management of Environmental and Social Management System Records."

8 Treatment and Disposal of Tailings

RMGC will design, construct, operate, maintain and inspect its facilities for the treatment and disposal of cyanidation tailings to prevent cyanide releases and exposure to its workers and the public and to minimize their impacts if they do occur. Information demonstrating that the facilities are being designed, constructed, operated and maintained to prevent major accidents will be included in the *Safety Report* provided to the competent authority pursuant to the Seveso II Directive. Detailed written operating procedures and training programs for workers managing reagent-strength cyanide and detoxification chemicals will be implemented to further minimize the potential for and impacts of chemical releases and exposures. These measures are addressed in greater detail in the following paragraphs.

8.1 SO₂/Air Detoxification Facility Design, Construction, and Operation

The Roşia Montană Project SO₂/air tailings treatment (detoxification) facility will be located within the process plant, and will be designed and constructed to address the requirements of the International Cyanide Management Code, the *Reference Document and Best Available Techniques for Management of Tailings and Waste-Rock in Mining Activities* (EU, July 2004), and other international BMPs and internationally accepted engineering specifications, consistent with all applicable local, regional, and national Romanian regulatory requirements. It will be designed to meet or exceed the specific regulatory targets [10 ppm (10 mg/L)] established by Article 13 (6) of *Directive 2005/.../EC of the European Parliament and of the Council of[sic] On the management of waste from extractive industries and amending Directive 2004/35/EC* (EU, December 2005).

The detoxification facility will be located within the overall fenced security boundaries of the processing plant in order to minimize the potential for unauthorized exposure to cyanide and other hazardous conditions at the process plant site. As recommended by the *Reference Document and Best Available Techniques for Management of Tailings and Waste-Rock in Mining Activities*, the detoxification facility will be designed with a capacity twice that of its minimum technical design requirements, and will detoxify residual cyanide in the tailings slurry to levels at or below EU-specified levels (10 mg/L) at the point the tailings slurry pipeline discharges to the TMF. As an additional measure of protection, emergency lime addition equipment will also be provided as well as backup power generators and redundant process pumps. Within the detoxification facility, tanks and pipelines for process solutions will be constructed of steel, HDPE, or other materials compatible with slurry containing cyanide and cyanide solution; however, in process areas involving cyanide solutions with 5% or greater concentrations, stainless steel piping system components shall be required. Process details are generally summarized in Section 2.3.3 (“Ore Preparation and Processing Methods”) of the Project EIA; actual operational details will be defined in standard operating procedure CN-03, “Cyanide Detoxification Plant Operation.”

The detoxification facility will be built within concrete secondary containment structures with sufficient capacity to hold at least 110% of the largest tank within the containment as well as any piping that drains back to the tank. Secondary containment structures for solution containing cyanide that are external to plant buildings will have additional capacity sufficient to address precipitation from the design storm event. Sumps within the containment will be equipped with pumps to return any released solution to the treatment process. Float switches or other high level indicators will be placed at key locations within the secondary containment to identify the presence of solution and alert operators in the detoxification facility control room. The storage tank for sodium metabisulphite will also be located within a separate secondary containment structure sufficient to hold at least 110% of this tank, in order to prevent accidental mixing with solution containing cyanide.

Backup generators and automatic control and shut down systems will be used to prevent any release of tailings prior to detoxification. The primary and backup thickener underflow

pumps will be interlocked with the detoxified tailings pumps and will automatically commence circulation back to the thickener if the tailings backup pumps and/or backup generator should fail. This feature will also be alarmed to alert process control room operators so that the level in the thickener tanks(s) can be monitored and upstream processing activities halted if necessary. Interlocks within the treatment plant will also shut down the detoxified tailings pumps if any reagent backup pumps should fail and the ability of the system to effectively treat the tailings is subsequently compromised.

As previously noted, the SO₂/air tailings detoxification plant is designed to reduce the level of weak acid dissociable (WAD) cyanide in the spent leaching slurry and in the tailings subsequently discharged to the TMF in order to meet the 10 mg/L target values currently established by Article 13 (6) of *Directive 2005/.../EC of the European Parliament and of the Council of [sic] On the management of waste from extractive industries and amending Directive 2004/35/EC* (EU, December 2005). EU limits are consistent with internationally-recognized BMP guidelines (e.g. the WAD cyanide limits invoked by the International Cyanide Management Code, the World Bank, and regulatory bodies for major mining regions such as the State of Nevada and Environment Australia) and are supported by a large body of evidence indicating that such concentrations are not lethal to birds and terrestrial wildlife. However, the SO₂/air tailings detoxification plant will be designed so that it not only will be immediately capable of achieving current EU limits (10 mg/L) but given the development of sufficient process monitoring data and operator experience can also be adjusted to increase the effectiveness of the detoxification process.

Standard operating procedure CN-03, "Cyanide Detoxification Plant Operation," will provide specific instructions for operation of the SO₂/air tailings detoxification plant. In addition, the procedure identifies cyanide-related risks, lists the necessary personal protective equipment, requires pre-work safety inspections, and references employee training requirements. The procedure will address how plant operations are to be monitored to ensure effective detoxification of cyanide before the tailings are discharged to the TMF. Contingency actions for any observed process upsets in the detoxification facility are also defined in the procedure.

A hydrogen cyanide gas detector will be located at the detoxification facility. The detector will sound a highly audible evacuation alarm and initiate a flashing beacon if the airborne cyanide concentration reaches the most stringent of the worker exposure limits established by the Romanian government or the EU, or recommended by the International Cyanide Management Institute. It also will transmit an alert signal to the detoxification process facility control room. Medical oxygen, resuscitation equipment, and a cyanide antidote (to be administered only by medical professionals or trained staff on the emergency response team) will be available at the treatment plant in the event of a cyanide release. Potable water sources, eye wash/safety shower stations, and dry powder fire extinguishers will also be located in strategic locations throughout the plant.

Procedures for emergency response to potential cyanide releases and exposures at the processing facilities are further discussed in Section 12 of this *Cyanide Management Plan* and the Roşia Montană Project *Emergency Preparedness and Spill Prevention Contingency Plan*.

8.2 Tailings Facility Design, Construction, and Management Requirements

The Roşia Montană Project Tailings Management Facility (TMF) will be designed and constructed to standard, accepted engineering specifications consistent with international BMPs, the *Reference Document and Best Available Techniques for Management of Tailings and Waste-Rock in Mining Activities* (EU, July 2004), and all applicable local, regional, and national Romanian regulatory requirements. The facility has been designed to store all of the tailings from production, the reclaim pond, the water volume from two Probable Maximum Flood (PMF) events, with an additional one meter of freeboard as contingency. Information demonstrating that the facility is designed, constructed, operated and maintained

to prevent major accidents will be included in the *Safety Report* that will be provided to the competent authority pursuant to the Seveso II Directive, as discussed in Section 3.2. Design and construction records will be retained in accordance with procedure MP-12, “Management of Environmental and Social Management System Records” and may be made available for external review upon request, at RMGC’s discretion.

All earthworks and placement of materials for dam and impoundment construction will be subject to construction quality control/quality assurance practices that conform to international standards, as a condition of the procurement with the earthworks and/or construction management contractor. Design, construction, and quality assurance/quality control records and as-built certifications of these facilities will be retained in Roşia Montană Project files in accordance with procedure MP-11, “Management of Environmental and Social Management System Records.” Pipelines for delivery of tailings to the impoundment and return of water to the process will be constructed of HDPE and/or lined or coated steel, as required. The tailings pipeline may be constructed with both aboveground and buried sections to suit topographical and roadway conditions and the operational safety needs of particular pipeline sections. Aboveground sections will be laid in HDPE-lined trenches, with backup catchbasins provided periodically to facilitate the capture and retrieval of tailings in the event of a rupture. Underground sections will be double-walled. The entire pipeline system will be fitted with sensitive pressure drop-activated leak detection systems to alert the process plant operations control room in the event of a leak.

Operation of the TMF is discussed in detail in the Roşia Montană Project *Tailings Facility Management Plan* and its supporting procedures. The *Tailings Facility Management Plan* describes how and when raises of the dam will be built so that the facility’s design containment capacity is continuously maintained, and requires a regular determination of freeboard to ensure that this capacity is always available. The *Tailings Facility Management Plan* also refers to standard operating procedures that will set minimum requirements for contingency actions to be taken in response to the potential occurrence of the following events:

- Detection of insufficient freeboard in the primary TMF impoundment;
- Excessive water levels in the Secondary Containment System impoundment;
- Detection of cyanide levels in excess of specified limits identified at the tailings pipeline discharge point;
- Severe weather conditions;
- A power outage or seepage return/reclaim system pump failure (primary or backup);
- Detection of cyanide in routine groundwater monitoring points downgradient of the primary TMF impoundment;
- Temporary cessation of metal recovery operations; or
- TMF closure activities.

Access to the TMF (including all elements of the Secondary Containment System) will be carefully controlled in accordance with EM-07, “Site Security” to minimize the potential for unauthorized entry or exposure to potentially hazardous conditions.

8.3 Tailings Pipeline and TMF Spill Contingency Considerations

The pipelines carrying detoxified tailings to the TMF and reclaim water from the tailings decant pond back to the process water storage tank, may be buried below ground level or may be placed in lined trenches, as necessary to address specific pipeline design constraints (e.g., needs for protection in high traffic areas, protection from high-pressure releases, minimization of expansion and contraction from direct sunlight). Pipelines will be installed with lined catchbasins or other engineered structures, as appropriate, to limit the

potential for accidental damage, as well as the amount of discharge if a significant leak were to occur. Low-flow or low-pressure sensors will be installed on the primary and backup tailings and reclaim water pumps to alert process facility control room operators regarding potential leaks or pipeline ruptures. The pipelines will also be designed to ensure that any solution released from the tailings pipeline and the portion of the reclaim water pipeline between the impoundment and the storage tank will flow by gravity back into the TMF or to other appropriate containment structures.

The probability of overtopping of the primary TMF impoundment will be prevented by operating within its design storage capacity at all times, and by confirming the availability of this capacity through daily monitoring. Contingency measures included in the Roşia Montană Project *Tailings Facility Management Plan* and standard operating procedure TF-03, "Normal Operating Procedures - Tailings Water Management" will address power outages, primary or backup pump failures, severe weather conditions, or other situations that if left unmanaged could result in excess water or insufficient freeboard within the impoundment.

The Secondary Containment System downgradient of the tailings dam will be equipped with a level gauge to monitor the water level in the containment sump, and to alert operators in the control room if the freeboard decreases to a predetermined alarm level. This will trigger the contingency actions specified in the *Tailings Facility Management Plan* and standard operating procedure TF-03, "Normal Operating Procedures - Tailings Water Management." For example, the primary and backup tailings water reclaim pond pumps will be interlocked with a level gauge in the process water tank at the plant in order to automatically shut down the pumps, as necessary to prevent an overflow of the tank.

In general, routine and planned actions to correct upset conditions before they result in spills or releases to the environment, exposure to workers, or other major accidents are described in the *Tailings Facility Management Plan* and standard operating procedure TF-03, "Normal Operating Procedures - Tailings Water Management." Spills and releases of tailings water from this system will be addressed in the Roşia Montană Project *Emergency Preparedness and Spill Contingency Plan*, as discussed in Section 13.2. Both types of information will be included in the submissions made by RMGC to the competent authority pursuant to the Seveso II Directive, as noted in Section 3.2 and Table 3.2.

8.4 Wildlife Protection - TMF

Wildlife mortality from cyanide exposure is not anticipated at the TMF because, as noted in Section 8.1, operation of the SO₂/air detoxification plant will reduce the concentration of WAD cyanide in the tailings to at or below the 10 mg/L EU regulatory limits and the requirements of the International Cyanide Management code, both of which are intended to reduce the potential for faunal mortality. WAD cyanide is the appropriate form of cyanide to evaluate with regard to preventing wildlife mortality from contact or ingestion of process solution.

Notwithstanding the low probability of cyanide-induced wildlife mortality, TMF operators will monitor wildlife mortality in their daily inspections in accordance with applicable portions of procedure CN-05, "Wildlife Mortality Monitoring – Cyanide Facilities." This procedure establishes such inspections as part of the TMF operator's daily routine, and will require a daily notation of such observations; it will also require immediate notification of supervisory personnel if any mortality is observed. CN-05 also addresses specific corrective and preventive action procedures to be followed, and will specify records to be retained in accordance with MP-11, "Management of Environmental and Social Management System Records." This procedure will allow RMGC to determine the cause of the mortality, and to modify its procedures as needed to minimize the potential for a recurrence.

No adverse impacts to aquatic resources are expected from trace cyanide within the deposited tailings, because the TMF is designed and operated to prevent discharges to

surface waters during most of the life of the mine. At closure, any TMF decant pond water (and seepage from the Secondary Containment System treatment cells in the Corna Valley) that does not meet TN-001 discharge standards for total cyanide (0.1 mg/L) will be treated in a dedicated Secondary Cyanide Treatment Plant and discharged to the pit lakes only when TN-001 standards are met.

8.5 Preventive Maintenance - TMF

The preventive maintenance program for the SO₂/air detoxification facility and the TMF will include primary and backup pumps for tailings, reclaim water, and reagent; backup generators; level gauges; cyanide detoxification process monitoring devices; and other critical equipment. The preventive maintenance system will generate work orders on a predetermined schedule so that this equipment can be inspected and maintained or replaced as necessary to assure its continued proper functioning, and thereby prevent or minimise the likelihood of any cyanide exposures or releases. Standard operating procedure CN-07, “Decontamination of Cyanide Handling Equipment” describes the necessary measures for decontamination of equipment that has been in contact with cyanide solution, prior to its routine maintenance, sale, or disposal.

8.6 Monitoring and Inspection of TMF and SO₂/Air Detoxification Facility

The SO₂/air detoxification facility will be subject to daily inspections pursuant to procedure HS-16, “Routine Safety Inspections” and CN-04, “Inspections of Cyanide Tanks, Pipelines, and Other Cyanide Facilities.” Any unsafe conditions will be noted in an operator’s logbook and appropriate actions will be taken to address the deficiency. Significant safety problems or any releases of cyanide solutions will also require documentation as a non-conformance and formal resolution as required by MP-10, “Corrective and Preventive Action for Environmental and Social Action Program Non-conformances.” Any wildlife mortality also will be documented and reported as previously noted.

All tanks, piping, valves and secondary containment structures at the detoxification facility will be subject periodic formal inspections in accordance with CN-04 requirements. The procedure describes how the inspections are to be conducted and documented on inspection checklists, and how follow-up corrective actions are to be initiated and tracked. Detailed checklists will be used to focus the inspector on specific items to be observed. Tank and pipeline inspections will focus on structural integrity of the original system plus all authorized modifications; signs of corrosion and leakage; legibility/adequacy of labels, colour coding, or other markings indicating pipeline contents and direction of flow; and any evidence of unauthorized and/or undocumented system modifications. Secondary containment structures and associated piping systems will be inspected for their integrity, indications of cracks or leakage, presence of fluids, and available capacity.

A copy of the checklists to be used for inspections of the detoxification facility is included in Attachments 2 and 3 of this *Cyanide Management Plan*. All inspection records required by CN-04 will be retained in accordance with procedure MP-11, “Management of Environmental and Social Management System Records.”

RMGC will also confirm that its SO₂/air detoxification facility is functioning as designed (i.e., reducing residual WAD cyanide concentrations to 10 mg/L or less) through the implementation of the monitoring programme required by CN-03, “Cyanide Detoxification Plant Operation.”

At a minimum, detoxification plant influent and effluent will be monitored for the following parameters, at the frequencies indicated:

- pH (continuous monitor and alarm);
- WAD cyanide (during each shift);

- Total cyanide(during each shift);
- Copper (during each shift);
- Thiocyanate (SCN) concentrations (weekly); and
- Selected metals and other parameters that may be required by governing regulations or permits, at the frequencies specified therein.

The adequacy of the monitoring programme shall be specifically evaluated in view of any proposed process modifications, and this plan and procedure CN-03 adjusted accordingly.

RMGC will also confirm that the TMF and Secondary Containment System are not adversely impacting ground and surface water through a comprehensive water monitoring programme, as described in the Roşia Montană Project *Tailings Facility Management Plan*, the *Water Management and Erosion Control Plan*, and their supporting procedures. RMGC will routinely monitor the TMF for the presence of trace cyanide in the as-deposited tailings and decant pond throughout the operational phase of the project in accordance with TF-13, “Tailings Management Facility – Surface Water Monitoring.” As noted in TF-13, these cyanide-specific operational monitoring actions will include the following:

- Routine sampling for WAD cyanide at or near the discharge of the tailings pipeline to the tailings pond;
- Routine sampling for WAD cyanide in the reclaim pond [i.e., a grab sample from the pond perimeter or appropriate sampling points on the reclaim pump line (giving due consideration to the safety of the sampling technician)]; and
- Periodic computation of averages of trace cyanide values based on operational discharge values, and reporting to appropriate Romanian authorities if so requested by applicable regulatory permits.

Groundwater will also be routinely monitored for cyanide and other parameters through operations and closure at a series of wells installed downgradient of the main embankment of the TMF, in accordance with TF-12, “Tailings Management Facility – Groundwater Monitoring.” In the event that cyanide is detected at concentrations above TN-001 discharge standards (0.1 mg/L total cyanide), RMGC will initiate confirmatory sampling and other appropriate corrective actions (e.g., converting the TMF monitoring wells to pumping wells and pumping the intercepted water back to the TMF reclaim pond for re-use in the production process, or for treatment and discharge) as necessary to intercept or divert affected groundwater so that it does not migrate past the compliance point.

Details on sampling locations, sample preservation protocols, chain of custody procedures and analytical methods will be separately addressed in TF-12, “Tailings Management Facility – Groundwater Monitoring”, and TF-13, “Tailings Management Facility – Surface Water Monitoring.” Same-day analytical results for all cyanide analyses may be provided by Roşia Montană Project laboratory staff using a dedicated cyanide analyzer. Records of all monitoring activities and associated analytical results will be retained in accordance with procedure MP-11, “Management of Environmental and Social Management System Records.”

Standard operating procedure TF-04, “TMF Operations Inspection and Reporting” will address the daily inspection of the TMF and Secondary Containment System to confirm that the design freeboard is being maintained. Tailings and reclaim water pipelines valves and couplings will also be periodically inspected for deterioration or leakage. The surface water diversion structures upgradient of the TMF will also be inspected on a regular basis and after any significant storm or run-off events to ensure that they effectively prevent clean water from reaching the impoundment. The procedure also describes how routine, formal inspections are to be conducted and documented on an inspection checklist, and how follow-up corrective actions are to be initiated and tracked. All inspection records required by TF-04 will be retained in accordance with procedure MP-11.

RMGC will also monitor precipitation daily at the meteorological and air quality station near Gura Cornei in order to validate the assumptions used in the water balance and ensure that the TMF will operate as designed. Standard operating procedure TF-07, “TMF Air Monitoring/Meteorological Facility Operation” will describe the precipitation monitoring process. Procedure WT-01, “Preparation, Review, and Periodic Update of Project Water Balance” will address the use of these data in validating or updating the site’s water balance. General air quality parameters will be monitored at the same location in accordance with the *Air Quality Management Plan* and the following procedures:

- AQ-01, “Operation, Maintenance, and Calibration of the Total Solid Particulates (TSP) Sampler”;
- AQ-02, “Operation, Maintenance, and Calibration of the PM₁₀ Sampler”;
- AQ-03, “Operation, Maintenance, and Calibration of the NO – NO_x Automatic Analyser”;
- AQ-04, “Operation, Maintenance, and Calibration of the Automatic Analyser for CO”;
- AQ-05, “Operation, Maintenance, and Calibration of the Meteorological Station”; and
- AQ-06, “TSP Metals Sampling and Analysis.”

Process plant perimeter fencing and security practices will be inspected at least monthly in accordance with EM-07, “Site Security” to ensure that access to the cyanidation and detoxification facilities remains restricted to authorized personnel only.

9 Decommissioning and Closure of Cyanide Facilities

RMGC will decommission its cyanide facilities as part of the overall mine closure activities discussed in the Roşia Montană Project *Mine Rehabilitation and Closure Management Plan*. Decommissioning and closure of cyanide facilities will entail the removal or detoxification of unused reagent cyanide and the cleanup of cyanide-containing residues in process tanks and equipment. The specific measures to accomplish these tasks are included in the *Mine Rehabilitation and Closure Management Plan*, as are the cost estimates and information on financial assurance for decommissioning and closure required by the International Cyanide Management Code. As noted in the *Mine Rehabilitation and Closure Management Plan*, all cyanide process tanks and piping systems will be triple flushed with water to remove residual cyanide, and the effluent routed to the detoxification circuit for reduction of residual cyanide concentrations to below EU standards for cyanide in tailings. Detoxified washwater will then be released to the tailings pipeline for deposition in the TMF. The decommissioned process plant tanks and piping systems will then be cut up and recycled for their scrap metal value.

Any decant water remaining in the TMF supernatant pond after process plant decommissioning will be pumped to the Secondary Cyanide Treatment Plant and, as necessary, treated to below Romanian TN-001 water quality discharge standards (<0.1 mg/L total cyanide), and then discharged to the pit lakes. Any TMF seepage will be captured and routed to a system of passive/semi-passive treatment cells downstream of the Secondary Containment System. Water will not be discharged from the treatment cell system unless residual or trace concentrations of cyanide in seepage water are below TN-001 standards. Any treatment cell effluent not meeting TN-001 requirements will be captured and pumped back to the Secondary Cyanide Treatment Plant for treatment and discharge to the pit lakes.

10 Cyanide Worker Safety

10.1 Measures to Limit Worker Exposures

To the extent practicable, RMGC will engineer its facilities and design its operational practices and procedures to limit worker exposure to hydrogen cyanide gas and sodium cyanide salts to the more restrictive of the worker exposure limits established by the Romanian government or the EU, or recommended by the International Cyanide Management Institute. RMGC will maintain a pH of approximately 10.5 in the various cyanide bearing process solutions and slurries throughout its operation to limit the evolution of hydrogen cyanide gas, and will ensure that no areas of the operation upstream of the detoxification process present the potential for exposure of its workers to harmful concentrations of cyanide.

RMGC will conduct routine safety meetings and regularly scheduled formal safety meetings to solicit worker input to safety issues and to ensure that employees perform their tasks in a manner that is protective of their health and safety and that of their co-workers. At each meeting, employees will have the opportunity to ask questions and identify health and safety concerns. RMGC will also establish a suggestion box that employees may use to identify concerns with health and safety issues. Safety meetings will be discussed in standard operating procedure HS-17, "Employee Safety Training, Drills and Meetings."

10.2 Requirements for Personal Protective Equipment

While not anticipated to be an item of concern, should any situation arise where RMGC determines that the potential for cyanide exposure cannot be adequately eliminated, reduced or controlled with process changes and the use of engineering or administrative controls, then employees performing such tasks will be required to use appropriate personal protective equipment. A comprehensive programme for the use of such equipment will be discussed in the RMGC *Operational Health and Safety Plan* and standard operating procedure HS-09, "Personal Protective Equipment." The program identifies the personal protective equipment required for each work area, job function and task that presents the potential for worker exposure to cyanide, after all practical process changes and/or engineering controls have been implemented to eliminate, reduce, or control the exposure. The program also describes the training necessary for use of the personal protective equipment.

10.3 Hydrogen Cyanide Monitoring Requirements and Equipment Calibration

RMGC will monitor its cyanide facilities to protect the health and safety of its workers in accordance with the overall programme defined in the Roşia Montană Project *Environmental and Social Monitoring Plan*, the specific information provided in this plan, and the standard operating procedures referenced herein. Fixed airborne cyanide detection monitors will be located at the cyanide off-loading, dissolution and storage area, the processing plant and the SO₂/air detoxification facility. Monitors will be set to sound a highly audible evacuation alarm, initiate a flashing beacon (light) and alert control room personnel if the concentration of hydrogen cyanide gas reaches the most stringent of the worker exposure limits established by the Romanian government or the EU, or recommended by the International Cyanide Management Institute. Confirmatory monitoring with portable personal monitors will also be conducted periodically, as noted in the RMGC *Operational Health and Safety Plan* in order to ensure that employees are not exposed to potentially harmful concentrations of hydrogen cyanide gas. All monitoring results will be retained in accordance with procedure MP-11, "Management of Environmental and Social Management System Records."

RMGC will maintain, test, and calibrate its fixed and portable cyanide monitoring equipment as directed by their manufacturer. Records of these activities will also be retained in accordance with procedure MP-11.

10.4 Antidotes and First Aid Requirements

RMGC will maintain cyanide first aid equipment including medical oxygen and a resuscitator at the off-loading, storage and dissolution area, in the process plant and at the SO₂/air detoxification facility in the event that a worker is exposed to cyanide. First aid kits will be routinely inspected to ensure that required equipment and materials are available and in good condition. A cyanide antidote acceptable under applicable Romanian and EU laws and regulations will also be available on site, and will be stored and replaced with new antidote kits at intervals recommended by the manufacturer. A copy of the checklist to be used for inspections of first aid equipment is included in Attachment 3 to this plan. Inspection records will be retained in accordance with procedure MP-11, "Management of Environmental and Social Management System Records."

First aid procedures for response to cyanide exposure are to be included in standard operating procedure HS-03, "First Aid/Medical Attention." All workers who may be called upon to respond to cyanide exposures will be trained in these procedures and will take part in routine drills to test and improve their response skills. Because antidotes must be provided intravenously or intramuscularly, administration of antidotes is restricted to qualified medical personnel or specially trained members of RMGC emergency response teams. Appropriate training programmes will be implemented and document in accordance with Section 4.2 of the Roşia Montană Project *Environmental and Social Management Plan* and standard operating procedure MP-03, "Environmental and Social Management System Training." Retention of training records will be addressed by procedure MP-11.

Guidelines for transport of exposed workers to local medical facilities that have adequate, qualified staff, equipment and expertise to provide additional treatment is also included in procedure HS-03. Any incidents involving cyanide exposure will be documented and investigated. Specific procedures for accident and incident investigations, reporting and recordkeeping are addressed HS-01, "Accident/Near-Miss Investigation, Reporting, and Recordkeeping." Because of the intrinsic hazards associated with cyanide operations, any incidents involving cyanide exposure such occurrences will also be addressed as non-conformances and formally investigated and resolved in accordance with MP-10, "Corrective and Preventive Action for Environmental and Social Management System Non-conformances." Regardless of the circumstances of any such incident, RMGC programs and procedures to protect worker health and safety will always be reviewed to ensure that responses to cyanide exposures remain adequate and appropriate, and procedural modifications or improvements will be implemented where necessary to minimize the potential for future recurrence.

10.5 Other Safety Equipment Requirements

Low-pressure safety shower/eye wash stations and non-acidic dry powder extinguishers will be located at strategic locations throughout the operation where cyanide is present, including the off-loading, storage and dissolution area, the process plant and the SO₂/air detoxification facility. A site plan will be prepared and posted in the control room and all major cyanide work areas showing the locations of safety equipment. The equipment will be maintained and inspected on a routine basis, using the inspection checklist included in Attachment 3 of this plan; inspection records will be retained in accordance with procedure MP-11, "Management of Environmental and Social Management System Records."

10.6 Signage Requirements

Warning signs printed in English and Romanian will be placed on perimeter fencing and in all areas where cyanide is stored or used to alert workers that cyanide is present; that smoking, open flames, eating and drinking near sources of cyanide will not be allowed under any circumstances; and that necessary levels of personal protective equipment must be worn. English- and Romanian-language copies of the cyanide SDS included as Attachment 4 will also be posted in strategic locations throughout the process plant, as well as in the emergency response data packages prepared for the RMGC emergency response teams and cyanide delivery truck drivers.

All tanks and piping containing cyanide will be identified either by colour-coding or by signs, labels, tags or decals to alert workers regarding their contents. Labels, signs, tags, arrows or other means will be used to indicate the direction of flow in pipes carrying solutions containing cyanide. All signs, labels and other means of notification and identification associated with cyanide management will be printed in both Romanian and English.

11 Cyanide Worker Training Requirements

11.1 General Cyanide Worker Training Requirements

The overall training process to be implemented for the Roşia Montană Project activities is addressed in Section 4.2 of the *Roşia Montană Project Environmental and Social Management Plan*. Procedure MP-03, “Environmental and Social Management System Training” will address the identification of training requirements by job description and will provide basic procedures for conducting and documenting training activities.

As part of their standard job-specific training, employees directly involved with cyanide management tasks will also receive specific training on how their job responsibilities must be performed to prevent unplanned releases of cyanide, and to minimize cyanide-related risks to their own health and safety and the health and safety of their co-workers and the general public. Training topics will, at a minimum include a general introduction to this *Cyanide Management Plan*, the standard operating procedures applicable to individual work assignments, applicable portions of the *Emergency Preparedness and Spill Contingency Plan*, and emergency response requirements as detailed in Section 11.2. Training will include recognition of the cyanide or cyanide-bearing materials that may be present at the site, information regarding the health effects of cyanide, symptoms of cyanide exposure, and procedures to follow in the event of exposure. The documents will be made available to all RMGC staff via the controlled document distribution (Section 4.5) and records management (Section 5.3) provisions of the *Roşia Montană Project Environmental and Social Management Plan*

Training will be provided in accordance with MP-03, “Environmental and Social Management System Training” by knowledgeable personnel who are experienced in effective communication techniques. All employees receiving cyanide worker training will be required to pass a written test to ensure their understanding of the subject matter covered. Refresher training will also be conducted for all cyanide workers on at least an annual basis.

11.2 Emergency Response Training Requirements

Workers having access to cyanide will receive training in the procedures to be followed if a cyanide release is discovered, including notification of the appropriate site personnel, ensuring co-worker and public safety, and taking direct action to control or contain the release wherever possible.

Site personnel who may be called upon to respond to workplace exposures to cyanide will be trained in the neutralization, decontamination, and first aid procedures noted in the *Emergency Preparedness and Spill Contingency Plan*. This training will include the procedure for notifying appropriate site personnel and will stress that the responder must first ensure his own protection through use of cyanide-specific personal protective equipment. Specialized training will also be provided to those workers designated as Emergency Response Coordinators and members of the Emergency Response Team. All employees receiving specialized cyanide-related emergency response training will be required to pass a written and practical test to assure their understanding of the subject matter covered. Emergency Response Teams shall also include qualified medical staff or other trained personnel who will be authorized to administer cyanide antidotes, if required.

Emergency drills simulating worker exposures and environmental releases will be conducted at least annually to provide practical, hands-on training for all categories of workers having access to cyanide during the performance of a particular job function. Emergency simulation results will be evaluated from a training perspective to confirm that personnel have the knowledge and skills required for rapid, safe, and effective response. The training

requirements of this *Cyanide Management Plan*, the *RMGC Occupational Health and Safety Plan*, and/or the *Roşia Montană Project Emergency Preparedness and Spill Contingency Plan* will be revised if any deficiencies or non-conformances are identified. Records of these drills will be retained in accordance with procedure MP-11, "Management of Environmental and Social Management System Records."

11.3 Training Records

Records documenting all levels of training related to the use of cyanide in the workplace will be retained in accordance with procedure MP-11, "Management of Environmental and Social Management System Records." Training records will include the names of the employee and the trainer, the date of training, the topics covered, and employee proficiency test results, where required.

12 Emergency Response Considerations for Potential Cyanide Exposures and Releases

RMGC will incorporate measures into the design, construction, and operation of its facilities to prevent cyanide releases to the natural environment as well as workplace exposures. The unloading, storage, mixing, and use of cyanide in the mineral extraction process will be conducted within fully contained areas of the process plant. The plant design requires individual containment areas to be sized to accept 110% of the volume of potentially reporting material. All spills within the containment area are amenable to being returned directly to the cyanidation process, and no residual spill material will be generated in normal operations that will require management or disposal as a waste. Spills of dry sodium cyanide briquettes or granules in the unloading or storage area will be captured and deposited in the mixing tanks. Any spills of process solution will be captured with portable suction pumps and returned to appropriate locations in the process (i.e., areas that will not contribute to a process upset). Containment areas associated with cleaned-up spills will be washed into sumps within the containment, and the collected effluent pumped back to the process.

These preventive measures (and the low probability of cyanide-related accidents or emergencies) notwithstanding, it is both prudent and necessary under governing EU Directives to plan for emergency situations and to be prepared to respond rapidly and effectively in the event that emergencies do occur. RMGC has therefore included cyanide-specific elements in its detailed *Emergency Preparedness and Spill Contingency Plan* and, as applicable, in its submittals to competent authorities pursuant to the Seveso II Directive.

12.1 Cyanide-Related Elements in Emergency Preparedness and Spill Contingency Plan

The *Emergency Preparedness and Spill Contingency Plan* addresses Roşia Montană Project procedures for responding to all types of emergency situations that may occur on site, including injuries and spills of chemical, petroleum products, and other potentially dangerous or hazardous substances. However, rather than providing a separate set of procedures for response to cyanide exposures and releases within this *Cyanide Management Plan*, the details of the RMGC response procedures for cyanide are included in the overall *Emergency Preparedness and Spill Contingency Plan* so that a single document may serve as the primary reference during emergencies. The minimum considerations presented for information in this Section of the *Cyanide Management Plan* will be reflected in the procedures included in the *Emergency Preparedness and Spill Contingency Plan*.

The *Emergency Preparedness and Spill Contingency Plan* is designed to fulfil RMGC obligations under applicable EU directives for preparation and submission of emergency prevention, response and notification plans, a Safety Report, and other requested information. In accordance with the Seveso II Directive, the *Emergency Preparedness and Spill Contingency Plan* will include information on Roşia Montană Project activities and the quantity and form of cyanide (as well as other dangerous substances used or stored on site), and will identify other environmental and social factors that may cause or aggravate the consequences of a major accident. The *Emergency Preparedness and Spill Contingency Plan* also describes Roşia Montană Project policies and procedures for prevention of major accidents in addition to describing the elements of the facility's design and construction that limit the potential for such events.

The *Emergency Preparedness and Spill Contingency Plan* will also be developed with the involvement of and consultation with the project workforce and external stakeholders, in order to ensure that it addresses site-specific risks and is responsive to local community concerns. External stakeholders may include local communities, potentially affected

individuals or groups, community leaders or representatives, and/or local response agencies and medical facilities. RMGC will periodically consult with employees and stakeholder to ensure that the *Emergency Preparedness and Spill Contingency Plan* continues to address current conditions and risks. Consultations regarding the *Emergency Preparedness and Spill Contingency Plan* will be documented in accordance with the requirements of the Roşia Montană Project *Public Consultation and Disclosure Plan* and records retained as required by procedure MP-11, “Management of Environmental and Social Management System Records.”

12.2 Potential Release/Exposure Scenarios

The development of effective emergency response procedures requires a realistic evaluation of potential cyanide releases and/or exposure scenarios that may occur at RMGC, regardless of the probability or likelihood of occurrence. A range of potential scenarios is therefore identified below, along with brief summaries of the likely nature of the potential release or exposure and the appropriate response. Specific response actions and mitigation measures designed to minimize the likelihood of such occurrences are further detailed in the *Emergency Preparedness and Spill Contingency Plan*.

Scenario 1. Potential release of hydrogen cyanide gas during cyanide off-loading, storage, and initial mixing of process solution (tank rupture scenario)

Nature of Incident:	High-concentration hydrogen cyanide gas release
Potential cause:	Operator error and/or equipment failure leading to rupture of container tanks of solid sodium cyanide during off-loading and initial process solution mixing, and subsequent contact of cyanide with precipitation or other low to neutral pH water source
Preventive measures	<p>Design of covered offloading area to permit safe manoeuvring of trucks and trailers and elimination of precipitation and all potential low to neutral pH water sources</p> <p>Provision for highly audible and visible (flashing light) alarms, triggered by appropriate airborne cyanide detectors</p> <p>Compliance with the <i>Cyanide Management Plan</i>.</p> <p>Compliance with applicable SOPs, including:</p> <p>CN-01, “Unloading and Storage of Reagent Cyanide”</p> <p>CN-02, “Carbon-in-Leach Facility Operation”</p> <p>CN-04, “Inspections of Cyanide Tanks, Pipelines, and other Cyanide Facilities”</p> <p>CN-06, “Maintenance and Calibration of Hydrogen Cyanide Monitoring Equipment”</p> <p>CN-07, “Decontamination of Cyanide Handling Equipment”</p> <p>CN-08, “Emergency Power Generation for Cyanide Handling Equipment”</p> <p>EM-02, “Emergency Response Preparedness”</p> <p>EM-04, “Alcohol Testing for Drivers/Equipment Operators”</p> <p>EM-05, “Hazardous Material Storage and Transfer Operations”</p> <p>MP-03, “Environmental and Social Management Training”</p>
Response:	<p>Immediate implementation of the <i>Emergency Preparedness and Spill Contingency Plan</i> at Level III or Level IV, depending on the potential for off-site impacts; if Level IV, immediate co-ordination with the applicable Roşia Montană and Abrud community emergency plan and responsible local officials.</p> <p>Notify and evacuate down-wind areas; stop release, contain spill, and</p>

	<p>neutralise if possible, followed by immediate first aid for any exposed personnel.</p> <p>Conduct incident investigation and undertake appropriate corrective and preventive action in accordance with EM-03, “Emergency Incident Investigation, Reporting, and Record keeping” and MP-10, “Corrective and Preventive Action for Environmental and Social Management System Nonconformances.”</p> <p>Implement other emergency-specific actions as described in Section 7.2.2 of the <i>Emergency Preparedness and Spill Contingency Plan</i> and the Safety Data Sheet (SDS) information included in Attachment 4.</p>
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Scenario 2. Potential release of hydrogen cyanide gas during initial mixing of process solution (operator error scenario)

Nature of Incident:	High-concentration hydrogen cyanide gas release
Potential cause:	Operator error during process solution mixing that would introduce low to neutral pH water into the container tank
Preventive measures:	<p>Piping system interlocks designed to prevent an potential for accidental operator introduction of low to neutral pH water</p> <p>Provision for highly audible and visible (flashing light) alarms, triggered by appropriate process set points</p> <p>Compliance with the <i>Cyanide Management Plan</i>.</p> <p>Compliance with applicable SOPs, including:</p> <p>CN-01, “Unloading and Storage of Reagent Cyanide”</p> <p>CN-02, “Carbon-in-Leach Facility Operation”</p> <p>CN-04, “Inspections of Cyanide Tanks, Pipelines, and other Cyanide Facilities”</p> <p>CN-06, “Maintenance and Calibration of Hydrogen Cyanide Monitoring Equipment”</p> <p>CN-07, “Decontamination of Cyanide Handling Equipment”</p> <p>CN-08, “Emergency Power Generation for Cyanide Handling Equipment”</p> <p>EM-02, “Emergency Response Preparedness”</p> <p>EM-05, “Hazardous Material Storage and Transfer Operations”</p> <p>MP-03, “Environmental and Social Management Training”</p>
Response:	<p>Immediate implementation of the <i>Emergency Preparedness and Spill Contingency Plan</i> at Level III or Level IV, depending on the potential for off-site impacts; if Level IV, immediate co-ordination with the applicable Roşia Montană and Abrud community emergency plans and responsible local officials.</p> <p>Notify and evacuate down-wind areas; stop release, contain spill, and neutralise if possible, followed by immediate first aid for any exposed personnel.</p> <p>Conduct incident investigation and undertake appropriate corrective and preventive action in accordance with EM-03, “Emergency Incident Investigation, Reporting, and Record keeping” and MP-10, “Corrective and Preventive Action for Environmental and Social Management System Nonconformances.”</p> <p>Implement other emergency-specific actions as described in Section 7.2.2 of the <i>Emergency Preparedness and Spill Contingency Plan</i> and the SDS information included in Attachment 4.</p>

Scenario 3. Potential release of hydrogen cyanide gas from the processing plant or SO₂/air treatment plant

Nature of incident:	Low-concentration hydrogen cyanide gas release
Potential cause:	Temporary loss of process pH control systems
Preventive measures	<p>Installation of pH monitoring equipment (with backups) and establishment of alarmed set points to prevent pH control excursions</p> <p>Provision for highly audible and visible (flashing light) alarms, triggered by appropriate process set points, that prompt process operators to close influent valves and adjust the system</p> <p>Compliance with the <i>Cyanide Management Plan</i></p> <p>Compliance with applicable SOPs, including:</p> <p>CN-02, "Carbon-in-Leach Facility Operation"</p> <p>CN-04, "Inspections of Cyanide Tanks, Pipelines, and other Cyanide Facilities"</p> <p>CN-06, "Maintenance and Calibration of Hydrogen Cyanide Monitoring Equipment"</p> <p>CN-07, "Decontamination of Cyanide Handling Equipment"</p> <p>CN-08, "Emergency Power Generation for Cyanide Handling Equipment"</p> <p>EM-02, "Emergency Response Preparedness"</p> <p>EM-05, "Hazardous Material Storage and Transfer Operations"</p> <p>MP-03, "Environmental and Social Management Training"</p>
Response:	<p>Immediate implementation of the <i>Emergency Preparedness and Spill Contingency Plan</i> at Level III or Level IV, depending on the potential for off-site impacts; if Level IV, immediate co-ordination with the applicable Roşia Montană and Abrud community emergency plan and responsible local officials.</p> <p>Notify and evacuate down-wind areas; stop release, contain spill, and neutralise if possible, followed by immediate first aid for any exposed personnel.</p> <p>Conduct incident investigation and undertake appropriate corrective and preventive action in accordance with EM-03, "Emergency Incident Investigation, Reporting, and Record keeping" and MP-10, "Corrective and Preventive Action for Environmental and Social Management System Nonconformances."</p> <p>Implement other emergency-specific actions as described in Section 7.2.2 of the <i>Emergency Preparedness and Spill Contingency Plan</i> and the SDS information included in Attachment 4.</p>

Scenario 4. Potential generation of hydrogen cyanide gas from accidental release of sodium cyanide briquettes during transport to the Project site

Nature of incident:	Potential generation of hydrogen cyanide gas from accidental release of sodium cyanide briquettes
Potential cause:	Transport vehicle accident; breach of ISO container and contact with water
Preventive measures:	<p>Maximisation of rail (vs. road) transportation in logistics planning for delivery of cyanide briquettes</p> <p>Avoidance of high risk road areas as indicated by transportation route surveys and evaluation and selection of routes to minimise risks, including logistics considerations and local community emergency response capabilities</p> <p>Establishment of co-operative arrangements with emergency response organisations located in towns or villages along the primary transportation corridors</p> <p>Strict contractual controls over transport operations (see 3.2.1.2 and the <i>Cyanide Management Plan</i>), including</p> <p>driver training/competence certifications;</p> <p>alcohol testing for delivery and escort vehicle drivers, before and after delivery;</p> <p>specific logistics and routing instructions for transport to the operation;</p> <p>convoy and escort vehicles with flashing lights and UN-compliant signals and placarding;</p> <p>delivery container design requirements, condition, and certification;</p> <p>direct (radio/telephone) communication capabilities along the entire transit route, including Global Positioning System (GPS) tracking;</p> <p>safety and maintenance of the means of transportation (e.g. vessels, vehicles, or railway cars) throughout transport;</p> <p>compliance with applicable national regulations in each phase of transport;</p> <p>safety training for transporters and handlers throughout transport;</p> <p>security throughout transport; and</p> <p>specific instructions for unloading; and</p> <p>planned and co-ordinated emergency response actions, if necessary, at any point in the transportation process.</p> <p>RMGC and transporter compliance with the <i>International Cyanide Management Code</i></p> <p>Compliance with the periodic emergency response drill and all other requirements of the <i>Cyanide Management Plan</i></p> <p>Compliance with applicable SOPs including:</p> <p>CN-07, "Decontamination of Cyanide Handling Equipment"</p> <p>EM-02, "Emergency Response Preparedness"</p> <p>EM-05, "Hazardous Material Storage and Transfer Operations"</p> <p>MP-03, "Environmental and Social Management Training"</p>
Response:	<p>Immediate implementation of the <i>Emergency Preparedness and Spill Contingency Plan</i> at Level III or Level IV, depending on the potential for off-site impacts; if Level IV, immediate co-ordination by the RMGC Emergency Response Team with transporter representatives and with the nearest local emergency response organisation.</p> <p>Contact and co-ordinate other response actions with local, regional, and national officials, as indicated by the community emergency plans from the</p>

	<p>affected transportation corridor communities</p> <p>Secure the spill site, immediately initiate air quality monitoring actions, notify and evacuate down-wind residential areas as indicated.</p> <p>Under dry conditions, use shovels and/or front-end loader to pick up material and place in drums for use or return to RMGC or the chemical manufacturer for recycling, and remediate contaminated soil; under wet conditions, cover with plastic to prevent contact with water and recover material when dry.</p> <p>Conduct incident investigation and undertake appropriate corrective and preventive action in accordance with EM-03, "Emergency Incident Investigation, Reporting, and Record keeping" and MP-10, "Corrective and Preventive Action for Environmental and Social Management System Nonconformances."</p> <p>Implement other emergency-specific actions as described in Section 7.2.2 of the <i>Emergency Preparedness and Spill Contingency Plan</i> and the SDS information included in Attachment 4.</p>
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Scenario 5. Potential cyanide solution releases within the process plant from faulty tanks, pipelines, fittings, or valves

Nature of incident:	Strong cyanide solution release from reagent mixing, storage, or carbon-in-leach (CIL) tanks; low strength cyanide solution release from processing area; or very low strength cyanide solution release from SO ₂ air treatment plant
Potential cause:	Failure or leaks from tanks, pipelines, couplings, valves, or secondary containment systems; power outages and pump failures occurring simultaneously with malfunctions of pump interlocks and high-level switches
Preventive measures	<p>Design to prohibit potential mixing of process solution with precipitation or low- or neutral pH water</p> <p>Installation of bermed concrete secondary containment structures for the CIL tanks and all cyanide process areas within the process plant, capable of capturing 110% of the volume of process solution that could potentially report to a given containment</p> <p>Installation of airborne cyanide gas alarms above the CIL tanks and at other appropriate locations throughout the plant</p> <p>Design of interlocks and backup systems to eliminate the potential for simultaneous pump/level switch failures</p> <p>Installation of backup generators to prevent loss of electrical service to all cyanide process pumps</p> <p>Use of BAT design standards for piping system/pump/ component selection, including requirements for materials and structural characteristics compatible with cyanide service</p> <p>Engagement of qualified construction firm with certified tank and piping system welders</p> <p>Strict construction quality assurance requirements in construction and acceptance testing of process plant, including receiving inspection of all construction materials, welder certification and welding inspections, tank and piping system integrity inspections, and appropriate system pressure and operational tests during plant commissioning</p> <p>Compliance with the periodic emergency response drill requirements and other provisions of the <i>Cyanide Management Plan</i></p> <p>Compliance with applicable SOPs including: CN-01, "Unloading and Storage of Reagent Cyanide" CN-02, "Carbon-in -Leach Facility Operation"</p>

	<p>CN-04, "Inspections of Cyanide Tanks, Pipelines, and other Cyanide Facilities"</p> <p>CN-06, "Maintenance and Calibration of Hydrogen Cyanide Monitoring Equipment"</p> <p>CN-07, "Decontamination of Cyanide Handling Equipment"</p> <p>CN-08, "Emergency Power Generation for Cyanide Handling Equipment"</p> <p>EM-02, "Emergency Response Preparedness"</p> <p>EM-05, "Hazardous Material Storage and Transfer Operations"</p> <p>MP-03, "Environmental and Social Management Training"</p>
Response:	<p>Immediate implementation of the <i>Emergency Preparedness and Spill Contingency Plan</i> at Level III or Level IV, depending on the potential for off-site impacts; if Level IV, immediate co-ordination with the applicable Roşia Montană and Abrud community emergency plan and responsible local officials.</p> <p>Notify and evacuate downwind areas; stop release, contain spill, and neutralise if possible, followed by immediate first aid for any exposed personnel.</p> <p>Pump spilled solutions from secondary containments back to the cyanidation process.</p> <p>Use earth-moving equipment to construct emergency catchment areas, as necessary if containments were breached, and remediate any contaminated soil areas.</p> <p>Conduct incident investigation and undertake appropriate corrective and preventive action in accordance with EM-03, "Emergency Incident Investigation, Reporting, and Record keeping" and MP-10, "Corrective and Preventive Action for Environmental and Social Management System Nonconformances."</p> <p>Implement other emergency-specific actions as described in Section 7.2.2 of the <i>Emergency Preparedness and Spill Contingency Plan</i> and the SDS information included in Attachment 4.</p>

Scenario 6. Breach in tailings pipeline

Nature of incident:	Release of detoxified tailings with trace (≤ 10 mg/L) concentrations of WAD cyanide from tailings pipeline
Potential cause:	Failure in pipeline (pipe sections, welds, couplings, or valves) due to defective workmanship, physical damage, and/or corrosion
Preventive measures	<p>Use of BMP design standards for pipeline design and material selection</p> <p>Installation of pressure drop leak detection devices in the pipeline that report to Programmable Logic Control (PLC) systems in the process control room</p> <p>Installation of lined catchments at strategic points on pipeline alignment to contain potential spills</p> <p>Burial or physical protection of pipeline sections near heavy operational traffic areas</p> <p>Engagement of qualified construction firm with certified pipeline welders, pipeline coating specialists, and strict construction quality assurance/quality control (QA/QC) oversight</p> <p>Strict construction quality assurance requirements in construction and acceptance testing of pipeline components, including receiving inspection of all construction materials, weld inspections, pipeline coating and integrity inspections, and pressure and operational tests during pipeline commissioning</p> <p>Compliance with <i>Tailings Facility Management Plan</i>, including periodic</p>

	<p>condition/integrity inspections and periodic emergency response drills, as specified</p> <p>Compliance with applicable SOPs including:</p> <p>EM-02, "Emergency Response Preparedness"</p> <p>TF-01, "Operations Start-up"</p> <p>TF-02, "Normal Operating Procedures- Tailings Deposition"</p> <p>TF-04, "Tailings Management Facility- Operations Inspection"</p> <p>TF-05, "Tailings Management Facility- Operations Reporting"</p> <p>TF-06, "Tailings Management Facility- Emergency Maintenance/ Inspection"</p> <p>TF-07, "Tailings Management Facility- Emergency Response Action"</p> <p>TF-08, "Tailings Management Facility- Emergency Notification Requirement"</p> <p>TF-09, "Tailings Management Facility- Health and Safety"</p> <p>TF-11, "Tailings Management Facility- Health and Safety Monitoring"</p> <p>MP-03, "Environmental and Social Management Training"</p>
<p>Response:</p>	<p>Immediate implementation of the <i>Emergency Preparedness and Spill Contingency Plan</i> at Level III.</p> <p>Initiate emergency shutdown of process plant operations, stop detoxified tailings release.</p> <p>Contain spill, pump spilled tailings from secondary containments to the TMF.</p> <p>Initiate pipeline repairs, conduct weld inspections and acceptance testing of repaired sections prior to authorising process plant restart.</p> <p>Use earth-moving equipment to construct emergency catchment areas, as necessary if containments were breached.</p> <p>Conduct incident investigation and undertake appropriate corrective and preventive action in accordance with EM-03, "Emergency Incident Investigation, Reporting, and Record keeping" and MP-10, "Corrective and Preventive Action for Environmental and Social Management System Nonconformances."</p> <p>Implement other emergency-specific actions as applicable, as described in Section 7.2.3 of the <i>Emergency Preparedness and Spill Contingency Plan</i> and the SDS information included in Attachment 4.</p>

Scenario 7. Breach in TMF (main embankment) and/or Secondary Containment Dam

<p>Nature of incident:</p>	<p>Major breach of the TMF tailings dam (main embankment) and/or Secondary Containment Dam [with trace/ultratrace (< 10 mg/L) concentrations of WAD cyanide in tailings]</p>
<p>Potential cause:</p>	<p>Inadequate QA/QC management practices in starter dam construction and/or subsequent raises, as well as earthquake, foundation failure, overtopping, erosion, or bombing or other manmade action intended to cause a dam breach</p>
<p>Preventive measures</p>	<p>Institution of rigorous site security procedures in accordance with EM-07, "Site Security"</p> <p>Proactive engagement of external stakeholders and local, regional, and national officials in accordance with the <i>Project Public Consultation and Disclosure Plan</i></p> <p>Compliance with the emergency response drill requirements and other</p>

	<p>provisions of the <i>Tailings Facility Management Plan</i></p> <p>Compliance with all proactive monitoring, inspection, and other requirements from all applicable SOPs including:</p> <p>EM-02, “Emergency Response Preparedness”</p> <p>TF-03, “Normal Operating Procedures- Tailings Water Management”</p> <p>TF-04, “Tailings Management Facility- Operations Inspection”</p> <p>TF-05, “Tailings Management Facility- Operations Reporting”</p> <p>TF-06, “Tailings Management Facility- Emergency Maintenance/ Inspection”</p> <p>TF-07, “Tailings Management Facility- Emergency Response Action”</p> <p>TF-08, “Tailings Management Facility- Emergency Notification Requirement”</p> <p>TF-09, “Tailings Management Facility- Health and Safety”</p> <p>TF-10, “Tailings Management Facility- Risk Analysis”</p> <p>TF-11, “Tailings Management Facility- Health and Safety Monitoring”</p> <p>TF-12, “Tailings Management Facility- Groundwater Monitoring”</p> <p>TF-13, “Tailings Management Facility- Surface Water Monitoring”</p> <p>TF-14, “Tailings Management Facility- Air Monitoring/Meteorological Facility”</p> <p>MP-03, “Environmental and Social Management System Training”</p> <p>If daily monitoring reveals worsening or unexpected conditions, shut down process plant and tailings pipeline, pump down the decant pond, and minimise other inflow into the TMF by placement of diversion berms or dikes; immediately alert public officials and affected communities via community emergency response contacts.</p>
<p>Response:</p>	<p>Immediate implementation of this <i>Emergency Preparedness and Spill Contingency Plan</i> at Level IV; immediately alert and mobilise site and local emergency response organisations, co-ordinate with emergency response organisations as described in the Roşia Montană and Abrud community emergency plans.</p> <p>Administer first aid/arrange for medical attention, as needed, in accordance with HS-03, “First Aid/Medical Attention.”</p> <p>Immediate notification and evacuation of residents in Abrud and other locations downgradient of the secondary containment dam.</p> <p>Immediate notification of mine site management and local, regional, and national authorities; notify local law enforcement and state security representatives if potential terrorist action is indicated.</p> <p>Immediate notification of and co-ordination with the Government of Hungary, EU representatives, relief agencies, and/or other concerned stakeholders as indicated by the <i>Public Consultation and Disclosure Plan</i> or specific permit conditions</p> <p>Implement emergency systems, shut down the process plant and tailings pipeline, and take site stabilisation actions (e.g., breach repair, backfilling, reinforcement, and installation of dikes or diversion structures) to the extent practical given the nature of the incident.</p> <p>Conduct incident investigation and undertake appropriate corrective and preventive action in accordance with EM-03, “Emergency Incident Investigation, Reporting, and Recordkeeping” and MP-10, “Corrective and Preventive Action for Environmental and Social Management System Nonconformances.”</p> <p>Implement other emergency-specific actions as applicable, as described in Section 7.2.3 of the <i>Emergency Preparedness and Spill Contingency Plan</i> and the SDS information included in Attachment 4.</p>

Scenario 8. Overtopping of the Tailings Management Facility and/or Secondary Containment System (no dam breach)

Nature of incident:	Overtopping of the TMF and/or Secondary Containment System (with trace/ultratrace concentrations of WAD cyanide in tailings)
Potential cause:	Extreme rain or snowmelt runoff event in excess of the design PMF
Preventive measures	<p>Compliance with the emergency response drill requirements and other provisions of the <i>Tailings Facility Management Plan</i>.</p> <p>Compliance with applicable SOPs including:</p> <p>EM-02, "Emergency Response Preparedness"</p> <p>TF-03, "Normal Operating Procedures- Tailings Water Management"</p> <p>TF-04, "Tailings Management Facility- Operations Inspection"</p> <p>TF-05, "Tailings Management Facility- Operations Reporting"</p> <p>TF-06, "Tailings Management Facility- Emergency Maintenance/ Inspection"</p> <p>TF-07, "Tailings Management Facility- Emergency Response Action"</p> <p>TF-08, "Tailings Management Facility- Emergency Notification Requirement"</p> <p>TF-09, "Tailings Management Facility- Health and Safety"</p> <p>TF-10, "Tailings Management Facility- Risk Analysis"</p> <p>TF-11, "Tailings Management Facility- Health and Safety Monitoring"</p> <p>TF-12, "Tailings Management Facility- Groundwater Monitoring"</p> <p>TF-13, "Tailings Management Facility- Surface Water Monitoring"</p> <p>TF-14, "Tailings Management Facility- Air Monitoring/Meteorological Facility"</p> <p>MP-03, "Environmental and Social Management Training"</p> <p>If daily monitoring reveals worsening conditions, shut down process plant and tailings pipeline, pump down the decant pond, and minimise other inflow into the TMF by placement of diversion berms or dikes; alert public officials and issue evacuation alert to affected communities via community emergency response contacts</p>
Response:	<p>Immediate implementation of this <i>Emergency Preparedness and Spill Contingency Plan</i> at Level IV; immediately alert and mobilise site and local emergency response organisations, co-ordinate with emergency response organisations as described in the Roşia Montană and Abrud community emergency plans</p> <p>Administer first aid/arrange for medical attention as needed, in accordance with HS-03, "First Aid/Medical Attention"</p> <p>Immediate notification and evacuation of residents in Abrud and downgradient of the secondary containment dam</p> <p>Immediate notification of mine site management and local, regional, and national authorities; notify local law enforcement and state security representatives if potential terrorist action is indicated</p> <p>Immediate notification of and co-ordination with the Government of Hungary, EU representatives, relief agencies, and/or other concerned stakeholders as indicated by the <i>Public Consultation and Disclosure Plan</i> or specific permit conditions</p> <p>Implement emergency systems, shut down the process plant and tailings pipeline, and take site stabilisation actions (e.g., reinforcement of weakened dam areas) to the extent practical given the nature of the incident</p> <p>Minimise other inflow into the TMF and/or stop overtopping flow by placement of diversion berms or dikes</p> <p>Conduct incident investigation and undertake appropriate corrective and preventive action in accordance with EM-03, "Emergency Incident Investigation, Reporting, and Record keeping" and MP-10, "Corrective and Preventive Action for Environmental and Social Management System"</p>

	Nonconformances” Implement other emergency-specific actions as applicable, as described in Section 7.2.3 of the <i>Emergency Preparedness and Spill Contingency Plan</i> and the SDS information included in Attachment 4.
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12.3 Emergency Response Team/Off-site Responders

The *Emergency Preparedness and Spill Contingency Plan* identifies primary and alternate Emergency Response Coordinators, Emergency Response Team members and off-site response agencies for response to emergency situations. These same personnel are also the appropriate responders for cyanide emergencies, and shall have received the training specified in Section 11.2 of this *Cyanide Management Plan*. The *Emergency Preparedness and Spill Contingency Plan* includes contact information and call-out procedures for response personnel. The plan also requires that any off-site response personnel that may be called to assist in the event of an emergency be familiarized with the contents of the plan, the nature of the risks present at RMGC including cyanide, and the planned response actions.

In the event of a cyanide-related emergency, the primary or alternate Emergency Response Coordinator will be immediately contacted. The Emergency Response Coordinator will subsequently activate the Emergency Response Team.

The Emergency Coordinators are responsible for coordinating all emergency response measures. They shall be thoroughly familiar with all aspects of the *Emergency Preparedness and Spill Contingency Plan*, all operations and activities at RMGC involving cyanide, the location and characteristics of cyanide, cyanide solutions and cyanide facilities, the location of response equipment, and the facility layout. The Emergency Coordinators are specifically vested the authority to commit the resources needed to implement *Emergency Preparedness and Spill Contingency Plan* requirements in response to a cyanide emergency.

All members of the Emergency Response Team are responsible for implementing the *Emergency Preparedness and Spill Contingency Plan* under the direction of the Emergency Coordinator. Team members will be trained in the response procedures included in the *Emergency Preparedness and Spill Contingency Plan* and in the use of the response equipment listed therein.

RMGC also will work with the communities adjacent (and along the transit routes) to the Project site in order to develop the information necessary for preparation of external community emergency plans, and will co-ordinate with potential off-site responders such as local police and fire-fighters to make them aware of the nature of potential cyanide-related risks and the possible need for their assistance in an emergency.

12.4 Response Equipment and Maintenance/Inspection Requirements

Standard operating procedure EM-03, “Emergency Response Equipment - Maintenance, Inspections, and Testing,” describes how RMGC will ensure the availability of such equipment in the event it is needed. A list of equipment items required for the management of cyanide exposures and releases are listed in the procedure and address items necessary for containment and cleanup of spillage, traffic control, first aid and personal protective equipment, special equipment for response vehicles, and necessary items for documentation and communication.

12.5 Response Actions

EM-12, “Management of Reactive Chemical Spills” will include additional information on response actions specific to each cyanide release scenario identified in Section 12.2. For example, where a release from a pipeline or tank can be stopped by closing a valve or shutting down a pump, it is intended that the procedure identify the specific valve or pump. Such detail will be incorporated into an update of the *Emergency Preparedness and Spill Contingency Plan* when facility design characteristics are finalized.

Any accidental release of cyanide constitutes a non-conformance with the RMGC Environmental and Social Management System, as discussed in Section 5.2 of the Roşia Montană Project *Environmental and Social Management Plan*. Procedure MP-10, “Corrective and Preventive Action for Environmental and Social Management System Non-conformances” describes the process by which such incidents are document and near-term corrective actions initiated, along with the development of long-term preventive measures that address root causes and that are designed to eliminate or minimize the likelihood that such non-conformances will recur.

12.6 Internal and External Notification Requirements

Reporting of cyanide releases and exposures shall follow the same procedures established in the *Emergency Preparedness and Spill Contingency Plan* for the internal and external reporting of accidents and incidents. In the event of a major accident, RMGC will comply fully with the requirements of the Seveso II Directive and provide the competent authority with the following information:

- The circumstances of the accident;
- Identification of the dangerous substance(s) involved;
- Information to enable an assessment of the effects of the accident on human health and the environment;
- The emergency measures taken; and
- The measures to be taken to alleviate medium- and long-term effects of the accident, as well as to prevent recurrence.

12.7 Remediation of Releases and Management of Contaminated Materials

As previously noted, the unloading, storage, mixing, and use of cyanide will be conducted within full containment. The plant design will require individual containment areas to be sized to accept 110% of any reporting solid or liquid. Any spills within the containment area are amenable to being returned directly to the cyanidation process, and no residual spill material will be generated in normal operations that will require management or disposal as a waste. Spills of dry sodium cyanide briquettes or granules in the unloading or storage area will be captured and deposited in the mixing tanks. Any spills of process solution will be captured in containment sumps and returned to appropriate locations in the process (i.e., areas that will not contribute to a process upset) using portable suction pumps. Containment areas associated with cleaned-up spills will likewise be washed into containment sumps, from which the collected effluent can be pumped back to the process.

Because any potential spills are captured and returned directly to the cyanidation process and no residual spill material will be generated during normal operations, a potential waste stream is eliminated and no waste disposal actions are required.

In the unlikely event that solid sodium cyanide briquettes spill to the ground surface during delivery to the site (i.e., Scenario 4 in Section 12.2), the Emergency Coordinator will contact and coordinate necessary response actions with local, regional, and national officials, as

indicated by the community emergency plans from the affected transportation corridor community. The spill site shall be secured as soon as possible and air quality monitoring initiated. Down-wind residential areas will be notified and evacuated as indicated. Shovels and/or front-end loaders shall be used to over-excavate the affected soil area. Contaminated soil shall be drummed and sent to RMGC or the chemical manufacturer for process use or recycling. Other cyanide spill cleanup residues that cannot be used in the process or recycled will be drummed and managed as hazardous waste in accordance with the Roşia Montană Project *Waste Management Plan*.

Excavations will be deemed complete when confirmatory soil samples from the uppermost 2 cm of the excavated soil area indicate no more than 1 part per million WAD cyanide; same-day analytical services will be provided by RMGC's laboratory using a dedicated cyanide analyzer.

12.8 Cyanide Emergency Response Drills

RMGC will conduct emergency drills for response to cyanide exposures and/or releases at least annually. The drills shall be designed to simulate one or more of the types of releases and exposure scenarios noted in Section 12.2; scenarios selected for such drills shall not be repeated until all of the noted scenarios have been tested. Each drill will be evaluated to determine the adequacy of response procedures and responder training. Written documentation of the scope and evaluated results of each drill will be retained in accordance with MP-11, "Management of Environmental and Social Management System Records." This *Cyanide Management Plan*, the *Occupational Health and Safety Plan*, and the *Emergency Preparedness and Spill Contingency Plan* will subsequently be revised, as necessary based on evaluation of drill results.

13 Public Disclosure of Cyanide-Related Information

RMGC recognizes that full and open disclosure of information and dialogue regarding use of cyanide is necessary to assure the public that management measures are appropriate and sufficiently protective of the environment and the communities adjacent to the Roşia Montană Project. Such disclosure and commitment to ongoing dialogue is also required in order to ensure compliance with the Seveso II Directive. The following sections discuss Roşia Montană Project commitments to disseminate information regarding the use and management of cyanide as well as ongoing communications with stakeholders and regulatory agencies.

13.1 Safety Data Sheet Information

RMGC will maintain Safety Data Sheets from the cyanide supplier in both Romanian and English languages; see Attachment 4 for a typical example. Safety Data Sheets will be made available to RMGC employees in either electronic or paper format in all areas where cyanide is managed, and will be used to support hazard recognition training programmes for RMGC employees and contractors. Cyanide Safety Data Sheets also will be appended to the Safety Report discussed in Section 3.2, and will be made available to members of local communities, stakeholders, and the general public upon their request, as noted in the *Public Consultation and Disclosure Plan* and standard operating procedure HS-04, “Hazard Communication.”

13.2 Distribution of Cyanide-Related Information via Public Consultation and Disclosure Plan

The Roşia Montană Project *Public Consultation and Disclosure Plan* includes a number of measures to provide opportunities for stakeholder input into the project and for open dialogue between RMGC and its stakeholders regarding use of cyanide. These include open public meetings, the creation of a citizens’ advisory panel, and site tours for interested parties, as well as the public meetings related to facility permitting and licensing. Copies of this *Cyanide Management Plan* and supporting procedures will be made available to stakeholders at RMGC offices at the mine site, in the RMGC offices in Bucharest, and, at the Managing Director’s discretion, direct distribution or publication on the company website. Distribution of these documents will fulfill RMGC’s obligation to provide the public with the information on emergency prevention and planning pursuant to the EU Directives discussed in Section 3.2 of this *Cyanide Management Plan*.

As noted in Section 6.0 of the Roşia Montană Project *Environmental and Social Management Plan*, RMGC will also develop an annual Environmental and Social Performance Report that will include information on any confirmed cyanide exposure incidents, especially those that may have resulted in any hospitalization or injuries, and on any cyanide releases that:

- Required off-site response or remediation;
- Resulted in significant adverse effects to human health or the environment, on or off the mine site;
- Caused exceedances of applicable regulatory limits for cyanide; or
- Have otherwise required reporting under applicable regulations.

At RMGC’s discretion, copies may be published on the company website or distributed to interested parties upon request. Copies will also be available at the RMGC offices at the mine site and in Bucharest.

14 References

EXTERNAL REFERENCES

EEC, 1982; *Council Directive 82/501/EEC of 24 June 1982 on the major-accident hazards of certain industrial activities ("Seveso I")*

EEC, 1988; *Council Directive 88/610/EEC of 24 November 1988 amending Directive 82/501/EEC on the major-accident hazards of certain industrial activities*

EU, 1993; *Council Regulation (EEC) 793/93 on the Control and Evaluation of the Risks of Existing Substances*

EU, 1994; *Council Directive (EC) No 1488/94 of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances*

EU, 1994; *Commission Regulation (EC) No 1179/94 of 25 May 1994 concerning the first list of priority substances as foreseen under Council Regulation (EEC) No 793/93*

EU, 1995; *Commission Regulation (EC) No 2268/95 of 27 September 1995 concerning the second list of priority substances as foreseen under Council Regulation (EEC) No 793/93*

EU, 1996; *European Commission Directive 96/82/EC, 9 December 1996 on the control of major-accident hazards involving dangerous substances ("Seveso II")*

EU, 1997; *Commission Regulation (EC) No 143/97 of 27 January 1997 concerning the third list of priority substances as foreseen under Council Regulation (EEC) No 793/93*

EU, 2000; *Commission Regulation (EC) No 2364/2000 of 25 October 2000 concerning the fourth list of priority substances as foreseen under Council Regulation (EEC) No 793/93*

EU, 2003; *Directive 2003/105/EC of the European Parliament and of the Council of 16 December 2003 amending Council Directive 96/82/EC on the control of major-accident hazards involving dangerous substances*

EU, July 2004; *Reference Document and Best Available Techniques for Management of Tailings and Waste-Rock in Mining Activities*

EU, December 2005; *Directive 2005/.../EC of the European Parliament and of the Council of 26 November 2005 on the management of waste from extractive industries and amending Directive 2004/35/EC*

Government of Romania, 2000: *Governmental Emergency Ordinance (GEO) No 200/2000 on the classification, labeling and packaging of dangerous chemical substances and preparations*

Government of Romania, 2001: *Law No. 451/2001 for the approval of the GEO No 200/2000 on the classification, labeling and packaging of dangerous chemical substances and preparations*

Government of Romania, 2002: *GD No. 490/2002 for approval the Methodological Norms for application of GEO No. 200/2000 regarding the classification, labeling and packaging of dangerous chemical substances and preparations*

Government of Romania, 2002: *GD No 1.300/2002 on the notification of chemicals*

Government of Romania, 2003: *Regulation (EC) 304/2003 concerning the export and import of dangerous chemicals*

Government of Romania, 2003: *GD No 95/2003 on the control of the activities with major accident hazards in which are involved dangerous substances*

Government of Romania, 2003: *GD No. 92/2003 for approval the Methodological Norms regarding the classification, labeling and packaging of dangerous chemical substances and preparations*

Government of Romania, 2003: *Law No. 360/2003 on the regime of dangerous chemical substances and preparations*

Government of Romania, 2004: *GD No. 697/2004 for approval of the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade (the PIC Convention)*

Government of Romania, 2005: *GD No 2167/2005 on laying down the principles for assessment of the risks to man and the environment of the notified substances.*

International Cyanide Management Institute, July 2005; *International Cyanide Management Code for the Manufacture, Transport, and Use of Cyanide in the Production of Gold*; www.cyanidecode.org

UNEP, 2001; Technical Report No. 41, *APELL for Mining: Guidance for the Mining Industry in Raising Awareness and Preparedness for Emergencies at Local Level*; United Nations Environment Programme, Division of Technology, Industry and Economic, Paris, France.

RMGC ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM REFERENCES⁷

Roşia Montană Project Environmental Impact Assessment

Emergency Preparedness and Spill Contingency Plan

Waste Management Plan

Roşia Montană Project Environmental and Social Management Plan

Environmental and Social Monitoring Plan

Air Quality Management Plan

Mine Rehabilitation and Closure Management Plan

RMGC Occupational Health and Safety Plan

Public Consultation and Disclosure Plan

Tailings Facility Management Plan

RMGC Standard Operating Procedures Manual⁸

- AQ-01, "Operation, Maintenance, and Calibration of the Total Solid Particulates (TSP) Sampler";
- AQ-02, "Operation, Maintenance, and Calibration of the PM₁₀ Sampler";
- AQ-03, "Operation, Maintenance, and Calibration of the NO – NO_x Automatic Analyser";
- AQ-04, "Operation, Maintenance, and Calibration of the Automatic Analyser for CO";

⁷ Note: all documents listed are controlled documents per Section 4.5 of the *Roşia Montană Project Environmental and Social Management Plan*; current approved versions will be assumed to apply in all cases.

⁸ The noted procedures will be developed in advance of the operations phase of the project.

- AQ-05, “Operation, Maintenance, and Calibration of the Meteorological Station”; and
- AQ-06, “TSP Metals Sampling and Analysis.”
- CN-01, “Unloading and Storage of Reagent Cyanide”
- CN-02, “Carbon-in-Leach Facility Operation”
- CN-03, “Cyanide Detoxification Plant Operation”
- CN-04, “Inspections of Cyanide Tanks, Pipelines, and Other Cyanide Facilities”
- CN-05, “Wildlife Mortality Monitoring – Cyanide Facilities”
- CN-06, “Maintenance and Calibration of Hydrogen Cyanide Monitoring Equipment”
- CN-07, “Decontamination of Cyanide Handling Equipment”
- CN-08, “Emergency Power Generation for Cyanide Handling Equipment”
- EM-01, “Emergency Incident Investigation, Reporting, and Recordkeeping”
- EM-03, “Emergency Response Equipment – Maintenance, Inspections, and Testing”
- EM-04, “Alcohol Testing for Drivers/Equipment Operators”
- EM-06, “Facility Evacuation and Evacuation Accounting Procedures”
- EM-07, “Site Security”
- EM-12, “Management of Reactive Chemical Spills”
- HS-01, “Accident/Near-Miss Investigation, Reporting, and Recordkeeping”
- HS-03, “First Aid/Medical Attention”
- HS-04, “Hazard Communication”
- HS-09, “Personal Protective Equipment”
- MP-02, “Identification of Legal and Regulatory Requirements”
- MP-03, “Environmental and Social Management System Training”
- MP-05, “Review, Approval, Controlled Distribution, and Update of Environmental and Social Management System Documents”
- MP-07, “Purchasing”
- MP-08, “Surveillance Inspection”
- MP-10, “Corrective and Preventive Action for Environmental and Social Management System Non-conformances”
- MP-11, “Management of Environmental and Social Management System Records”
- MP-12, “Internal Environmental and Social Management System Performance Verifications”
- MP-13, “Management Review”

Annex 1. Cyanide Storage Area and Storage Tank Inspection Form

Date:	Inspected by:		
OBSERVATION	YES	NO	COMMENTS/ACTION
Are all cyanide tanks, containers and piping clearly labelled as containing cyanide?			
Is the direction of flow indicated on all cyanide piping?			
Are there signs of corrosion or deterioration of any cyanide tanks or containers?			
Are there signs of cracking or deterioration of any cyanide tank supports?			
Are HCN monitors/alarms in working condition?			
Is personal protective equipment available and in good condition?			
Are fire extinguishers charged and in good working order?			
Are there signs of corrosion or deterioration of any cyanide valves, pumps, or pipelines?			
Is there evidence of leakage or spillage from any cyanide tanks, containers, valves, pumps or pipelines?			
Are all cyanide process valves in their proper position?			
Is any water or cyanide solution present in cyanide secondary containments?			
Are cyanide secondary containment walls and floors separated, cracked or deteriorated?			
Are other emergency alarms in working condition?			
Is spill response/communication equipment readily available?			
Corrective/Preventive Action Necessary? [if so, summarise and record control numbers of applicable Corrective/Preventive Action Request (CPAR) forms]			
Reviewed/Approved by:		Date:	
:			
<i>Note: when completed, this form shall be retained in the Project records system per MP-11</i>			

Annex 2. Processing Area Weekly Inspection Form

Date:	Inspected by:										
	CIL		CD		TH		EC		SO ₂		
OBSERVATION	Y	N	Y	N	Y	N	Y	N	Y	N	
Are all tanks and piping clearly labelled?											
Is the direction of flow indicated on all piping?											
Are HCN monitors/alarms in working condition?											
Is personal protective equipment available and in good condition?											
Are fire extinguishers charged and in good working order?											
Are there signs of corrosion or deterioration of any tanks?											
Are there signs of cracking or deterioration of any tank supports?											
Are there signs of corrosion or deterioration of any valves, pumps or pipelines?											
Is there evidence of leakage or spillage from any tanks, valves, pumps or pipelines?											
Is any water or cyanide solution present in cyanide secondary containments?											
Are secondary containment walls and floors separated, cracked or deteriorated?											
Comments:											
Corrective/Preventive Action Necessary? [if so, summarise and record control numbers of applicable Corrective/Preventive Action Request (CPAR) forms]											
<i>Note: when completed, this form shall be retained in the Project records system per MP-11, "Management of Environmental and Social Management System Records"</i>											
CIL: Carbon in Leach Tanks; CD: Carbon Desorption Tanks; TH: Thickener Tanks; EC: Elution Circuit Tanks; SO ₂ : Treatment Plant Tanks											

Annex 3. Cyanide Health and Safety Equipment Monthly Inspection Form

Date:		Inspected by:				
		Equipment (note if present and in working order)				
Locations	Antidote (confirm date)	Medical oxygen (if bottle under 50% replace)	Resuscitator	Safety Shower/Eye Wash Station	Full Face Respirator Respirator Canister	Fire Extinguisher Dry Chemical
Unloading, Dissolution, and Storage Area						
Process Plant						
SO ₂ /Air Detox Plant						
Corrective/Preventive Action Necessary? [if so, summarise and record control numbers of applicable Corrective/Preventive Action Request (CPAR) forms]						
<i>Note: when completed, this form shall be retained in the Project records system per MP-11, "Management of Environmental and Social Management System Records"</i>						

Annex 4. Material Safety Data Sheets, Sodium Cyanide Briquettes