




GEOTEAM

Amulsar Gold Project

**Emergency Preparedness and Spill Response Plan**

Version 3  
June 2016

 <b>GEOTEAM</b>	<b>Emergency Preparedness and Spill Response Plan</b>	<b>June 2016</b>
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**REVISION HISTORY**

Revision	Date	Details	Prepared	Checked	Approved
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Plan approved by \_\_\_\_\_ Date \_\_\_\_\_

Health, Environmental, Safety and Security Manager

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## GLOSSARY

ADR	Adsorption, Desorption and Recovery
CO	Carbon Monoxide
DMP	Dust Management Plan
EAC	Effective Area Covered
ESIA	Environmental and Social Impact Assessment
Geoteam	Geoteam CJSC
GHG	Greenhouse Gas
g/t	grams per ton
HLF	Heap Leach Facility
Lydian	Lydian International Ltd
mg/m <sup>2</sup> /d	milligrams per square meter per day
NO <sub>x</sub>	Oxides of nitrogen
PM	Particulate Matter
PM <sub>2.5</sub>	Very fine particles with a diameter of less than 2.5 microns
PM <sub>10</sub>	Small particles with a diameter of 10 microns or less
RA	Republic of Armenia
RC drilling	Reverse Circulation drilling – a particular type of drilling technology
SO <sub>2</sub>	Sulphur dioxide
SOPs	Standard Operating Procedures
SPZs	Sanitary Protection Zones
TSP	Total Suspended Particles
VOC	Volatile Organic Compounds
WAI	Wardell Armstrong International Ltd
WHO	World Health Organisation
µm	micron, micrometers, one millionth of a metre

## 1 INTRODUCTION

Lydian International Ltd (Lydian) and its wholly owned Armenian subsidiary, Geoteam CJSC (Geoteam), is currently developing the Gold Amulsar Project (the Project), located in the central part of the Republic of Armenia (RA). The proposed Project will exploit the gold deposit via open-pit mining and heap-leach processing using dilute cyanide solution.

A Mining Right (MR) for the Project was granted by the RA government in November 2014. This was based, in part, on the approval of the regulatory Environmental Impact Assessment (EIA) for the Project in October 2014. Some permits also exist for ongoing exploration and development activities with additional permits required for the construction and operation phase. The Project is currently in the early stages of development, with construction activities planned to start during the second quarter 2016 subject to financing.

In parallel with the EIA, an Environmental and Social Impact Assessment (ESIA) was undertaken in compliance with, amongst others, the Performance Standards (PS) of the International Finance Corporation (IFC) and the Performance Requirements (PR) of the European Bank for Reconstruction and Development (EBRD).

In mid-2015, a Value Engineering (VE) and Optimization process was initiated, with Lydian commissioning Samuel Engineering Inc. (Samuel) and other consultants to perform engineering design on several identified VE and Optimization concepts. The objective was to reduce capital expenditure without increasing operating costs or increasing environmental and social impacts. The results from this work done in 2015, which were published in the NI “43-101 Technical Report: Amulsar Value Engineering and Optimization” in November 2015, included reduced capital and operational costs, making the Project more viable in a challenging economic environment.

Changes to the Project design as a result of the VE and Optimization work have resulted in the need to prepare a revision to the new EIA approved in October 2014 and amend the ESIA completed and disclosed in April 2015. The EIA was approved on 28th April 2016. The Project has also been subject to various health, safety, environmental and community/social (HSEC) commitments arising from the ESIA undertaken in compliance with the IFC PS and EBRD PR. The final version of the ESIA, denoted v10, published for public review and comment in June 2016, follows a series of public consultations and disclosure meetings in May & June 2016.

Both the EIA and ESIA make a number of commitments pertaining to the mitigation and management of E&S impacts. These commitments and requirements must be fulfilled as the

Project moves forward. To facilitate implementation, all commitments made in the ESIA have been compiled into a full Commitments Register (CR) which will be used by Lydian for tracking purposes throughout the Project. Although many of the commitments apply to E&S management during Project implementation (construction, operation and closure), some apply to the Project design and engineering phase and must be addressed before construction work starts on site. The implementation of many of the commitments depends not only on the actions of full Project team.

E&S commitments are being managed by Lydian and Geoteam using the Environmental and Social Management System (ESMS). The ESMS includes the Management Plans (MPs), such as this one, that detail requirements that Geoteam and its contractors will follow in order to fulfil the Project's environmental and social commitments. For the purpose of this MP, "Contractor" means any all project participants, including contractors working in the field on the project including but not limited to drilling contractors, construction contractors, camp service contractors, engineers, fabricators, suppliers, etc. Contractors should implement parts of the plans relevant to their activities, issuing their own management plans in line with the Geoteam ESMS.

## 1.1 COMMITMENTS

<b>ID.</b>	<b>Condition/actions</b>	<b>Public Commitment</b>	<b>Monitoring and compliance</b>	<b>Cross references and documentation</b>	<b>Responsibility</b>
EPSRP 1	A project risk register will be maintained and will identify the risks and response measures to be taken to manage the risks.	-	Project risk register to be maintained at site	-	Site Environment Manager reporting to Senior HESS Manager



ID.	Condition/actions	Public Commitment	Monitoring and compliance	Cross references and documentation	Responsibility
EPSRP 2	<p>An up-to-date inventory of all hazardous substances, including dangerous chemicals, fuels, oils and hazardous wastes will be maintained and will involve an assessment of potential risks by reviewing the MSDS sheets for the HE7S emergency response plans.</p> <p>Inventory to include:</p> <ul style="list-style-type: none"> <li>Details of each substance with comprehensive data on behaviour and toxicity</li> <li>Type, quantities, storage locations</li> <li>Action plan for more probable occurrences</li> <li>Environmental incident response procedures</li> <li>Emergency equipment</li> </ul>		Inventory of hazardous substances on site	-	Site Environment Manager reporting to Senior HESS Manager
EPSRP 3	For each incident scenario, the resources required for response, including materials and trained personnel for effective intervention will be defined in the incidence response plans	-	Emergency Response Plans	-	Site Environment Manager reporting to Senior HESS Manager

ID.	Condition/actions	Public Commitment	Monitoring and compliance	Cross references and documentation	Responsibility
EPSRP 4	<p>Incident control centre will be established and will be equipped with:</p> <ul style="list-style-type: none"> <li>Telephone and site radio communications</li> <li>Copy of emergency response plans</li> <li>Incident log book</li> <li>Powerful torches/lamps</li> <li>Reliable clock able to function without mains electricity supply</li> <li>First aid kit</li> <li>PPE required for response interventions</li> </ul>	-	Incident control centre	CMP	Senior HESS Manager
EPSRP 5	List of contact numbers for all senior managers, emergency response personnel and all external emergency services	-	Up-to-date contact list	OHSMP, CMP	Senior HESS Manager
EPSRP 6	Once the emergency has been fully dealt with, an investigation will be undertaken in accordance with the Incident Investigation and Response Procedures.	-	Incident reports	OHSMP, CMP	Senior HESS Manager
EPSRP 7	Meetings will be convened with public, government officials and other interested stakeholders to disseminate information relating to onsite emergency plans or actual incidents.	-	Stakeholder Meetings	SEP	Group E&S manager with media officer (supported by HESS manager)

<b>ID.</b>	<b>Condition/actions</b>	<b>Public Commitment</b>	<b>Monitoring and compliance</b>	<b>Cross references and documentation</b>	<b>Responsibility</b>
EPSRP 8	Special training for employees involved in Cyanide/other ERTs, specialised equipment, traffic control and job change.	-	Training records	CMP	Senior HESS Manager
EPSRP 9	Mock exercises/drills for developing employee skills for evaluating the adequacy of contingencies skills	-	Mock drills	CMP	Senior HESS Manager
EPSRP 10	Spill response kits will be provided at every location where chemicals, lubricants, fuels are stored	-	Visual Inspections	-	Site Environment Manager reporting to Senior HESS Manager
EPSRP 11	Emergency response training will be provided to all staff members.	-	Training records	-	Senior HESS Manager
EPSRP 12	Preventative maintenance program for all vehicles, and equipment, site access and haul roads, site fencing and warning signage's, water abstraction sites, pumps.	-	Maintenance records	-	Maintenance engineer reporting to Senior HESS Manager

## 1.2 OBJECTIVES AND GOALS

This Emergency Preparedness and Spill Response Plan (EPSRP) has been developed for preparing for and responding to major injuries, entrapment, major accidents, minor injuries, minor accidents, overtopping/leak/failure of the solution and water treatment ponds, natural disasters, unplanned ignition or explosion, security emergencies, releases/spills of hazardous materials, fires, earthquakes, and corresponding media coverage of the Amulsar Project. The

plan includes measures described in the UNEP APELL (Awareness and Preparedness for Emergencies at Local Level) guidelines.

Implementation of this plan is intended to mitigate or protect Geoteam personnel and the surrounding community from injury; prevent contamination of surrounding surface and ground waters with hazardous materials; prevent damage to the environment in particular to fauna and flora; provide firefighting procedures; describe other emergency response procedures that may be required at the sites: and describe the assistance that will be given in the event of an incident involving a shipment of hazardous materials destined for the sites. This plan also defines the mitigation measures necessary to ensure that pollution to air, water or land is prevented, or where not possible, reduced and mitigated as far as practicable during Project development and exploration works.

The objectives of the plan is to ensure that best practice is implemented to reduce impacts and that the Project complies with all national legislation, EBRD, IFC standards and international best practices. As such, this plan has the following specific objectives:

- To establish the emergency organization structure, responsibilities, support and communication routes;
- To identify all potential incident and emergency scenarios and to ensure that suitable and sufficient precautions are established and maintained in order to prevent the occurrence of such incidents and their consequences;
- Provide adequate resources, including trained Geoteam and contractors' personnel, to deal with all foreseeable situations;
- Guide and coordinate emergency response actions to ensure they are efficient and effective and provide Standard Operating Procedures (SOPs) for these actions;
- Ensure emergency response equipment is in place;
- Guarantee timely and effective interventions to contain and control any damage to people or the environment resulting from any accidental releases of hazardous substances and other pollutants; and
- Investigate incidents and improve emergency response procedures.

### **1.3 SCOPE OF THE EPSRP**

This plan will cover all in-country project phase activities including those undertaken at Geoteam's offices and employee accommodation facilities, storage locations, access roads as

well as open pits and processing facilities. Potential accidents or incidents that could occur as a result of the Project are included in the Project Risk Register, which will be developed prior to construction. The register will detail responses to specific incidents, while this plan defines generic approaches to responses, and defines the categorisation and terminology for all incidents.

This plan also defines Geoteam's requirements and best practice guidance on pollution prevention and response that will be implemented during exploration, construction and operation of the Project. This plan is an intricate part of the health and safety and environmental management systems developed by Geoteam, and should be read in conjunction with other relevant ESMS documents, such as:

- Occupational Health and Safety Plan (OHSMP) (Ref GEOTEAM-HSE-PLN0016)
- Cyanide Management Plan (CMP)(Ref GEOTEAM-ENV-PLN0221)
- Footprint Management Plan (FMP)(Ref GEOTEAM-ENV-PLN0216)
- Integrated Waste Management Plan (IWMP) ( (Ref GEOTEAM-ENV-PLN0215)
- Environmental Monitoring Plan EMP (Ref GEOTEAM-ENV-PLN0225)

The plan will continually develop with the Project, and will be subject to an annual review. The responses described in the Project Risk Register will be updated as required, and reviewed annually along with this plan.

## 1.4 DEFINITIONS

The following definitions describe the main concepts of the following Emergency Response Procedures:

### 1.4.1 Emergency

An accidental situation that could have/has resulted in serious adverse effects on the health and/or safety of persons or the environment. An emergency may be the result of human-induced or natural occurrences including, but not limited to, fires, explosions, threats (including terrorism threats), vehicle failures, storms, floods, and earthquakes.

Emergencies may originate from Project activities (e.g. road accident, purposeful or accidental disobedience of Project rules, inadequacy of Project Plans), natural events (e.g. earthquakes, high rainfall/flooding, landslides), or social events (e.g. vandalism, attacks, sabotage).

#### **1.4.2 Emergency Response**

A detailed program of action to control and/or minimize the effects of an emergency requiring prompt corrective measures beyond normal procedures to protect human life, minimize injury, minimize damage to the environment, and optimize loss control.

#### **1.4.3 Hazard**

An event or situation, with the potential for human injury, damage to property, damage to the process, damage to the environment or some combination thereof.

#### **1.4.4 Hazardous Materials**

These are materials that have the potential to cause damage to persons or the environment and goods that have their handling, transport, or use regulated by national and/or international regulations. They include explosives, compressed and liquefied gases, flammable and combustible materials, oxidizing materials and organic peroxides, poisonous or infectious substances, radioactive substances, and corrosives.

#### **1.4.5 Accident**

An undesired event that results in harm to people or the environment, damage to property, or production loss.

#### **1.4.6 Incident**

An event, which could or does result in unintended harm or damage.

#### **1.4.7 Incident Commander**

The management person who initiates the emergency response system and is in control of the accident/incident scene.

#### **1.4.8 Material Safety Data Sheet (MSDS)**

An information package for a chemical, chemical compound or other hazardous material that outlines the nature of the material, the hazards of the material, proper handling procedures and first aid treatment.

#### **1.4.9 Near Miss**

An event having the likely potential that, under slightly different circumstances, **could** result in an actual injury to persons, damage to mine equipment / materials / environments.

#### **1.4.10 Response**

A set of procedures designed to guide the actions of personnel during an emergency situation.

#### **1.4.11 Risk**

The potential of a specific, undesired event occurring within a specific period or in specified circumstances. It may be either the frequency or the probability of a specific undesired event occurring.

#### **1.4.12 Risk Analysis**

The identification of undesired events that lead to the materialization of a hazard, the analysis of the mechanisms by which these undesired events could occur, and an estimate of the extent, magnitude, and likelihood of any harmful effects.

#### **1.4.13 Risk Assessment**

The quantitative evaluation of the likelihood of undesired events occurring and the likelihood of harm or damage being caused by them, together with the value judgments made concerning the significance of the results.

#### **1.4.14 Spill**

An unauthorized release or discharge of a dangerous good, mine product or sediment into the environment.

## **2 ROLES AND RESPONSIBILITIES**

Geoteam in conjunction with the Project management team (PMT) will nominate workers, including absence cover, to fulfil emergency response roles as specified in this plan. In particular, Geoteam staff will fulfil the Incident Commander role. The team(s) will be made up of workers from Geoteam, the PMT and contractors, In addition, Geoteam will be responsible for:

- Communicating this plan, specifying Geoteam's management commitments and requirements, to the Contractors;
- Monitoring and auditing of the implementation of this plan and Contractors' performance with respect to the requirements of this plan;
- Determining appropriate corrective action for any non-compliance
- Conducting compliance assurance Specific responsibilities are described below.

## 2.1 INCIDENT COMMANDER (IC)

The Health, Environment, Safety and Security Manager (HESS) or designate in his absence assumes this position upon receiving a call from the Scene Coordinator or other. This person manages the communications between the Geoteam management support team and the Scene Coordinator, evaluating and directing all the emergency control measures. The IC will also keep the Lydian Management Team informed and updated of the situation. Responsibilities include:

- Establishing the Site Incident Control Room, which is a safe area outside of the emergency zone from where the Incident Commander coordinates the response to incidents;
- Ensuring the Geoteam management support team is updated on the emergency status and of the actions that have been taken to respond to the emergency;
- Directing the control measures that are taken during the emergency; and
- Deciding when to ask for external help (ambulances, firefighters, Civil Defence, etc.), if the available resources in the zone may potentially be exceeded by the emergency.

## 2.2 SCENE COORDINATOR

The most Senior Supervisor (either Geoteam or Contractor) at the work site shall fulfil this position. The Scene Coordinator is responsible for:

- Communicating directly with and providing support to the Incident Commander;
- Coordinating and supervising all on-site emergency response activities;
- Clearing the area of the emergency of unnecessary workers and equipment if appropriate;
- Cordoning the area of the emergency; and



- Controlling the site of the emergency including access to ensure any visitors that may be at site at the time of the emergency have clear instructions as to where to go/what action to take.

### **2.3 EMERGENCY RESPONSE TEAM (ERT)**

A team of suitable workers will form the Emergency Response Team (ERT). The ERT will be led by the Incident Commander, or a suitably trained designate. All members of the ERT have the following responsibilities:

- To ensure that they are aware of their emergency response tasks;
- To attend any training or exercise that is organized for the ERT; and
- To look after any emergency response equipment that has been issued to them.

### **2.4 SITE ENVIRONMENT MANAGER**

The Site Environment Manager is responsible for providing environmental advice during an emergency if requested by the Incident Commander. He/she will be responsible for:

- Determining what environmental emergency equipment will be available at the project sites;
- Identification of potential risks from incident and emergency situations and the management of any environmental repercussions;
- Routine reporting of environmental performance in regard to preventive measures and responses to actual events;
- Ensuring environmental emergency equipment is regularly inspected; and
- After an incident, inspecting the area and ensuring environmental protection measures are incorporated in clean-up activities.

### **2.5 SITE HEALTH AND SAFETY MANAGER**

The Site Health and Safety Manager is responsible for providing health and safety advice during an emergency if requested by the Incident Commander. He/she will be responsible for, amongst other things:

- Managing /coordinating the response to major environmental emergencies and incidents;
- Ensure that all employees and contractors undergo environmental and health and safety inductions;
- Responsible for preparation of risk assessments. Review and update of the mine's accident and emergency plans, to comply with the requirements of applicable RA legislation;
- Provide MSDS Sheets as requested;
- Provide advice regarding appropriate PPE;
- Ensure appropriate records and documentation maintained for all areas of work;
- Ensure adequate training and awareness of departmental staff to implement this plan ;
- Establishing emergency equipment requirements that are to be available at the project sites;
- Ensuring emergency equipment is regularly inspected;
- After an incident, inspecting the operations and ensuring health and safety measures are incorporated in follow-up activities;
- Responsible for liaison with the competent Armenian authorities, including incident notifications, co-operation with the Environmental Department, all other Geoteam departments and the mine's various contractors;
- Planning annual internal audits of the mine's emergency prevention and response arrangements as defined by this plan;
- Monitor compliance with procedure and develop training and auditing tools that will raise awareness; and
- Reporting the outcomes of to the General Manager

## **2.6 ALL PROJECT WORKERS**

All Project workers are responsible for:

- Immediately reporting an incident to the site supervisor;
- Attending any emergency response training that they are invited to attend;
- Using appropriate equipment in an emergency; and

- Cooperating with the incident investigation process.

## **2.7 PROJECT DIRECTOR**

- Responsible for ensuring that the Amulsar project complies with the requirements of this plan; and
- Ensuring that designated managers understand their responsibilities and that they have sufficient resources to carry out their functions effectively.

## **2.8 HEADS OF DEPARTMENT**

- Training personnel in procedures;
- Reporting any unsafe or unsatisfactory conditions to the Health and Safety Manager; and
- Initiating incident response actions in accordance with this plan.

In common with many other industries, mining has a number of operational risks that can have adverse impacts upon people and the environment. Some risks, like those associated with the transportation, handling and use of chemicals, oils and other potential pollutants, are common to those experienced in other sectors, while others are specific to mining activities and the site itself.

A key principle of the APELL guidelines is the discussion of the hazards and risks which can occur at mining operations with local communities and government agencies. This helps raise awareness of the risks and mitigation measures, and offsets any alarmist responses regarding the Project. The Project Risk register will detail the risks associated with specific components of the project, and a general summary of these is included below.

- Barren Rock Storage Facilities, and Heap Leach Facility – large physical structures, with large volumes of material. Risks include landslip, containment breach, pond overflow, release of acids and other hazardous chemicals, heavy metals and spent solvents;
- Transport of materials to and from site and loading/unloading – most materials are non-hazardous, but considerable quantities of hazardous materials are also transported including sodium cyanide, process reagents, oil and fuel, anti-freeze and other solvents. Certain waste, such as mercury, are also to be transported from the sites;
- Pipeline Failure – such as those carrying heap leach solution, fuel and wastewater. Failures can lead to the rapid release of large quantities of material;

- Subsidence and landslips – this can occur in areas of incompetent ground, resulting in damage to facilities and structures, with potential release of material to the environment. Mitigation of this is based on detailed studies of ground conditions, and facility designs based on conservative values;
- Spills of Chemicals – including cyanide solution, acids, solvents, mercury, and heavy metals. A relatively small number of chemicals is widely used in mining in large quantities, with the result being that the risks associated with these chemicals are well known. Cyanide has become associated with gold mining and has an emotional response to its use. Accidents involving cyanide can be expected to attract strong media attention. As such, cyanide is managed through a specific Cyanide Management Plan (Ref GEOTEAM-ENV-PLN0221). This contains a strong emergency preparedness component and complies with the International Code for Cyanide Management;
- Fires and Explosions – Explosives are widely stored and used at mine sites. Ammonium nitrate and fuel oil mixtures are used, and are shipped as separate components to improve safety;
- Risks at Closed Mines – including acid rock drainage, spent heap leach solution, water contamination, collapse of pit walls and stockpiles. Using the APEEL process enables capacity building in local communities in order to respond to incidents post mine closure; and
- Natural Disasters – such as earthquakes, flooding, landslides.

The Amulsar project represents a multi-faceted and continually evolving operation that occupies a substantial land area, with a range of potential risks. As part of the development of the Project, several studies have been conducted to assess risks associated with the mine.

## **2.9 IMPACT ASSESSMENTS AND MANAGEMENT PLANS**

Various detailed studies relating to project development have already been undertaken as an essential part of the Environmental and Social Impact Assessment and authorisation processes. The output reports of these studies includes a predictive assessment of the various environmental risks associated with potential incidents and emergency situations, and a preliminary implementation plan which includes the actions needed to prevent occurrence of and react responsibly to any such events. Geoteam has duly reviewed those recommendations and refined its emergency preparedness and response obligations in accordance to specific risk assessments determined through the ESIA process.

## 2.10 HAZARDOUS SUBSTANCES INCLUDING CHEMICALS, FUEL / OIL AND WASTE MATERIALS

The HESS will ensure the maintenance an up-to-date inventory of all hazardous substances, including dangerous chemicals, fuel / oils and hazardous wastes, and undertakes an assessment of potential risks by reviewing the Material Safety Data Sheets (MSDS). This inventory will be shared with Department Heads for the purposes of HE&S Emergency Response plans. The inventory is to include the following information:

- Details of each substance (cross-referenced to MSDS assessment and filed) with comprehensive data on the behaviour and toxicity of hazardous materials in case of accidental release;
- Typical quantities, storage locations and associated facilities (i.e. pipelines);
- Type/construction of storage facilities and details of any integrity testing of tanks and pipelines;
- Tank and/or secondary containment storage capacity where provided; and
- Responsibility and frequency of preventive maintenance / routine inspections.

## 2.11 RISK AVOIDANCE, MITIGATION AND CONTROL

The consequences of each the significant identified risks are evaluated and an action plan for the more probable occurrences that details the appropriate preventive and response measures.

Preventive measures may include:

- Finding an alternative solution that avoids the risk entirely
- Maintaining an inventory of hazardous substances / wastes;
- Devising procedural controls for activities that pose risk (e.g. remote refuelling of vehicles and plant);
- Providing appropriate drainage systems and secondary containment; and
- Maintaining a suitable working environment (e.g. sufficient lighting in all working areas, especially where critical activities or night-time working occur) and appropriate site security measures

Emergency response measures may include:

- Environmental incident response procedures, requiring appointment of designated individual(s) with the authority to implement necessary response actions and creation of emergency response teams (including members of Health Safety and Security department)
- Provision of emergency equipment including: fire control equipment; spill control and decontamination equipment; personal protection clothing and equipment for response teams (e.g. fire blankets, respirators, absorbents); emergency lighting; and communications equipment
- Training personnel in emergency procedures, providing information and signage (e.g. in regards to equipment location, evacuation routes, etc.) and undertaking periodic drills and simulations;
- Maintenance and testing of emergency equipment.

As a minimum, the HESS Manager, shall define what resources, including materials and trained personnel, for effective interventions for each incident scenario. As appropriate, specific procedures and responsibilities (see Section 8) will be developed in regard to each significant risk scenario for:

- Detecting incidents and raising the alarm;
- Evacuating personnel to predetermined points of safety and provision of emergency first aid treatment;
- Systematic and safe shut-down of operations during incidents;
- Designation of a central incident control location for major incidents;
- Containment / control of hazardous materials / situations;
- Search and rescue;
- The removal and/or protection of vital equipment, materials and documents;
- All clear and re-entry procedure;

Contacts with the authorities, the media and, as appropriate, with the local community (e.g. provision of counselling or other support for any casualties and their families).

## 3 INCIDENT PREPARATION ACTIVITIES

### 3.1 INCIDENT CONTROL CENTRE

The priority of any incident management will be human health, followed by safety of people then protection of the environment. For any severe incident, an Incident Control Centre shall be designated with an alternative if the first choice is unavailable due to the incident. The control centre shall be equipped with the following as appropriate:

- telephone and site radio communications;
- a copy of these Emergency plans, including site maps, procedures and hazardous material information as appropriate; an incident log book;
- powerful torches/lamps;
- a reliable clock, operated independently of mains electricity;
- first aid kit;
- suitable personal protective equipment for the risks involved (e.g. respirators, face shields, goggles, footwear, gloves etc.).

#### 3.1.1 Incident Control Responsibilities

**Incident Controller (HESS Manager or designated alternatives):** must be trained in responding to incidents and must have a comprehensive knowledge of the site and its activities. He/she will have absolute control of the internal actions in an emergency and must be competent to implement the evacuation procedures. All key control personnel will be commanded by him/her for the duration of the incident. The designated Incident Controller is to accurately log all control actions and decisions made by the control team.

**Site Security:** must ensure that all visitors/contractors are booked on/off site so that an accurate roll call can be made in the event of evacuation.

**Nominated Safety Officers:** Each department or work area has a nominated person who will be responsible for ensuring evacuation procedures are carried out and for undertaking a roll call of the persons in that area.

**Media Officer:** All statements to the media or other contact should be through the designated media contact, i.e. only by the Country Director.

**Emergency Response, Fire and Salvage Teams:** Members of the workforce should man the emergency teams on a volunteer basis and be trained both to tackle the incident, if safe to do so, and to commence salvage / rehabilitation operations.

**All other staff:** All personnel engaged in site activities are required to become thoroughly familiar with and to conform to the provisions of this Plan and any other safety and/or environmental directives as may be considered appropriate by management. Personnel are encouraged to offer ideas, suggestions or recommendations regarding any operational condition, procedure or practice that may enhance the safety of people and the protection of the environment.

**Contractors:** Contractors and their employees are required to meet, at a minimum, all aspects of the Geoteam ESMS. Failure to comply may result in loss of contract.

### 3.1.2 Key Personnel / Emergency Contacts

**Internal:** The contact numbers for the Incident Controller and deputies should be readily available and displayed where necessary. The Incident Controller and other key personnel should have an up-to-date list of contact numbers for all senior managers and emergency response personnel (plus any specialist contractors, public emergency services and government agencies). An example of a contact number list is provided in appendix.

**External:** The emergency services numbers should be displayed at key points around the site. The Incident Controller should maintain a list of all external emergency services including Fire Services; Police; hospitals and medical assistance; etc.

### 3.1.3 Emergency Communications

Effective communication systems are critical to successful emergency response. The following outlines the communication procedures to be followed during routine mine operations and emergency events:

#### Internal Communications

The internal communications system will be used to alert personnel and contractors to potential and actual incidents or any dangerous situations, convey safety information, and maintain effective site control. Radios will be used when teams are working away from the mobile telephone network. The internal system will consist of alarms or short signals that can easily be conveyed by audible signals. Training on the internal communications system will be



provided to all employees as part of their induction. A dedicated radio channel will be available for Emergency Response calls.

#### Communications during an Emergency

During an emergency, the H&S Duty officer will be notified immediately. Information will be transmitted to the rest of the mine site as appropriate. The H&S Duty telephone will be operational 24 hours a day by on-site personnel. The H&S Duty officer will also have radio access and a designated radio will be allocated for emergency response purposes only.

In the event of an emergency, there will also be prompt notification of appropriate individuals. The Incident Controller shall be contacted immediately and he shall determine, once the Level of Emergency has been assessed, who to contact from the list below:

- Project Manager
- HESS Manager
- Country Director
- Plant Manager
- Site Health and Safety Manager
- Site Environmental Manager
- Community Relations Manager
- Emergency Response Team(s)
- Other Line Managers / Supervisors
- Government Ministries
- Community Leaders
- Employee Family Members (in the event of any casualties)

An announcement will also be made over all radio channels stating which channel will be designated as the channel for management of the emergency and that all non-emergency communications will be discontinued.

In the unlikely event that there is a need for the rapid notification of local communities, the HESS Manager will immediately contact the Country Director, who will inform the relevant local Community Leaders. The notification process will be documented in writing to include information such as date, time, location, nature of the event and actions taken to address the situation.

The Incident Controller should send an Emergency Message to notify corporate functions at the Lydian head office (e.g. CEO, Investor Relations, legal affairs) of the emergency as per standing instructions. Environmental incidents, accidents or complaints not classed as major emergencies must be reported to the Site Environment Manager and line management as appropriate.

Once the emergency has been fully dealt with, an investigation will be undertaken, in accordance to the Incident Investigation and Reporting Procedure (Ref GEOTEAM-HSE-PRO0207). An Incident Report shall be prepared and distributed together with any supporting evidence such as photographs. Summary details of each incident are to be included in periodic performance reports as stipulated in the Environmental Monitoring Plan (EMP) (Ref GEOTEAM-ENV-PLN0225).

#### Communications with the Public

The Group Environment and Social Manager in conjunction with the Media Officer will be responsible for all on site and communications with any members of the public such as local communities or herders in the vicinity of the mine or incident.

The Country Director together with the HESS Manager, Social Manager and media officer shall convene meetings to disseminate information related to on-site emergency plans or actual incidents. Local residents, community leaders, other stakeholders, and non-governmental agencies will be contacted as appropriate and invited to attend these meetings. This will need to be sanctioned first by the Project Director and CEO

The HESS Manager will coordinate with the Country Director to brief him on the facts of any incident and what pertinent information should be released to the public, government officials and other interested stakeholders. The Country Director will be responsible for informing the appropriate parties including the press at the national level.

If appropriate, Geoteam will establish waiting and briefing areas for family/relatives of those involved in serious accidents. Food and a sitting/sleeping area will also be provided to members of the family and relatives as appropriate.

In providing information to the public following an incident, the HESS Manager, Project Director and the Country Director will provide information on the following:

- Description of the event;
- Identification of the population that might be affected;

- Description of any injuries and disposition of those involved in the incident;
- Identification of any on-going hazards;
- Description of precautions taken to limit current or future risks;
- Description of mitigation measures that are proposed or have been taken by the mine to correct the problem or deal with its causes; and
- Contact information.

### **3.2 TRAINING**

Geoteam believes that comprehensive training in the use of emergency response equipment and personnel protection devices and tactics is necessary to ensure the best response possible. Competency in responding to emergency incidents requires a complete understanding of the roles and responsibilities of each person in the response team. Provision for training is an integral part of a complete contingency planning and implementation program.

Initial training must be followed by periodic updates to maintain familiarity with all aspects of the plan. As a minimum, all employees should receive training in the following areas:

- How to raise the alarm;
- How to report an incident;
- What immediate actions to take in the event of an incident (e.g. when to evacuate, when and how to intervene, what personal protective equipment to use; what systems to shut down, etc.); and
- Tackling a fire and use of portable fire extinguishers: If staff are expected to fight incipient fires or may have to escape through an area that might be affected by fire, they should be trained in use of extinguishers and their proper operation on particular types of fire (e.g., metals, electrical, chemical, wood, or paper). If not expected to tackle fire, they should simply evacuate.

In addition, certain functions, such as the following, will require specific training for the employees involved:

- Cyanide / other Emergency Response teams, including any fire-fighters, first aiders and designated media contacts;
- Specialised Equipment: Some IT / machinery operations present fire loss exposures by their very nature; e.g. emergency generator and fuel tank, bottled gas appliances.

Employees involved must be thoroughly trained in the fire risks and the control measures to be followed.

- **Traffic Control:** During a fire or other emergency, persons with essential duties must be able to direct staff and/or the public emergency services to locations where they are needed.
- **Job Change:** Training employees when they change jobs can be as important as induction for new staff.

### **3.3 DRILLS AND SIMULATIONS**

Geoteam acknowledges that mock exercises or drills are important in developing employee and contractor skills and for evaluating the adequacy of contingencies plans and preparations in dealing with both environmental and health and safety concerns. The HESS Manager shall plan periodic simulation exercises or practice drills in regard to the identified potential incident and emergency scenarios.

The objectives of drills and simulations include evaluation of the following:

- practicality of the plan (structure and organization);
- adequacy of communications and interactions among parties;
- emergency response procedure and equipment effectiveness in preventing or containing pollution and/or injuries;
- evacuation and personnel count procedures;
- adequacy of first aid and rescue procedures;
- adequacy of emergency personnel response and training; and
- public relations skills.

Drills will be conducted in various forms such as desktop, computer-synthesized and on-site practical exercises. Drills will be at pre-determined regular intervals, frequent enough to ensure that the response team maintains proficiency in all aspects of the contingency plan. Drills will be conducted in a variety of situations and it is desirable to include public emergency response organisations in them. The complexity of the drill may be increased as the incident response team gains proficiency.

## 4 EMERGENCY PREPAREDNESS

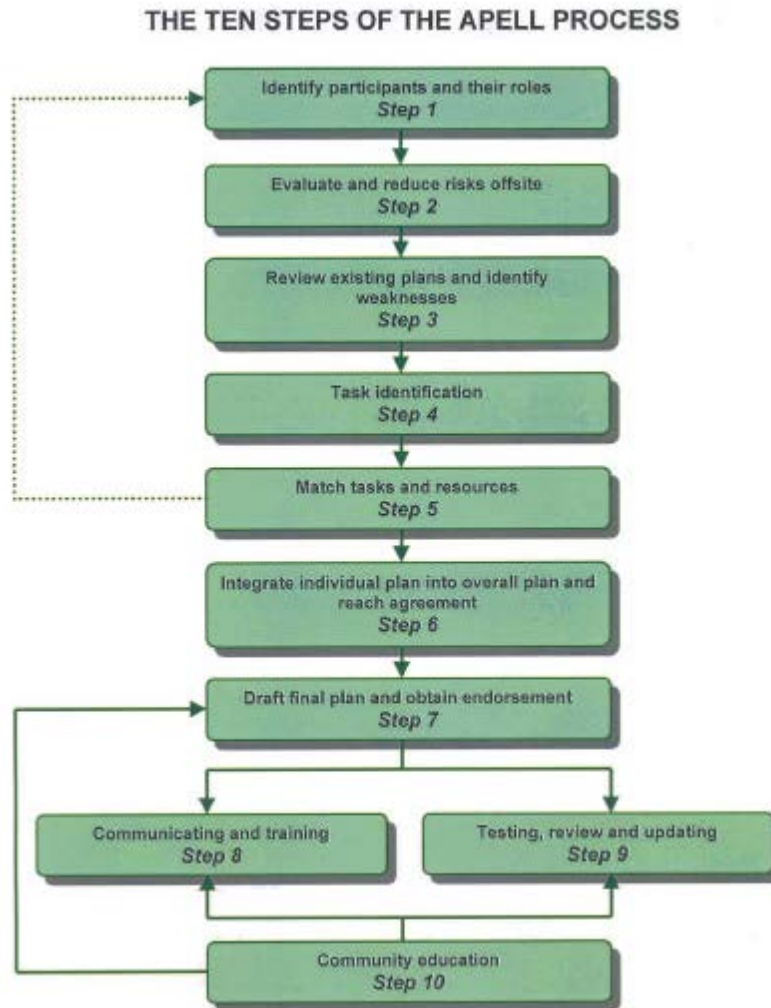
### 4.1 COMMUNITY ENGAGEMENT

The mining and metals industry is working continuously to advance safety and security measures at company operations. Despite all the measures being undertaken, the industry accepts that there can never be complete “zero risk” at any one operation. So, in addition to risk management, the industry acknowledges that emergency preparedness plans need to be incorporated into their existing management policies and processes. The Awareness and Preparedness for Emergencies at the Local Level (APELL) process is a planning process targeted at accident prevention, preparedness and response.

Communities are affected either by exposure to direct and indirect risks or psychologically by the panic and fear of unknown impacts and consequences resulting from a mining incident. Both real and perceived risks damage social confidence and trust in the industry and impacts on its licence to operate. The impacts and fears can be substantially reduced if surrounding communities and emergency services have been previously informed of possible hazards and briefed about risk management measures and crisis management plans. The APELL process was designed to create such public awareness, and to ensure that community services are adequately prepared to respond in the event of any possible emergency.

The process provides a structured way of including the community in the development and implementation of such plans and has the flexibility to complement voluntary codes of conduct in environmental management and community outreach programmes. The same approach and many of the steps can be equally relevant in other situations where community and environmental impacts are involved. The approach can be applied in post-accident consultative processes, or in situations where communities may be exposed to long-term chronic impacts from a mining operation. The objective is essentially the same—to use community consultation and planning involving many parties, in pursuit of integrated, effective action which is well understood and supported by all. Informed communities are also more likely to support the Project and understand the risks and mitigation measures required to operate a safe mine. The ten steps of the APELL process are shown in Figure 1.

Figure 1: The APELL Process



## 4.2 MEDICAL EMERGENCY PREPAREDNESS

As part of the Emergency Response Plan, a separate Medical Emergency Response and Evacuation Plan (MEREP) was commissioned. The MEREP defines the requirements for Medical Emergency Response, which includes a procedure to be used for the purpose of developing, implementing and maintaining Geoteam’s local medical response manuals and procedures. The MEREP does not deal specifically with mass casualty, war, civil unrest, or natural disasters which may be dealt with in a separate disaster plan document involving Corporate team, Corporate and Site resources, Government & UN interaction, identification of resources and interaction with Embassies and Diplomatic missions,. It does, however,

include IMSS emergency Helicopter evacuation resources and IMSS Air ambulance resources should Lydian request these services. The Revised MEREP is attached as Appendix 1.

### **4.3 EMERGENCY EQUIPMENT**

All Project locations will have emergency response equipment (e.g. first aid boxes, environmental spill kits) available as deemed appropriate. As a minimum, response kits shall be placed at any location where chemicals/lubricants/fuels are stored. In addition, first aid boxes shall be available in project vehicles. Content of response kits must be appropriate for use, as determined by the HESS Manager.

In areas of risk of environmental spills, response kits must be provided for the type (i.e. chemical properties) and volume of chemicals/lubricants/fuels stored. The Site Environmental Manager shall maintain a file of Material Safety Data Sheets (MSDS) for all chemicals, lubricants, and fuels available at project locations. This plan is also to be kept at these locations, along with any additional relevant specific procedures for responding to spills. The file shall be updated whenever a new substance is used at a project location. A copy of this file will be kept available in the event of an emergency.

Maps indicating the locations of all response kits and types will be maintained. This map is to be displayed at suitable locations. The number, location and content of spill kits will be checked during weekly inspections to ensure they remain adequate for the needs of the project.

### **4.4 EMERGENCY PREPAREDNESS TRAINING**

Emergency response training will be conducted for all workers at various levels. Completion of such training shall be recorded and filed by the relevant site Environmental manager and site Health and Safety Manager. At a basic level, the Project induction shall cover actions to take in the event of an emergency including:

- First response actions;
- Who to alert in the event of an emergency;
- Correct use of fire extinguishers (including types of fire extinguishers and how to use them); and
- Spill kit deployment (including types of kit and how to use it).

Workers with specific Emergency Response Roles (e.g. Incident Commander) will receive specific training on carrying out their role. Initial and refresher specialist/dedicated emergency response training will be specified in the site Training Plan (to be developed).

#### **4.5 EMERGENCY RESPONSE EXERCISES**

A series of emergency response exercises will be undertaken to test the Project's emergency preparedness. These will include:

- Communications test;
- Desktop exercises; and
- In the field exercises.

The HESS will compile a schedule of emergency response exercises and ensure that they are implemented. Exercises will be monitored and notes made of the progression of the test and any failings/problems encountered.

All emergency response exercises will be followed up with a report of the exercise including identification of any areas for improvement. Where necessary, actions will be entered in the appropriate action tracking register to ensure that all actions are addressed.

#### **4.6 PROVISION OF MATERIAL, EQUIPMENT AND MONITORING SYSTEMS**

Geoteam shall provide suitable and sufficient material, equipment and systems to help prevent and contain environmental incidents and emergencies, including:

- Piezometers and monitoring boreholes for groundwater, and sufficient surface water monitoring points to characterise all potential receiving waters;
- Impervious surfaces in material unloading, storage and handling areas;
- Secondary containment drip trays and spill kits for mobile plant and equipment;
- Secondary containment systems for liquid storage and handling systems, including bunds / berms, trenches, drip trays, sumps and oil traps for leak/spill collection;
- Suitable storage facilities including fire-proof cabinets and warehouse racking;
- Process instrumentation including fire and spill / leak detection and alarms;



- HCN monitors/alarms and HCN personal monitors, as per the Cyanide Management Plan (CMP) (Ref GEOTEAM-ENV-PLN0221);
- Cyanide antidote (oxyi-viva) kit;
- Adequate waste storage containers to avoid any contamination or chemical reactions – see Integrated Waste Management Plan (IWMP) Ref GEOTEAM-ENV-PLN0215);
- Bird Balls and other deterrent systems on solution ponds at HLF, as required;
- Strategically located or mobile incident response equipment including emergency signage, fire-fighting apparatus and materials, spill kits and safety gear; and
- Sufficient free board for storage ponds incorporated at design stage.
- Emergency Response vehicle which will be equipped for such responses

In addition, as appropriate, up to date site plans or marking systems will be used to denote any underground utilities / pipelines while collision barriers, fences and stop controls will be installed to reduce incidents that may result in damage to key facilities.

#### **4.7 INSPECTION ROUTINES AND PREVENTIVE MAINTENANCE PROGRAMMES**

Geoteam shall develop and implement a preventive maintenance programme to minimise mechanical or other equipment failures of any critical parts that might result in major loss, leakage, spill or other adverse environmental/safety impact. Contractors shall be required to implement similar arrangements for all environmentally sensitive plant, equipment and facilities under their control.

The preventive maintenance programme shall include the following items:

- All vehicles and mobile plant and equipment;
- Site access and haul roads;
- Security fencing and warning signage;
- Water abstraction sites, pumps, meters, pipeline and associated control and monitoring systems;
- Hazardous materials, chemical reagents and hydrocarbon / oils storage facilities, including any lifting equipment, secondary containment and drainage collection systems (sumps / oil traps, etc.);

- Cyanide and process solution systems including: vats / tanks / ponds; sumps; pipework; valves; pumps: pressure relief and venting systems; control and monitoring sensors and systems for leak/spill containment, detection, alarm and automatic shut-down;
- Any equipment containing ozone depleting substances (e.g. refrigeration systems with more than 3 kg of refrigerant, any fluorinated gases or SF6);
- Bird balls and deterrent systems;
- Heap Leach facility, open pits, waste dump facility / topsoil stockpiles, ROM pads, boreholes and piezometers (physical integrity checks);
- Waste storage containers, waste storage facilities and waste transport vehicles;
- Fire / smoke detection and alarm systems, fire extinguishing equipment, spill and other incident response equipment.

To complement the preventive maintenance programme, the HESS Manager and relevant Heads of Department shall maintain routine visual inspections of the facilities to detect weaknesses and defects before failures occur. The company shall keep appropriate records to document and identify any actions taken, persons involved, and the inspections and preventive maintenance activities undertaken.

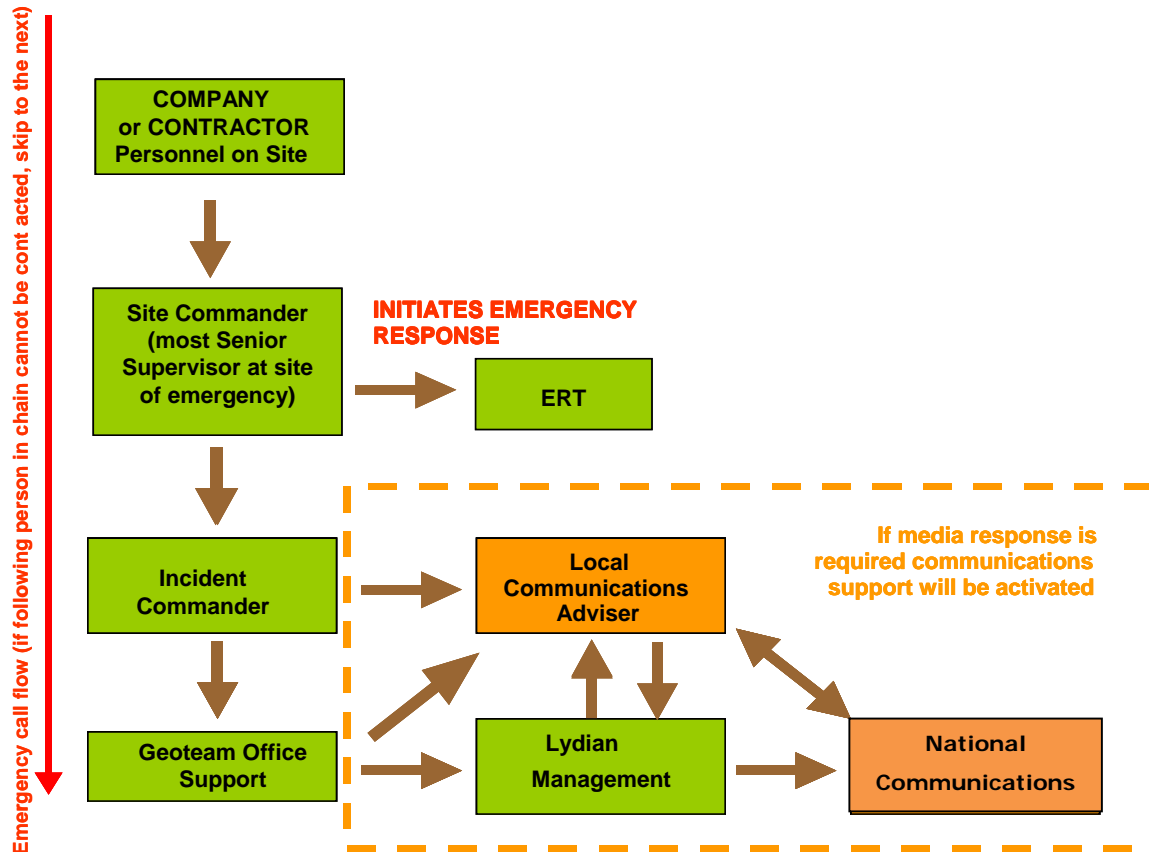
## **5 EMERGENCY RESPONSE**

### **5.1 EMERGENCY NOTIFICATION PROCESS**

An emergency is an incident that may cause serious injuries, loss of life, extensive damage to property or the environment, or serious disruption to people, business or infrastructure. If an incident has occurred, the Site supervisor will determine whether or not it constitutes an emergency and if necessary instigate this Emergency Response and Spill Prevention Plan.

If an emergency response is required the incident should be reported according to the flowchart in Figure 2.

**Figure 2 Emergency Response Communications Flowchart**



The response to any emergency will be coordinated at 3 levels:

- The corporate level (Lydian);
- The country level (Geoteam); and
- The site level (Amulsar).

Contact information can be found in Appendix A and is to be displayed on H&S noticeboards throughout the site.

## 5.2 MOBILISING THE RESPONSE

Upon receiving initial notification of an incident, the individual having on-scene authority must assess the magnitude of the problem and potential threat to personnel, equipment, and

environment. That individual or his direct superior should then initiate the following general sequence of actions as appropriate to the situation (see individual response procedures for precise instructions in regards to any Level III incidents):

- Identify the nature of the emergency and ascertain if there are casualties;
- Locate the source, the area of immediate risk and the potential for escalation;
- Raise the alarm, alert the emergency response team and activate the appropriate warning system;
- Mobilize the appropriate resources to isolate the hazard as far as possible and to implement "first aid" remedial actions;
- Initiate procedures for the protection of personnel, plant, property and the environment. Consider the need to evacuate non-essential personnel and the need for an emergency shut-down of operations – see detailed Procedures Manual;
- Implement procedures for the protection of vital systems / resources, continuity of critical services and security of the property and equipment;
- Arrange to account for personnel and to log events;
- Activate emergency communications links. Notify designated Incident Controller, senior Geoteam and contractor management as appropriate;
- Cooperate with the emergency response team / any external emergency services and with other senior personnel as they arrive;
- The Incident Controller will assess the situation and call for further assistance as necessary;
- Keep abreast of developments and ensure that the means of giving and receiving information, advice and assistance function effectively;
- Once appropriate, implement approved procedures for rehabilitation and waste management.

### **5.3 CORPORATE RESPONSE (LYDIAN)**

The Corporate Response Team shall consist of:

- Chief Executive Officer
- Chief Operating Officer (COO, TBA);

- Senior Vice President –Sustainability and Governance;
- Chief Financial Officer; and
- Communications Officer – Investors Relation

If deemed necessary by the CEO or Sr. Vice President, a Jersey based Emergency Control Room will be set up for the duration of the emergency.

The Corporate Response Team in Jersey will report directly and regularly to the Chief Executive Officer, who will in turn inform the Board.

#### **5.4 IN-COUNTRY RESPONSE (GEOTEAM)**

The Project Director, in conjunction with the Geoteam Managing Director, will coordinate any response required in Armenia. Such a response may include coordinating with external parties such as the national police/security, local communities and the Local Communications Adviser.

#### **5.5 ON-SITE RESPONSE**

The on-site response will be led by the Incident Commander who shall:

- Declare an emergency and initiating the Emergency Response Procedures;
- Initiate site evacuation (if appropriate) and securing the area;
- Notify and co-operate with the local emergency/security services (fire, police etc.). If appropriate, delegate incident control to local emergency services, should they be more suited to the role;
- Direct the emergency response activities at the site: rescue, medical treatment, evacuation, firefighting, spill control and other emergency response activities;
- Set up a Site Incident Control Room at a safe distance from the incident scene, with radio, telephone or messenger contact;
- Maintain a log of the incident and ensuring that proper consideration is given to the preservation of evidence; and
- Declare an end to the incident when it is appropriate to do so.

##### **5.5.1 Site Emergency Response Team**

The Emergency Response Team (ERT) will consist of:

- Scene Coordinator (SC) – Most senior on site supervisor;
- Field Environmental supervisor as deemed required by Incident Commander or Scene Coordinator;
- Field Health and Safety supervisor as deemed required by Incident Commander; and
- First responders to any incident on site or on the routes into or out of site.

It will be the duty of the Incident Commander to oversee and manage the response to the incident in order that the incident is brought under timely control with minimal further negative impacts, losses or casualties. The Scene Coordinator is to provide support for the IC and should always:

- CO-ORDINATE the response;
- CLEAR the area;
- CORDON the area; and
- CONTROL any onlookers.

The Scene Coordinator will ensure the ERT has all the necessary logistical support and manpower required to effectively and efficiently deal with the incident, seeking the support of the IC as necessary to provide this.

### **5.5.2 Site Incident Control Room**

All major emergencies on site will be coordinated from the Site Incident Control Room, the location of which will be determined by the IC taking into account the circumstances of the emergency. Possible locations include the Project offices and an offsite vehicle/ trailer. The Site Incident Control Room is to be remote from areas of potential danger such as fuel storage areas and shall be equipped or have immediate access to:

- Independent power supply;
- Satellite voice and data communications capacity;
- Most recent version of the Emergency Response and Spill Prevention Plan (this document) and scenario specific Emergency Response Procedures (EPSRP);
- Maps that show surrounding area, landing areas, roads, potentially impassable areas (e.g. flood areas, etc.), hospitals, government emergency services and police posts;
- Site plans indicating locations of key activities and safety/environmental equipment (e.g. fire extinguishers/spill kits);

- Protective safety equipment;
- Fire extinguishing equipment;
- Emergency first aid equipment;
- Incident cordon tape;
- Potable water;
- An up-to-date list of all workers on site;
- Waterproof clothing; and
- Emergency contact list.

### 5.5.3 Specialist Incident Response Requirements

Certain aspects of the operation will require specific incident response teams, e.g. cyanide management. The function of the ERT will include training on these areas, as described in the relevant management plans. The procedures for responding to these specific incidents will be included in this EPSRP as they are developed and approved.

An emergency response room will be set up and equipped with the required Emergency response equipment.

## 5.6 EXTERNAL PARTIES

Project workers must not involve external parties (e.g. media, police, regulators) in an emergency unless permission has been given by the Incident Commander and the Project Direct. All media enquiries should be directed to the Local Communications Adviser and, where necessary, the Country Manager.

## 5.7 ENVIRONMENTAL INCIDENTS

Geoteam recognises that detection, information gathering and informed decisions are the first steps in responding to an emergency incident. All these steps may occur over a short or protracted time period depending on the circumstances and magnitude of the incident. Detailed response procedures need to be tailored to identify the responsibility of personnel having on-scene authority to evaluate the situation, assess the magnitude of the problem and activate the emergency response.

Spills are characterised by the location of spills and their magnitude. Locations of spills determine the first stages of response, namely:

- Inside buildings and bunded areas – contained and thus source to be determined, and spills cleaned. No further action required;
- Outside buildings and bunded areas but within the plant – response measures determined by material spilt and size of spill; and
- External spills – response determined by location (proximity to communities), material (hazardous chemicals require more rapid response than harmless materials) and size of spill.

Geoteam uses the following escalating scale to code incidents according to their severity and potential impacts:

- **Level I:** minor spills (eg >20litres) requiring an on-site worker to respond quickly and intervene with the necessary corrective actions;
- **Level II:** intermediate level spills (e.g. 20-200 litres) requiring response by on-site or off-site trained staff but posing no danger to staff or the public;
- **Level III:** a major incident beyond the resources of the Project, where there are subsidiary problems to complicate the situation such as fire, explosion, toxic compounds, and threat to life, property and the environment spillages. Assistance may be required from local, regional, and/or national organizations. The media will often be present and politicians at all levels will be requesting action.

## 5.8 RESPONDING TO ENVIRONMENTAL INCIDENTS

This Plan and the supporting Procedures Manual identify the various methods needed to manage incidents as qualified below:

- **Fire Incidents:** may be level I, II or III depending upon the location and the type of plant and materials involved
- **Explosives Incidents:** treat all events as potential Level III incidents.
- **Impact / collision / extrication of plant or equipment:** may be level I, II or III depending upon the location, type of vehicle or plant involved (e.g. road or site vehicle, mobile site plant, etc.) and possibility of any uncontrolled release to the environment (e.g. fuel, hydraulics, cargo).



- **Earthquake, Landslip, Subsidence, Erosion or Other Geophysical Event:** The site has been designed to withstand any expected seismic events, and geotechnical testing conducted thoroughly. These measures should reduce the risks due to seismic events or landslip. No additional precautions are expected to be necessary as a result.
- **Rainstorm:** there may be a need to check integrity of safety and environmental equipment after rainstorm / flood event to ensure that it remains in good working order (e.g. check drains not blocked, electrical supply to monitoring and alarm systems functioning, etc.)
- **Overtopping of solution/storm event ponds:** There is a low likelihood of such an event except in the most severe / unprecedented storm conditions. Given the volumes involved, it would be considered to be a Level III event.
- **Catastrophic Failure of HLF solution ponds:** There is a low likelihood of such an event due to the design measures taken. In the event of such an occurrence, this would be treated as a Level III event
- **Cyanide Spill:** All scenarios and potential incidents are to be treated as potential Level III and require specific response procedures as per the Cyanide Management Plan (CMP) (Ref GEOTEAM-ENV-PLN0221). These procedures are included in Appendix B as well.
- **Acid / or Other Chemical / Liquid Spill:** Specific response procedures only required if liquid in question is classed as toxic, very toxic, poisonous or harmful to the environment (see MSDS information), <20 litres = Level I; 20 – 200 litres = Level 2; > 200 litres = Level III (may initiate soil tests). Response plan can be similar to cyanide response plan, with consultation of these concurrently. Otherwise treat incidents as Level I or II incidents and apply generalised spill response procedure.
- **Oil / Hydrocarbons Spill:** (generalised spill response procedure) <60 litres = Level I; 60 – 200 litres = Level 2; > 200 litres = Level III (may initiate soil tests).
- **Waste Spill:** Normally a Level I or II event, unless it involves a significant quantity (i.e. >200 kgs / litres) of hazardous or contaminated wastes.
- **Wildlife Incidents:** see the Biodiversity Management Plan (BMP) (Ref GEOTEAM-ENV-PLN0227) and supporting procedure and notification form. This would be treated as treated as a Level I event, unless confirmation was received that the incident involves a rare or endangered species or more than 20 examples in a single incident, in which case escalate to Level III.

- **Chance Discoveries of Archaeological / Heritage Importance:** Treat discoveries generally as a Level I event unless confirmation that incident involves damage to a particularly rare or significant item or relic, in which case escalate to Level III.

Note that other potential incidents - such as a major Water Supply Failure – may also be identified in accordance with the risk assessment process (see Section 6 of this document).

## 6 POST-EMERGENCY PROCEDURES

Post-emergency procedures involve three key activities that are usually coordinated by the IC and on-site workers. The activities involved are:

- End emergency notification;
- Incident investigation and report; and
- Site cleanup and/or repairs.

### 6.1 END EMERGENCY NOTIFICATION

The Incident Commander, in consultation with the Scene Coordinator or appropriate authorities, will order “return to normal” status. The following activities will take place once the “return to normal” status has been determined:

- The site of the incident will be made safe and secured ready for investigation. No unauthorized workers should be allowed to enter the scene. If possible, some initial photos of the scene should be taken to assist in the investigation process.
- NOTE: If serious injury or death has occurred, the scene must be left undisturbed;
- All response team members and on-site workers, including contract workers and emergency services, if they attended, will be notified;
- All previous contacts, including the public and government, will also be notified;
- A media statement will be prepared ready for release, if requested; and
- Debriefing meetings with employees (i.e., insurance, legal, human resources) will be conducted on request.

All “return to normal” activities will be documented.

## 6.2 REPORTING AND INVESTIGATION

The incident will be investigated and reported as per the Incident reporting and Investigation Procedure. In order to aid this process the IC will collect together all documentation relating to the incident including incident logs and the names of workers involved in the emergency response.

Key steps in the incident investigation process include:

- Review of the incident site;
- Interview of workers:
- Involved in activities in the incident area preceding the incident;
- Involved in managing activities in the incident area;
- Involved in the emergency response; and
- Review all documentation including:
- Geoteam and contractor plans, procedures, permits;
- Emergency response documentation.

In addition to investigating the immediate and root causes of the incident, the investigation will also consider the effectiveness of the response with a view to identifying improvements. All records relating to the incident will be appended to the incident investigation report and kept for at least five years.

## 6.3 CLEANUP AND/OR REPAIR

Once the incident site has been released from the investigation, the Site Environmental Manager shall conduct an environmental inspection to identify areas that need cleaning up, or disposal (e.g. contaminated fire water, contaminated ground) and additional material /equipment requirements. The Site Environmental Manager shall instruct contractors on any special/abnormal arrangements to ensure that environmental protection measures are adopted during the clean-up. Such measures may include:

- Ensuring all contaminated materials (e.g. rags, wipes, spill kits, PPE) are collected together for appropriate disposal;
- Pumping contaminated fire water into a tank/container to send for appropriate treatment and disposal rather than releasing it to the ground;

- Reinstating used spill kits/providing additional kits; and
- Installing/repairing drip trays and bunds.

Appropriate ESMS plans will apply to the clean-up activities including, but not limited to:

- Occupational Health and Safety Management Plan (OHSMP) (Ref GEOTEAM-HSE-PLN0016)
- Integrated Waste Management Plan (IWMP) (Ref GEOTEAM-ENV-PLN0215)
- Footprint Management Plan (FMP)(Ref GEOTEAM-ENV-PLN0216); and
- Cyanide Management Plan (CMP) (Ref GEOTEAM-ENV-PLN0221).

All clean-up activities will be documented.

## **6.4 DISPOSAL OF SPILLED CONTAMINANTS, DEBRIS AND DAMAGED ITEMS**

The preliminary Integrated Waste Management Plan (IWMP) (Ref GEOTEAM-ENV-PLN0215) specifies procedures for the safe removal of recovered spilled material and contaminated soil or absorbents and the location of temporary and/or permanent storage facilities for contaminated materials. The various possible treatment and disposal options such as reprocessing or landfill, are covered in the plan along with procedures for obtaining the required approvals or permits from appropriate authorities.

## **6.5 RESTORATION/REMEDIATION**

This is the action taken to restore the affected environment to the pre-spill conditions and shall normally be determined by the HESS Manager together with responsible Heads of Department. Clean-up operations themselves can be dangerous and a task-based safety risk assessment may be required. Restoration shall include the following as applicable:

- physical removal of contaminated surface materials;
- high-pressure washing;
- chemical cleaning;
- replacing of contaminated absorbent materials; and
- bioremediation.

## 6.6 INCIDENT INVESTIGATION AND CORRECTIVE ACTIONS

A post-incident evaluation shall be undertaken by the HESS Manager for drills / simulations and relevant Head(s) of Department for any actual emergency incidents. The primary purpose of the post-incident evaluation is to ensure prevention of a reoccurrence and to determine appropriate mitigations and corrections to the mine's contingency plans.

The post-incident evaluation shall include the following:

- suitability of the organization structure, equipment, communication system, etc;
- adequacy of training, alarm systems, contingency manual, control centre, communication plans, security, spill containment and recovery procedures, monitoring, etc; and
- suitability of the emergency response action plan, media communications plan, mutual aid plans, etc.

Note that, further to any major spillage of dangerous or environmentally hazardous materials, the HESS Manager may initiate additional sampling and analysis of soil and/or groundwater in order to determine the extent of any pollution or validate the effectiveness of clean-up and remediation efforts.

The incident report shall follow the procedure for Incident Investigation and Reporting (Ref GEOTEAM-HSE-PRO0207) and shall include:

- a general description of the incident;
- source and cause of the incident;
- description of the response effort;
- type and quantity of materials released and the percentage recovered;
- itemized cleanup costs, if applicable; and
- recommendations for further preventative and mitigation measures or upgrading emergency preparedness and response plans.

## 7 PERFORMANCE MONITORING

### 7.1 VERIFICATION AND MONITORING

Geoteam' assurance monitoring will be undertaken as described in the Amulsar Site Monitoring Plan (Ref GEOTEAM-ENV-PLN0225). Whenever monitoring indicates a non-

conformance related to Project standards, requirements and commitments, Geoteam reserves the right to issue a Non-conformance Report (NCR), Corrective Action Request (CAR), Work Improvement Notice (WIN) and Temporary Work Suspensions (TWS) to the relevant applicant, which will include a time frame for addressing the issue.

In addition to internal verification and monitoring and audits conducted by Geoteam, external audits may also be carried out by recognised third parties including Armenian regulatory authorities.

## 7.2 REVIEW OF INCIDENTS WITH AUTHORITIES

Geoteam shall cooperate fully with the competent authorities in any investigation and review of accidents and incidents.

## 7.3 ESMS MANAGEMENT REVIEW

The HESS Manager shall ensure that all activities and contingency plans covered by this Plan are duly discussed in the ESMS Management Review meetings. As appropriate, the HESS shall provide information on the performance of the plan (e.g. summary of drills, simulations and actual incidents and outcomes as required in this plan) and recommendations for further improvement in the mine's emergency management provisions. This plan is subject to an annual review.

## 7.4 ANNUAL AUDIT

The HESS shall ensure that all activities and contingency plans covered by this Plan are subject to an ESMS audit (the minimum frequency shall be annual). The results of audits are to be discussed during annual management meetings, where the management team shall provide information on the performance of the site and recommendations for further improvement.

# 8 SUPPORTING PROCEDURES

The following documents are used to support and implement this Plan:

- ESMS Policy Manual (Ref GEOTEAM-ENV-PLN0200);
- Document Control Procedure (Ref GEOTEAM-ENV-PRO0210);
- Chance Finds Procedure (Ref GEOTEAM-ENV-PRO0219);

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- ARD Management Plan (Ref GEOTEAM-ENV-PLN0239); and
- Stakeholder Engagement Plan (Ref GEOTEAM-SOC-PLN1050).

## 9 AUTHORIZATION

- Approved By: \_\_\_\_\_
- \_\_\_\_\_ Executive Vice President Sustainability \_\_\_\_\_ Date

## 10 APPENDIX A EMERGENCY CONTACT LIST

Incident Commander (Senior Geologist)	
Geoteam Office	HSES Manager  Tel: +3 741 058 6037  Fax: +3 741 054 6037
Lydian Management (Jersey)	Tel: +44 1534 747 890  Fax: +44 1534 758 708
Local Communications Advisor	Public Relations Department  Tel: +3 741 058 6037  Fax: +3 741 054 6037



## **11 APPENDIX B CYANIDE RESPONSE**

### **11.1 CYANIDE-RELATED ELEMENTS IN EMERGENCY PREPAREDNESS AND SPILL CONTINGENCY PLAN**

Cyanide will be managed in accordance to the Cyanide Management Plan, (CMP) (Ref GEOTEAM-ENV-PLN0221, and ESIA Appendix 8.11). Examples of scenarios and response procedures should form part of the Geoteam EPSRP at Amulsar mine. It may be advisable that all cyanide response procedures are incorporated in a single document may serve as the primary reference during emergencies.

The EPSRP will be designed to fulfil Geoteam's obligations under Armenian regulations or EU directives. The plan will include information on Amulsar project activities, quantity and form of cyanide and should identify any environmental and social factors that may cause or aggravate the consequences of a major accident. The EPSRP will identify the Project-specific risks and describe Geoteam project policies and procedures for the 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 EPSRP will be developed with the involvement of the project workforce and external stakeholders, so that it addresses site-specific risks and is responsive to stakeholder concerns. External stakeholders will include local communities, potentially affected individuals or groups, community leaders or representatives, and/or local response agencies and medical facilities. Geoteam will periodically consult with employees and stakeholders to ensure that the EPSRP continues to address current conditions and risks. Consultations regarding the EPSRP need to be documented and records retained as required. The plan should be tested, including involving local communities and local response agencies where appropriate.

#### **11.1.1 Potential Release / Exposure Scenarios**

The development of an effective EPSRP requires a realistic evaluation of all potential cyanide releases and/or exposure scenarios that may occur at Amulsar regardless of the probability or likelihood of occurrence.

### 11.1.2 Emergency Response Team / Off-site Responders

The EPSRP identifies the primary and any alternate ERCs, ERT members and off-site response agencies. The ERT should receive appropriate training to undertake these duties. The EPSRP will include contact information and call-out procedures for response personnel. The EPSRP also requires that any off-site response personnel, who will be called to assist in the event of an emergency, be familiar with the contents of the EPSRP, the nature of the risks present at Amulsar (including cyanide), and the planned response actions.

In the event of a cyanide-related emergency, the primary or alternate EPC will be immediately contacted. The ERC will subsequently activate the ERT. The ERCs are responsible for coordinating all emergency response measures. They shall be thoroughly familiar with all aspects of the EPSRP, all operations and activities at Amulsar involving cyanide, the location and characteristics of cyanide, cyanide solutions and cyanide facilities, the location of response equipment, and the facility layout. Both the internal and external ERCs should have the authority to commit resources needed to implement the EPSRP requirements in response to a cyanide emergency.

All members of the ERT are responsible for implementing the EPSRP under the direction of the EC. ERT members will be trained in response procedures included in the EPSRP and in the use of the response equipment listed.

Geoteam will also work with the communities adjacent (and along the transit routes) to the Project in order to develop the information necessary for preparation of external community emergency plans, and 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.

## 11.2 RESPONSE EQUIPMENT AND MAINTENANCE / INSPECTION REQUIREMENTS

All response equipment will be regularly maintained, inspected, and tested to ensure its availability if an event occurs. A list of required equipment for use in the management of cyanide exposures and releases should be developed. This will include preparation of cyanide cleanup, spillage, traffic control, first aid and PPE and any special equipment for response vehicles.

### 11.3 RESPONSE ACTIONS

All plausible cyanide incidents accidents and cyanide release scenarios will be identified to facilitate the development of a comprehensive list for all necessary repair equipment. 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 identifies the specific equipment and that adequate spares are stored at site in case of a malfunction. Such details could be incorporated into an update of the EPSRP when facility design characteristics are finalised.

### 11.4 INTERNAL AND EXTERNAL NOTIFICATION REQUIREMENT

Reporting of cyanide releases and exposures will follow the same procedures established in the EPSRP for the internal and external reporting of accidents and incidents. In the event of a major accident, Geoteam will need to comply fully with Armenian government requirements and international regulations, and be prepared to give interviews and issue statements in Armenia or from Lydian Head Office to the national or international press. It would be prudent to consider specific media training for key personnel with periodic refresher training if required.

The following information will be collected and recorded as a minimum:

- 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.

### 11.5 REMEDIATION OF RELEASES AND MANAGEMENT OF CONTAMINATED MATERIALS

As discussed previously, the unloading, storage compound, mixing, HLP, solution ponds and processing plant where cyanide operations are conducted has been designed to contain any cyanide spillages/leakages. The process plant design requires individual containment areas to be a minimum 110% of any reporting solid or liquid. Any liquid spills within the containment

area can be returned directly to the cyanidation process, (pumped to the process pond) and no residual spill material will be generated in normal operations that will require management or disposal as 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 spills can be captured and returned directly to the cyanidation process no residual spill material should be generated during normal working operations.

If solid sodium cyanide briquettes spill to the ground surface during delivery to the site, the ERC will contact and coordinate necessary response actions with local, regional, and national officials, as indicated by the community EPSRPs from the affected transportation route. The spill site will be secured as soon as possible and air quality monitoring initiated. Down-wind residential areas will be notified and evacuated as indicated by the SPEPSRP. Shovels and/or front-end loaders shall be used to over-excavate the affected soil area. Where possible contaminated soil will be drummed and collected by a licensed contractor for return to the NaCN manufacturer (subject to transboundary conventions and laws) for re-processing or appropriate disposal. If this is not possible, the soil will be either stored or disposed of at site in accordance with the provisions of the Integrated Waste Management Plan (IWMP, Ref GEOTEAM-ENV-PLN0215). 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 WMP.

## 11.6 EMERGENCY RESPONSE DRILLS

Geoteam will conduct emergency drills for response to cyanide exposures and/or releases at least annually. The drills will be designed to simulate one or more of the types of releases that should as mandatory procedure be identified. 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 and analysed for improvements.

## 11.7 PUBLIC DISCLOSURE OF CYANIDE-RELATED INFORMATION

Geoteam recognises that a full and open disclosure of information regarding the use of cyanide is necessary to assure the public that the management measures are appropriate and sufficiently protective of the environment and the communities, and that this will be a continuous and flexible procedure. It is also required in order to comply with international directives and guidance, such as the United Nations Environment Programme 'APEL for Mining – Guidance for the Mining Industry in Raising Awareness and Preparedness for Emergencies at Local Level' (2001) and the International Council on Mining and Metal's 'Good Practice in Emergency Preparedness and Response (2005).

## 11.8 MATERIALS SAFETY DATA SHEET

Geoteam will obtain Material Safety Data Sheets (MSDS) from their cyanide supplier in both Armenian and English languages. An example is provided in Appendix 2. The MSDS will be made available to all employees in either electronic or paper format and posted in all areas where cyanide is managed. It will also be used to support hazard recognition in training programmes for workers and contractors. MSDS will also form part of the EPSRP procedures and will be made available to members of local communities, stakeholders, and the general public upon request.

## 11.9 DISTRIBUTION OF INFORMATION VIA STAKEHOLDER ENGAGEMENT PLAN

Geoteam has developed a Stakeholder Engagement Plan (SEP, Ref No GEOTEAM-SOC-PLN0150) to guide consultation throughout mine development. This will include a number of measures to provide opportunities for stakeholder input into the project regarding the use of cyanide. These include open public meetings, the creation of a citizens' advisory panel' (or use of the Focus Groups and committees already established), and site tours for interested parties, as well as the public meetings related to facility permitting and licensing. Copies of this CMP and supporting procedures can be made available to stakeholders.

Geoteam performance reports should be prepared to include any information on confirmed cyanide exposure incidents, especially those that might or have resulted in any hospitalisation 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; and/or
- Have otherwise required reporting under applicable regulations.