# Lupin Mines Incorporated

A wholly owned indirect subsidary of Elgin Mining Inc.

## Lupin Project

Nunavut, Canada

# **Spill Contingency Plan**

Lupin Mines Incorporated
Elgin Mining Inc.
#1104 - 750 West Pender Street
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## Contents

# 1.0 INTRODUCTION

Lupin Mines Incorporated (Lupin), a wholly owned indirect subsidiary of Elgin Mining Inc. (Elgin), has prepared this spill contingency plan for surface exploration, which includes geological/geophysical surveying and core drilling, at the Lupin Project in Kitikmeot Region, Nunavut.

| | |
|---|---|
| Company: | Lupin Mines Incorporated |
| Project: | Lupin Project, Nunavut |
| Company Address: | 1104 – 750 W Pender St, Vancouver, BC, V6C 2T8 |
| Telephone: | 604-682-3366 |
| Email: | vpark@elginmining.com |
| Attention: | Vivian Park, Manager, Exploration |

Effective date: From 1 October 2011

Distribution List:

| | |
|---|---|
| Patrick Downey | Chief Executive Officer |
| Brian Morales | Chief Financial Officer |
| Michele Jones | Manager, Corporate Affairs |
| Vivian Park | Manager, Exploration |
| Karyn Lewis | General Administration |

Additional copies of this plan are available from General Administration.

This plan will be posted in key locations at the site, and all employees and contractors will be made aware of its contents.

The documents "NWT Environmental Protection Act, Spill Contingency Planning and Reporting Regulations", July 22, 1998 and "A Guide to the Spill Contingency Planning and Reporting Regulations", June 2002, were used as guide in preparing this plan.

## 1.2 Purpose and Scope

The purpose of this document is to describe response plans for spills and potential spills of all sizes as they relate to surface exploration at the Lupin Project.

A separate spill contingency plan for the Lupin Mine, currently on care and maintenance, titled "Final Lupin Spill Contingency Plan" was compiled with respect to the requirements within Water License 2AM-LUP0914, Part H, Item 1; renewed on July 1, 2000, and is effective from January 1, 2011 to December 31, 2011.

## 1.3 Environmental Policy

Lupin aims to achieve a high standard of care for the natural environment in all of the activities in which we engage. The company intends to minimize the impact on the environment by:

- conducting operations in compliance with all relevant environmental regulations, licenses and legislation as a minimum condition;
- identifying, monitoring and managing environmental risks arising from operations;
- seeking continuous improvement in environmental performance, production processes, waste management and the use of resources;
- providing appropriate training and awareness for all employees on environmental issues;
- communicating regularly with employees about the company's aim and about individual responsibilities;
- informing our customers and suppliers of company's aim and of their responsibilities in relation to the company's business;
- communicating with shareholders, the communities and governments about Lupin's environmental performance, and;
- contributing to the development of laws and regulations which may affect our business.

## 1.3 Project and Company Information

Lupin Mines Incorporated, a wholly owned indirect subsidiary of Elgin Mining Inc., is a Canadian based company focused on the exploration and development of the Lupin Gold Mine and Ulu Gold Project, both located in Nunavut, Canada. In addition, Elgin's portfolio includes interests in Arizona, California, and Mexico.

Elgin purchased Lupin Mines Incorporated, which owns the Lupin Mine, from MMG Resources Ltd in July 2011. The site was an operational underground gold mine from 1982 to 2005 with temporary suspensions of activities between Jan 1998 and April 2000, and again between Aug 2003 and March 2004. The mine resumed production in March 2004 until 2005. Since 2005, the site has remained in care and maintenance; its Class A Water License (2AM-LUP0914) has been kept in good standing.

Lupin's exploration program will involve prospecting and mapping, geophysical surveying, and on-land core drilling, based out of the existing permitted Lupin Mine site. The purpose of the exploration program is to investigate on-lease targets near the mine to determine whether economic deposits of sufficient size exist in support of reopening of the Lupin Mine as a producing entity.

The first stage of the drill program commencing in November 2011 involves drilling approximately 5,000 meters, or three to five holes in each target identified through geophysical surveys, to a maximum depth of 500 meters. If results warrant, a second stage of drilling, for up to 25,000 meters will follow, spanning

April to September 2012. Depending on the results of the 2012 program, additional exploration or resource development drilling may be planned.

The Lupin Project is accessed via plane or helicopter using the existing airstrip located at the Lupin Mine.

Drill targets are partially accessible from existing road infrastructure, and in other cases will be accessed either overland during winter conditions when there is sufficient snow cover to protect the ground or via helicopter. If necessary, short spur roads developed from existing roads may be constructed. If needed, these roads will be constructed from material obtained from existing sources, will be constructed a minimum of thirty (30) meters from any waterbody and will not involve any water crossings.

All camp infrastructure required for the exploration program currently exists at the Lupin Mine site, which has previously been screened by the Nunavut Impact Review Board under file 99WR053 and approved by the Nunavut Water Board under water license 2AM-LUP0914.

## 1.4 Site Location

The Lupin Project is located in Kitikmeot Region, Nunavut, 360 kilometers north-northeast of Yellowknife, Northwest Territories and 285 kilometers southeast of Kugluktuk. The geographic center of that property is 65° 45’29” N / 113° 13’20W (Figure 1). It is on the western shore of Contwoyto Lake, approximately 60 kilometers south of the Arctic Circle (Figure 2).

This is an isolated site. The only people immediately affected by a spill would be employees and contractors of the company.

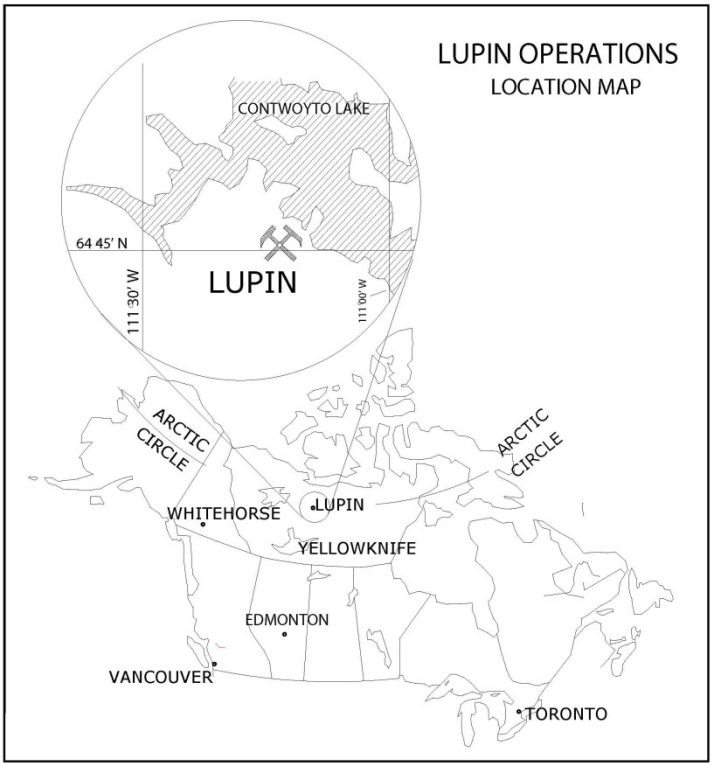


**Figure 1 Lupin Project Location**

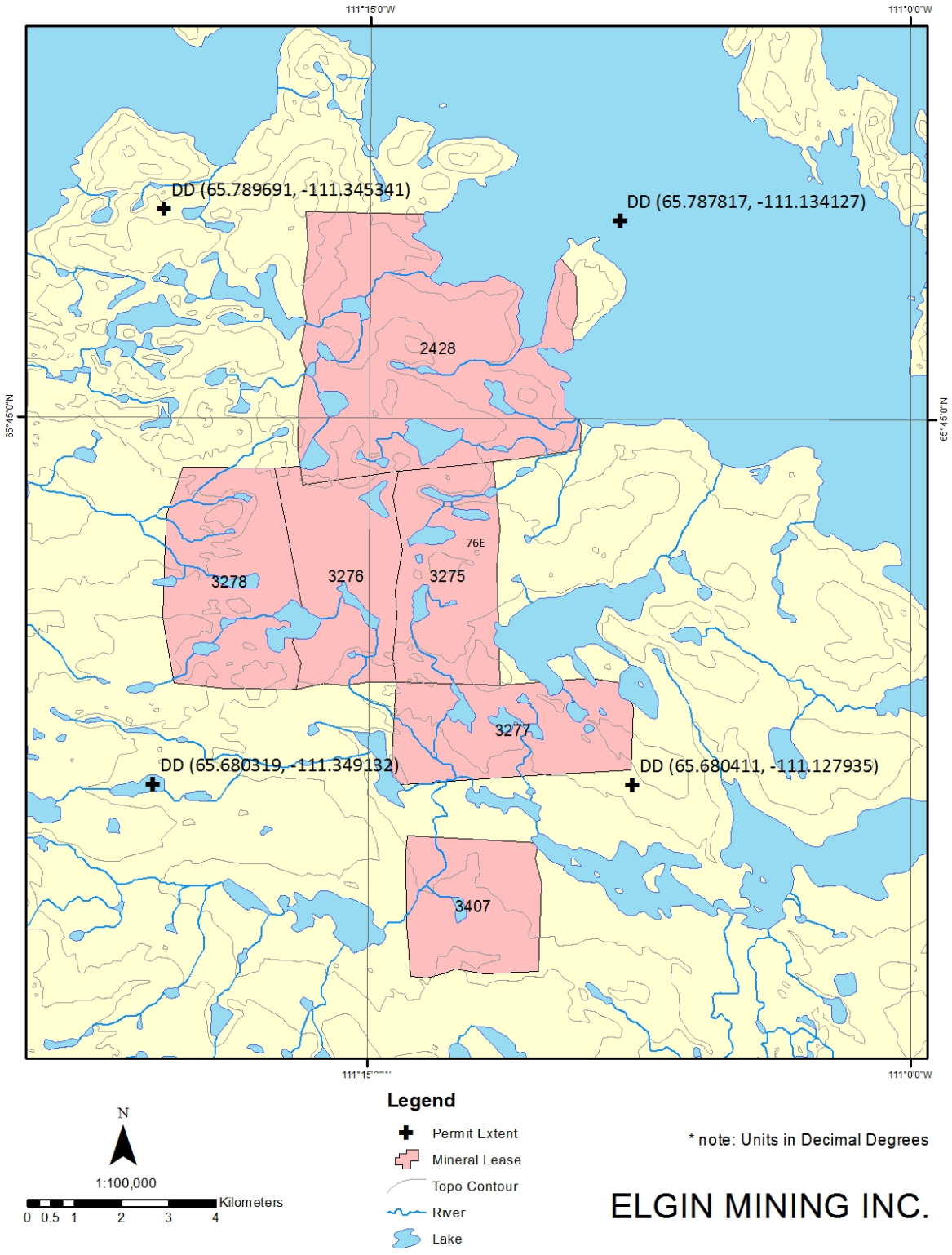


**Figure 2 Lupin Project Mineral Leases**

## 1.5 Petroleum and Chemical Storage and Inventory

The hazardous materials that will be stored on site and used in the execution of surface exploration activities include:

- Diesel
- Jet A and /or Jet B aviation fuel
- Gasoline
- Propane
- Grease/Lubricants
- Drilling additives

Material Safety Data Sheets (MSDS) for these materials are attached as Appendix 3.

Hazardous materials flown off site are accompanied by the appropriate manifest.

# 2.0 REPORTING AND ACTION PROCEDURES

An immediately reportable spill is defined as a release of a substance that exceeds the volumes outlined in Appendix 1 or is likely to be an impending threat to environmental or human health and must be reported to the 24-Hour Spill Report Line.

All other spills are cleaned, tracked and documented. Documentation must be submitted to the appropriate authority upon request or at a pre-determined reporting interval. If there is uncertainty regarding the spill volume, or if the material is a contaminant, then the spill will be reported to the 24-Hour Spill Report Line.

All site personnel are equipped with two-way radios. Supervisors carry emergency telephones. There are several VOIP telephones on site, one of which is a designated emergency line. There is a backup MSAT satellite telephone.

## 2.1 Initial Reporting and Actions

A person encountering a spill must immediately report the spill to the Camp Manager, or to the Exploration Manager.

| | |
|---|---|
| Camp Manager (Tom Collett or Mathieu Beaudoin) | via Radio, Engenius telephone or 778-372-3266 |
| Exploration Manager (Vivian Park) | via Radio, Engenius telephone or 778-372-3267 |

**Action:**

- Report spill to a manager
- Assess the spill – identify material and volume, and the risk to personnel and the environment
- If there is no risk, attempt to control the spill – refer to MSDS for product identification and handling
- If there is a risk, stand clear and prevent others from entering the area

## 2.2 Reporting

If the spill is immediately reportable, then the Camp Manager, Exploration Manager, or an appropriate designate will contact the NU 24-Hour Spill Report Line.

24-Hour Spill Report Line: Tel: 687-920-8130 Fax: 867-873-6924

The Exploration Manager will submit a Detailed Spill report that to a Water Resources Inspector no later than 30 days after the initial report of a spill.

**Important contacts:**

| **Lupin Mines Incorporated** | **Telephone** | **Fax** |
|---|---|---|
| Vivian Park, Exploration Manager | 778-372-3267<br>250-819-5788 | |
| Karyn Lewis, General Administration | 604-682-3366<br>778-386-7340 | |
| Patrick Downey, President and CEO | 604-682-3366 | |
| | | |
| **Government Agencies** | | |
| 24-HOUR Spill Report Line | 867-920-8130 | 867-873-6924 |
| INAC Water Resources Inspector (Iqaluit) | 867-975-4289 | |
| Nunavut Water Board | 867-360-6338 | 867-360-6369 |
| | | |
| **Government of NWT – Department of Renewable Resources** | | |
| Environmental Protection, Ken Hall; Manager Env. Prot. | 867-920-6476 | 867-873-0221 |
| Harvey Gaukel; Hazmat Specialist | 867-873-7645 | 867-873-0221 |
| **Government NWT – Wildlife Management Division** | | |
| Wildlife Biologist | 867-920-6190 | 867-873-0293 |
| | | |
| **Government of Nunavut** | | |
| Environmental Protection, Iqaluit | 867-975-5910 | 867-975-5980 |
| | | |
| **Government of Canada** | | |
| Indian and Northern Affairs Canada-Land Use and Water Use | | |
| Regulatory Approvals, Water Resources | 867-669-2650 | 867-669-2716 |
| Land Use; Reg. Manager, Land | 867-669-2763 | 867-669-2731 |
| Nunavut District Office; Iqaluit (Water) | 867-979-4407 | 867-979-6445 |
| Andrew Kein, Water Resources Inspector, Iqaluit | 867-975-4289 | |
| | | |
| **Environment Canada** | | |
| Environment Canada, Iqaluit | 867-975-4644 | |
| Environment Canada, 24-hour emergency pager | 867-920-5131 | |
| | | |
| **Department of Fisheries and Oceans** | | |
| Fisheries Habitat Biologist (Iqaluit) | 867-979-8007 | 867-979-8039 |
| | | |
| **Others** | | |
| Kitikmeot Inuit Association, Kugluktuk | 867-982-3310 | 867-982-3311 |
| Kugluktuk Hunters and Trappers Association | 867-982-4908 | 867-982-4047 |

Regardless of the size of the spill, a Spill Report Form (Appendix 2) will be completed, with the original retained at site, and a copied delivered to:

| | |
|---|---|
| Exploration Manager | Vivian Park |
| General Administration | Karyn Lewis |

After the spill has been reported to management, and the assessment is complete, then remedial action by a response team composed of employees and contractors, coordinated by the Camp Manager or Exploration Manager, will commence according to the appropriate action plan.

# 3.0 PETROLEUM AND CHEMICAL CRODUCTS – RESPONSE INFORMATION

The measures outlined in the response plans intend to minimize the potential impact to water and land following a petroleum or chemical spill. The immediate action is to preserve health and limit environmental damage. The plans deal with the procedures/methods of spill containment, termination, remedial measures and clean-up of spills related to those products used during the exploration program.

A copy of the drilling contractors safety and spill contingency plan is attached as Appendix 4.

## 3.1 Spill Containment, Recovery and Disposal

A spill of occur in one or a combination of the following areas: on land, snow, ice or in the water. Various proven practical methods of containment and recovery are well documented for use in northern climates; these are summarized below. For additional technical information, consult the Environment Canada Report EPS 9/SP/2, December 1986.

The initial action is to prevent any direct health risk to response personnel. Persons not directly associated with the clean-up operations are to be directed to leave the immediate area. The area will be isolated and limited to traffic as directed by the response team.

### 3.1.1 Containment on Land

The greatest potential for the possibility for a spill on land is related to refueling the drill rig and heaters at the drill sites. All petroleum and hazardous waste products in the camp area are held within lined and bermed containment areas.

Petroleum products spilling onto snow covered ground may be contained by the construction of snow dykes. For fast initial containment of smaller spills, the dykes can be built manually with shovels. Larger spills may require the use of heavy equipment such as graders and bulldozers.

The impermeability of dykes may be ensured by lining with a polyethylene liner, plastic tarpaulin or similar synthetic material. Alternatively, in freezing temperatures, water may be sprayed or poured over the dykes to further enhance the barrier to the spilled material. This method assumes that water is available or may be accessed from the spill site. Synthetically lined dykes are more effective than just snow or snow and ice-lined dykes.

During warmer months, containment dykes may be constructed from sand or gravel if these materials are available in an unfrozen form. Again, for smaller spills, the dykes can be fashioned manually with shovels where for larger spills, trucks or other heavy equipment (front-end loaders) will normally be required to transport and handle sand and gravel.

Trenching or ditching can be used as a method for containing and/or intercepting the flow of liquid spills on land. Ice, snow, loose sand, gravel and surface layers of organic material can usually be scraped or dug away until the underlying frozen substrate is reached. This can be effective in re-directing flow or simple containment prior to pumping or absorbing the spilled material. Trenching in solid frozen ground or rocky substrate is normally neither practical nor possible.

**Containment on Snow**

Containment on snow is readily achieved and is very effective due to its absorbent quality. Liquid spills will become immobile within the snow pack and easily removed for transport for recovery or disposal. Snow is readily fashioned into dykes or dams. Whenever possible, the snow pack should be left in place to avoid contaminating the underlying substrate.

**Containment on Ice**

Spills that occur on ice, from either direct spillage or migration to the ice, are greatly affected by the strength of the ice. If the spill does not penetrate the ice, and the ice is safe to work on, then the methods of containment are similar to that on land. Where the spill has penetrated the ice, the situation should be handled similar to that on open water. If, as in petroleum spills, the material floats, then every effort should focus on the recovery of the material using pumping/suction methods, and absorbents.

### 3.1.2 Containment on Open Water

A spill occurring on or into open water is very difficult to contain and every effort should be made to prevent the material from entering the water. If in the case of petroleum products, the material floats, then immediate deployment of surface booms should take place to control the spread of material. Pumping is the method of choice for removal of contained material.

### 3.1.3 Recovery

Spilled petroleum products contained within a dyked or trenched area should be recovered by pumping into a standby tanker, portable storage tank or drums dependent on volume involved, or use of an independent vacuum truck. Pump and suction hoses should be screened to prevent snow, ice or debris from clogging the line or pump.

Any remaining material may be absorbed by use of a variety of natural and commercially available products, such as 3M brand Conweb and Phase III brand Oil Sponge.

The availability of shovels, rakes and pitchforks are invaluable in any spill clean-up and recovery operation. The use of heavy equipment for larger spill situations such as front-end loaders and haul

trucks, make the removal of material easier. It also ensures that all materials, including absorbent sand, snow etc. have been removed from the site.

### 3.1.4 Disposal

Petroleum products such as oil that has been recovered by pumping into portable tanks, drums or a standby tanker can often be reclaimed and reused. Water and debris can be separated from the pure fuel by gravimetric means in a tank. In this manner disposal can be minimized and financial losses reduced.

In-situ combustion may be used as a final means of disposal after every effort has been made to remove the spilled fuel/oil etc. Approval for burning of petroleum products must be obtained prior to combustion. Burning should never be carried out on land where combustible organics are present and the oil has migrated into the soil. Removal is the method of choice in this case.

The most efficient means of igniting diesel oil for in-situ combustion is with a large size portable propane torch. Other highly flammable products such as gasoline or alcohol, or combustible products, such as wood may also be used to promote ignition of the spilled product. Spilled oil should be ignited where it has pooled naturally or been contained by dykes, trenches or depressions. Oil which has collected in slots in river ice may also be disposed of by in-situ combustion if sufficient holes are drilled in the ice (but not through to the water). Once holes are drilled, the oil which collects in the holes may be ignited.

Liquid oil wastes (which cannot be reclaimed), oil contaminated snow and debris and oil residues left after in-situ combustion will be picked up and disposed of at a land disposal site approved by government authorities. Currently, hydrocarbon contaminated materials are removed to either the incinerator or the burn area of the site landfill for ignition. Disposal at local municipal dumps may be an alternative if required. In this case GNWT would be consulted.

In their technical review of the 2000 Contingency Plan, Environment Canada commented that bioremediation should be considered as an option for the treatment of contaminated soils. They suggested that a lined pit could be constructed at the landfill and ammonium nitrate already at site could be used as the fertilizer, and the heavy equipment used for mixing and aerating. The problem with this suggestion at the time was that the ammonium nitrate on site was purchased pre-mixed with fuel oil, thereby making the explosive ANFO (ammonium nitrate fuel oil), which is the main blasting agent that was used at the mine. The previous Lupin operation did not manufacture this explosive on site, as some other mines do, and so did not have a ready supply of the fertilizer needed for bioremediation. A product which Lupin identified as having had success with was the Phase III brand “Oil Sponge”. This is a bio-remedial absorbent composed of cotton linters, pecan pith, nutrients and microbial cultures.

Spilled chemical products will be recovered and reused wherever possible. Materials unable to be used will be collected and stored in containers and shipped off site for disposal, accompanied by an appropriate Waste Manifest.

# 4.0 SPILL RESPONSE RESOURCES

A wide variety of spill control/recovery equipment and materials for dealing with emergency spills of petroleum products and chemical reagents exists at the site.

## 4.1 Response Equipment

All equipment is stored in such a manner as to be readily available on short notice.

Equipment List

| | | | |
|---|---|---|---|
| 3 | FORD | F350 | CREW CAB 4X4 |
| 1 | FORD | F250 | EXT CAB 4X4 |
| 1 | GMC | K2500 | SUBURBAN |
| 1 | GMC | K1500 | SUBURBAN |
| 1 | FORD | L9000 | TANDEM DECK |
| 1 | FORD | F350 | REG CAB DRW 4X4 |
| 1 | FORD | F700 | SERVICE TRUCK |
| 1 | GMC | GENERAL | JET FUEL TRUCK |
| 1 | VOLVO | 5350B | ROCK TRUCK 6X6 |
| 1 | KOMATSU | HM 300 | ROCK TRUCK 6X6 |
| 1 | KOMATSU | WA250 PT | LOADER |
| 1 | KOMATSU | WA250 | LOADER |
| 1 | CATERPILLAR | 966 G | LOADER |
| 1 | CATERPILLAR | 966 C | LOADER |
| 1 | KOMATSU | PC 200-7 | EXCAVATOR |
| 1 | CASE | 580 C | BACK HOE |
| 1 | KOMATSU | D61 EX 15 | DOZER W/RIPPER |
| 1 | JOHN DEERE | 350 | DOZER |
| 1 | CATERPILLAR | 14 H | GRADER |
| 1 | GROVE | RT 522 | 20 TON R/T CRANE |
| 1 | JLG | | MAN LIFT |
| 1 | TAMROCK | | SURFACE DRILL |

Emergency spill containment and recovery materials and supplies are available for immediate mobilization at any time. Spill kits are located near the fuel farms and at the generators.

## 4.2 Response Team

The spill response team, assembled by the Camp Manager or Exploration Manager, will be composed of employees and contractors.

# 5.0 PETROLEUM AND CHEMICAL PRODUCTS – DETAILED RESPONSE PLANS

The following section contains the Response Plans for spills of Petroleum or chemical products that will be used for surface exploration at the Lupin Project.

- Diesel
- Jet A and /or Jet B aviation fuel
- Gasoline
- Propane
- Grease/Lubricants

Detailed response plans for each of the materials listed above are provided below.

**DIESEL FUEL:**

**24 HOUR SPILL REPORT LINE 867-920-8130**

**INITIAL SPILL RESPONSE**

- The Camp Manager or Exploration Manager shall be informed of the incident and the response team action initiated. **Spill reported via 24 hour emergency spill line**, above;
- **STOP** the flow of diesel fuel if possible;
- ELIMINATE open flame ignition sources;
- CONTAIN flow of oil by dyking, barricading or blocking flow by any means available. Use earth-moving
- equipment if nearby;
- If flow has reached flowing natural stream, mobilize team to deploy river boom, skimmer and
- absorbent booms.
- A detailed spill report shall be submitted
-

**HAZARDS**

- Slightly toxic by ingestion, highly toxic if aspirated, drying of skin on contact;
- Flammable, treat as combustible.

**ACTION FOR FIRE**

- Use $CO_2$, dry chemical, foam or water spray (fog), although water may spread the fire;
- Use fog streams to protect rescue team and trapped people;
- Use water to cool surface of tanks;
- Divert the diesel fuel to an open area and let it burn off under control;
- If the fire is put out before all diesel fuel is consumed, beware of re-ignition;
- Where diesel fuel is running downhill, try to contain it as quickly as possible;
- Rubber tires are almost impossible to extinguish after involvement with a fire. Have vehicles with burning tires removed from the danger area.

**RECOVERY**

- Recovered soils from contaminated fuel can be soaked up by sand and peat moss or snow if available, by natural products such as Phase III Oil Sponge, or by synthetic absorbents such as 3M Brand, Graboil or Conwed;
- If necessary, contaminated soil should be excavated;
- Diesel fuel entering the ground can be recovered by digging sumps or trenches;
- Diesel fuel on a water surface should be recovered by skimmers and absorbent booms (See Section on Recovery of Oil Spills).

**DISPOSAL**

- Incineration under controlled conditions; obtain prior approval.
- Landfarm and bio-remediate at an approved site.

**PROPERTIES**

- Chemical composition:  mixture of hydrocarbons in the range $C_9$ to $C_{18}$;
- Clear to yellow, bright oily liquid with hydrocarbon odour;
- Not soluble, floats on water.

**ENVIRONMENTAL CONCERNS**

- Moderately toxic to fish and other aquatic organisms;
- Harmful to waterfowl;
- May create unsightly film on water.

**CONTAINERS**

- Transported by tanker truck and transferred to various storage tanks in the tank farm.

## GASOLINE OR AVIATION FUEL:

## 24 HOUR SPILL REPORT LINE 867-920-8130

### INITIAL SPILL RESPONSE

- The Camp Manager or Exploration Manager shall be informed of the incident and the response team action initiated. **Spill reported via 24 hour emergency spill line**, above;
- STOP the flow of gasoline or aviation fuel if possible;
- ELIMINATE all possible sources of IGNITION, eg. extinguish cigarettes, shut off motors (from a remote location if surrounded by vapours);
- EVACUATE personnel from danger area;
- CAREFULLY CONSIDER the hazards and merits of trying to contain the spill. Contain only if safe to do so, and obvious benefit of containment is apparent (ie. contain if flowing towards a creek or water body). Otherwise leave gasoline to spread and evaporate. Do not attempt to contain a gasoline spill on water. Allow it to spread and evaporate;
- if spilled in an enclosed area, VENTILATE vapours.
- A detailed spill report shall be submitted

### HAZARDS

- EXTREME FIRE HAZARD (Jet A, MODERATE), highly flammable;
- forms explosive mixture with air; is heavier than air and can migrate considerable distances to sources of ignition and flashback;
- easily ignited by flame or spark;
- avoid contact with oxidizing materials (eg. Lead Nitrate, acids);
- moderately toxic by ingestion, highly toxic if aspirated.
- Note: Jet B contains a small amount of Benzene which is a suspect human carcinogen.

### ACTION FOR FIRE

- use $CO_2$, dry chemical, foam or water spray (fog), although water may spread the fire;
- use jet streams to wash away burning gasoline;
- use fog streams to protect rescue team and trapped people;
- use water to cool surface of tanks;
- divert the gasoline to an open area and let it burn off under control;
- if the fire is put out before all gasoline is consumed, beware of re-ignition;
- where gasoline is running downhill, try to contain it at the bottom prior to reaching lakes or streams;
- rubber tires are almost impossible to extinguish after involvement with a fire. Have vehicles with burning tires removed from the danger area.

### RECOVERY

- unburned gasoline can be soaked up by sand and peat moss and snow when available, or by synthetic absorbents such as 3M Brand, Graboil or Conwed;
- if necessary, contaminated soil should be excavated;

- gasoline entering the ground can be recovered by digging sumps or trenches.

**DISPOSAL**

- evaporation;
- incineration under controlled conditions; obtain prior approval.
- landfarm and bio-remediate at an approved site.

**PROPERTIES**

- chemical composition: mixture of hydrocarbons; Gasoline $C_4$-$C_{12}$, Jet B $C_6$-$C_{14}$ and Jet A $C_9$-$C_{16}$
- light green, clear, amber coloured liquids;
- volatile;
- not soluble, floats on water

**ENVIRONMENTAL** CONCERNS

- moderately toxic to fish and other aquatic organisms;
- may create unsightly film on water.

**CONTAINERS**

- Gasoline is transported by tanker trucks and pumped into a storage tank in the satellite tank farm. Bulk shipping via tanker truck of Aviation fuel (Jet A) occurs with tank storage at the main tank farm. Drum shipping and storage is in limited quantities.

## LUBRICATION OR HYDRAULIC OIL:

## 24 HOUR SPILL REPORT LINE 867-920-8130

### INITIAL SPILL RESPONSE

- The Camp Manager or Exploration Manager shall be informed of the incident and the response team
- action initiated. Spill reported via 24 hour emergency spill line, above;
- STOP the flow of oil if possible;
- ELIMINATE open flame ignition sources;
- CONTAIN flow of oil by dyking, barricading or blocking flow by any means available. Use earth-moving
- equipment if nearby;
- A detailed spill report shall be submitted

### HAZARDS

- low toxicity by ingestion, mildly irritating to eyes
- combustible, low fire hazard;
- avoid contact with oxidizing materials (eg. Lead Nitrate, acids).

### ACTION FOR FIRE

- use $CO_2$, dry chemical, foam or water spray (fog), although water may spread the fire;
- use fog streams to protect rescue team and trapped people;
- use water to cool surface fire exposed containers;
- divert the oil to an open area and let it burn off under control;
- if the fire is put out before all oil is consumed, beware of re-ignition;
- rubber tires are almost impossible to extinguish after involvement with a fire. Have vehicles with
- burning tires removed from the danger area.

### RECOVERY

- after containment, recover as much oil as possible by pumping into drums;
- residual oil may be burned in-situ, upon approval;
- remaining unburned oil can be soaked up by sand, peat moss and snow when available, or by synthetic
- absorbents such as 3M Brand, Graboil or Conwed;
- if necessary, contaminated soil should be excavated;
- oil on a water surface should be recovered by skimmers and absorbent booms.

### DISPOSAL

- incineration under controlled conditions, prior approval required;
- burial at an approved site
- ship to licensed waste reclaiming facility

**PROPERTIES**

- chemical composition: mixture of hydrocarbons and conventional industrial oil additives; $C_{20}$-$C_{66}$
- generally viscous liquids, light to dark amber colours;
- not soluble, floats on water.

**ENVIRONMENTAL** CONCERNS

- moderately toxic to fish and other aquatic organisms;
- harmful to waterfowl;
- may create unsightly film on water and shorelines.

**CONTAINERS**

- transported and stored in steel drums or cubes (these are self-contained units with an 8 drum capacity)

## APPENDIX 1: IMMEDIATELY REPORTABLE SPILL QUANTITIES

| TDG Class | Substance for NWT 24 Hour Spill Line | Immediately Reportable Quantities |
|---|---|---|
| 1<br>2.3<br>2.4<br>6.2<br>7<br>None | Explosives<br>Compressed gas (toxic)<br>Compressed gas (corrosive)<br>Infectious substances<br>Radioactive<br>Unknown substance | Any amount |
| 2.1<br>2.2 | Compressed gas (flammable)<br>Compressed gas (non-corrosive, non-flammable) | Any amount of gas from containers with a capacity greater than 100 L |
| 3.1<br>3.2<br>3.3 | Flammable liquids | > 100 L |
| 4.1<br>4.2<br>4.3 | Flammable solids<br>Spontaneously combustible solids<br>Water reactant | > 25 kg |
| 5.1<br>9.1 | Oxidizing substances<br>Miscellaneous products or substances excluding PCB mixtures | > 50 L or 50 kg |
| 5.2<br>9.2 | Organic peroxides<br>Environmentally hazardous | > 1 L or 1 kg |
| 6.1<br>8<br>9.3 | Poisonous substances<br>Corrosive substances<br>Dangerous wastes | > 5 L or 5 kg |
| 9.1 | PCB mixtures of 5 or more ppm | > 0.5 L or 0.5 kg |
| None | Other contaminants (e.g. crude oil, drilling fluid, produced water, waste or spent chemicals, used or waste oil, vehicle fluids, waste water, etc.) | > 100 L or 100 kg |
| None | Sour natural gas (i.e. contains H2S)<br>Sweet natural gas | Uncontrolled release or sustained flow of 10 minutes or more |

In addition, all releases of harmful substances, regardless of quantity, are to be reported to the NWT spill line if the release is near or into a water body, is near or into a designated sensitive environment or sensitive wildlife habitat, poses imminent threat to human health or safety, poses imminent threat to a listed species at risk or its critical habitat, or is uncontrollable.

## APPENDIX 2: SPILL REPORT FORM

This form can be obtained at:

http://www.enr.gov.nt.ca/_live/documents/content/NT-NU_Interactive_Spill_Form.pdf

# APPENDIX 4: FORACO DRILLING SAFETY AND SPILL CONTINGENCY PLAN