McGregor Lake Campsite
Spill & Contingency Plan

Prepared for

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McGregor Lake Campsite Spill & Contingency Plan

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1. Introduction

5050 Nunavut Limited (5050 Nunavut) was incorporated under the laws of Nunavut and presently holds 64 mineral claims comprising 53,734.30 hectares and two Inuit Owned Land parcels comprising of 19,711.70 hectares surrounding All Night Lake and McGregor Lake.

These claims are located between 70 and 100 kilometres south of Kugluktuk, Nunavut. The exploration program is at grass root stage and is considered to be low impact. It includes regional and detailed geological mapping, prospecting and sampling, airborne and ground based geophysical surveys and drilling.

5050 Nunavut is a wholly owned subsidiary of MIE Metals Corporation (MIE Metals) and has its corporate office at:

Suite 507, 700 West Pender Street
Vancouver, B.C. V6C 1G8
Tel: (604) 681-4001
Fax: (604) 681-4022

The principals in both companies are:

- *Gordon Addie, President of 5050 Nunavut Limited and MIE Metals Corporation*

5050 Nunavut Limited (5050 Nunavut), presently holds a Kitikmeot Inuit Association (KIA) Land Use License KTL306C016 permitting a camp (with airstrip), staking & prospecting, exploration (geophys-grd/air) drilling and bulk fuel storage at McGregor Lake to support exploration activities associated with Ni-Cu-PGE and uranium exploration. The License is valid until *July 20, 2011*. This *original* license was issued to establish a new camp at Iceberg Creek along the southwest shore of McGregor Lake.

As an alternative to setting up a new camp, the Kitikmeot Inuit Association (KIA) required 5050 Nunavut use an abandoned exploration camp along the north shore of McGregor Lake that was established and operated by Inco Limited in the 1950's and 1960's (Figure 1-1). Figure 1-2 shows the location of the campsite as well as the proposed drill targets.

This Spill and Contingency Plan was originally provided as part of the amendment and renewal of KTL306C016 to expand 5050 Nunavut's drilling program to 10,000m and the use/expansion of the McGregor Lake Campsite to accommodate 25-30 personnel. Figure 1-3 presents the camp layout.

This Spill and Contingency Plan is in support of any activities conducted by 5050 Nunavut and shall be in effect when approval is obtained by the appropriate authorizing agencies, and is subject to revisions as may be necessitated by future programs.

The project areas are remote; no communities are located nearby. Thus no persons other than 5050 Nunavut personnel and various contractor personnel are expected to be affected in the event of an incident. All 5050 Nunavut employees, whether permanent or casual, and program contractors, are required to be trained in 5050 Nunavut policies and procedures prior to engaging in work at the McGregor Lake campsite and the surrounding work area.

5050 Nunavut is aware that planning for an emergency situation is not an option but an obligatory activity. Campsite and field staff will be familiar with the Spill and Contingency Plan. As well, this Spill and Contingency Plan will be posted in the living quarters, drill shack(s) and will be distributed to supervisory personnel for distribution to staff and contractors.

2. Camp Details

The following section describes the campsite, its facilities, and period of operation.

2.1 Site Description

The campsite is situated on the north shore of McGregor Lake, 100 m from the high water mark of McGregor Lake. The camp is located on a flat bench of glacial gravel (Figure 1-3).

2.2 Camp Description

The camp is designed to accommodate 25 – 30 people. Occupancy will be seasonal, with anywhere from 1 to 30 people living at the camp during the operational period.

2.3 Camp Facilities

On-site facilities include: lakeside dock, kitchen, washrooms, sleeping accommodations, direct dial satellite phone, full time helicopter support and a full time certified First Aid Attendant as required by NWT-NT WCB.

2.4 General Waste Disposal

Sewage treatment will be confined to Pacto style toilets. All solid waste will be collected and incinerated on site daily. All solid waste that cannot be incinerated will be flown to Yellowknife or Kugluktuk for further disposal.

2.5 Camp Operation Times

Campsite preparation will begin in February or March 2008, and the exploration program will run from March to October. The camp shutdown period will be from October to March. During the winter shut-down the camp will either be winterized, or if warranted, one or two people will remain on site as caretakers.

3. Personnel Training

The obligations and responsibilities of the Spill and Contingency Plan awareness, maintenance and preparedness begin with the arrival of employees and contractors. Particularly in the case of new arrivals; supervisors will provide an orientation to acquaint worksite staff with Company policies, procedures, and health and safety issues. This orientation will include, but will not be limited to:

- Location of all fuels and fuel products
- Location of WHMIS and MSDS
- Location of spill kits and fuel spill equipment
- Instruction/direction of who uses fuel and fuel products and how to safely use, store and add fuel to equipment
- Instruction of the use of spill kits
- Instruction on the use of spill equipment
- Instruction on the clean-up and disposal of fuel products contained in a potential fuel spill

Staff will be required to familiarize themselves with the Spill Contingency Plan and their respective assigned roles. All campsite and field personnel will be trained in the areas of environmental awareness and site safety.

4. Fuel & Chemical Product Transport & Storage

This section discusses the required fuels, how they will be handled, stored and transferred.

4.1 Transport to Site

The McGregor Lake Campsite and the associated project areas are remote. Fuel will be transported to the Camp by fixed wing aircraft: float plane in the summer and ski plane in the winter.

4.2 Fuel Types and Quantities

The types of fuel and lubricants that will be stored on the campsite will consist of P-50 diesel motive, JET-B, Gasoline, Propane and an assortment of hydraulic oils and motor oils. The P-50 diesel motive will be used for heating purposes and powering generators, pumps, drill rigs, Caterpillar, Bobcat and other related heavy equipment. The JET-B will be used for helicopter refuelling. Gasoline will be used for re-fuelling snowmobiles and other small equipment. The propane will be on site in the event it is required for the drill-rigs. Oils and lubricants will be used on the equipment.

The following table provides the type of fuel and the containers the fuel will be stored in.

Table 4-1
Monthly Quantities of Fuel and Oil to be Stored at the Campsite

Fuel Type	Container Type	Number of Containers	Container Capacity	Total Volume to be Stored On-Site
Diesel (P-50)	Barrels	100	170 L	17,000 L
Gasoline	Barrels	10	170 L	17,000 L
Jet B	Barrels	300	170 L	51,000 L
Propane	Barrels	10	100 lb	1,000 lbs
Lubricants & Oils	Plastic Jugs	25	20 L	500 L

The appropriate Material Safety Data Sheets are attached in Appendix B of this Plan.

Waste oil volumes from the camp and related activities will be less than 0.04 cubic metres per week. Waste oil will be incinerated or used for heating purposes. Uranium may also be encountered in the drill cores. 5050 Nunavut currently holds Nunavut Waste Generator # NUG 100022 (attached in the appendices). All such waste will be documented and transported from the project area for proper disposal. The same individual in charge of documenting the hazardous wastes will have completed a course in the Transportation of Dangerous Goods specifically designed to train geologists in the safe transport of nuclear substances.

For the long term storage of drill core, radiation levels will be reduced to less than 1.0 μSv measured at 1.0 meter from the surface and in no instance will the level be allowed to exceed 2.5 μSv. In practice, it is anticipated that major uranium intersections will be transported to the Saskatchewan Research Council for testing and storage at their nuclear materials storage facility. Please refer to the attached Uranium Exploration Plan for further details regarding the Uranium exploration project.

4.3 Fuel Storage

All fuel on the camp site will be stored in 170L structurally sound steel drums with secondary containment in accordance with Section 3.9 of the CCME Environmental Code of Practice for Aboveground and Underground storage Tank Systems Containing Petroleum and Allied Products (2003), and located 100m from the high water mark of McGregor Lake.

Upon arrival at the camp all drums are factory sealed and clearly marked. All drums will be inspected daily by 5050 Nunavut personnel for container and bung soundness. Prior to refuelling, all drum rubber seals will be replaced. Any drum(s) noted to be leaking or showing signs of weakness and fatigue will immediately have all product transferred to a new drum(s). The discarded drum will then be hauled off site with the next backhaul shipment to Yellowknife.

To encourage progressive reclamation, no more than 20% of the fuel drums will be empty at any one time. Any empties that are deemed not worthy of holding fuel will be back hauled to landfill sites by and/or flown out in the summer months by plane for proper disposal in approved facilities in Yellowknife or Kugluktuk.

Spill kits will be available at all fuelling storage sites and fuel transfer areas as well as the campsite generator shack and drill rig.

4.4 Fuel Transfer

The helicopter will be fuelled directly from the Jet B drums by an electric pump powered by the aircraft's battery. A 170 L plastic tray will be placed beneath the pump handle to catch any potential leaks. There will also be a spill kit on site to mitigate any spillage of fuel during the process.

The drill will be refuelled from drums of P-50 that are slung to the site by helicopter. The diesel will be pumped directly into the drill's fuel tank from the drums by an electric pump powered by the drill's battery. A 170 L plastic tray will be placed beneath the pump handle to catch any potential leaks. There will also be a spill kit on site to mitigate any spillage of fuel during the process.

The camp stoves and generator will be refuelled directly from the drums of P-50 using a small portable electric pump. A 170 L plastic tray will be placed beneath the pump handle to catch any potential leaks. There will also be a spill kit on site to mitigate any spillage of fuel during the process.

The small engines (snowmobiles, geophysics generators, and the water pump) will be refuelled with gasoline from 5 gallon jerry cans with a spill kit on hand.

5. Basic Steps in the Event of a Spill

For the purposes of flammable liquids, Environment Canada defines a spill as a volume greater than 100L. 5050 Nunavut believes that, in the case of a spill or environmental emergency, it is necessary to react immediately in the most safe and environmentally responsible manner. No spill or incident (leak or drip) is so minor that it can be ignored. The following outlines the chain of communication and responses that will be followed in the event of a spill or other environmental emergency.

5.1 Procedures to Follow in the Event of a Spill

5050 Nunavut personnel will follow the following basic response steps in the event of a spill at the McGregor Lake campsite and at the exploration areas:

1. Ensure the safety of all persons at all times.
2. Find and identify the spill substance and its source, and, if possible, stop the process or shut off the source.
3. Inform the immediate supervisor or his/her designate at once by SAT Phone, so that he/she may take appropriate action. (Appropriate action includes the notification of a government official, if required).
4. Contain the spill or environmental hazard, as per its nature, and as per the advice of the 24-Hour Spill Report Line and Environmental Advisers, as required.
5. Implement any necessary cleanup or remedial action.

5.2 Chain of Command

The following provides the chain of command to be followed in the event of a spill:

1. The On-Site Coordinator(s), generally the Camp Manager or Project Manager, must be notified immediately of any spill, either by phone, radio, or in person. Please refer to Table 5-1 below for these individual's contact information and responsibilities.

2. *Following this, the On-Site Coordinator or their designated Response Coordinator must immediately report the spill to the following agencies:*

   ***24 Hour Spill Report Line** (867) 920-8130*
   ***Environment Canada 24-Hour Emergency Pager** (867) 766-3737*
   ***INAC Manager of Field Operations**, Peter Kusugak (867) 975-4644*
   ***INAC Water Resource Office**, Melissa Joy (867) 982-4302*
   ***INAC Resource Management Officer**, Baba Pedersen (867) 982-4306*

3. *Lastly, the NT/NU Spill Report Form (Appendix C) will be filled out as completely as possible before or after contacting the 24-Hour Spill Line by the On-Site Coordinator or their designated Response Coordinator.*

Table 5-1

Roles and Responsibilities

Individual	*Location & Contact Numbers*	*Responsibilities*
John Maclean *Camp Manager*	*McGregor Lake Campsite:* *(Field office number will be provided when established for the upcoming season)* *Yellowknife* *Office: (867) 873 8666*	*Camp Manger will be the first person to be on site and will assume authority over the spill scene and personnel involved.* *Activate the Spill & Contingency Plan.*
Phu Van Bui *Project Manager*	*McGregor Lake Campsite:* *(Field office number will be provided when established for the upcoming season)* *Vancouver* *Office (604) 681-4001 ext. 111* *Home (778) 233-3221*	*In the absence of the Camp Manager, will be the first person to be on site and will assume authority over the spill scene and personnel involved.* *Activate the Spill & Contingency Plan.*
Gordon Addie *President*	*Vancouver* *Office (604) 681-4001 ext. 109* *Home (604) 512-0145*	*In the absence of the Project Manager, assume authority over the spill scene and personnel involved.* *Activate the Spill & Contingency Plan.*
Elizabeth van Warmerdam *Franz Environmental Inc.* *Environmental Advisers*	*Vancouver* *Office (604) 632-9941*	*Advisor provides expert advice on environmental / logistical cleanup requirements. May provide assistance in developing any required testing or monitoring program, or in activating an existing program. May recommend preventive measures.*

6. Taking Action

The following sections outline the 5050 Nunavut's preventative and clean-up procedures to be followed during all 5050 Nunavut activities.

6.1 Before the Fact: Preventive Measures

The following actions illustrate the approach of 5050 Nunavut to environmental care, by minimizing the potential for spills during fuel handling, transfer or storage:

1. Fuel transfer hoses with cam lock mechanisms are to be used.
2. Carefully monitor fuel content in the receiving vessel during transfer.
3. If, during fuel transfer, drips are noted, clean up drips and minor spills immediately using absorbent pads.
4. Inspect drums daily, tanks and hoses for leaks or potential to leak.
5. Use plastic drip pans at all fuel transfer sites when and where fuel is transferred.
6. Use blue absorbent matting under any stationary machinery (e.g., bobcat, generator sets and drill engines).
7. Train personnel, especially those who will be operators, in proper fuel-handling and spill response procedures.

6.1.1 Response Equipment and Proximity

Equipment available to aid in spill response and remediation includes spill kits. Spill kits will be available at all fuelling storage sites and fuel transfer areas as well as the campsite generator shack and drill rig(s). Table 6-1 documents the regular contents of a spill kit.

Table 6-1
Contents of a Regular Spill Kit

- Absorbent Pads (Oil,& Diesel)
- Universal Absorbent Pads (Antifreeze & Non-Haz)
- 3" x 4' Absorbent Socks (Oil, Gas & Diesel)
- HD Hazmat Disposal Bags
- Nitrile Gloves

6.2 After the Fact: Mitigative Measures

1. Primary steps to take when a spill occurs:

    a. Ensure your own safety and that of others around you, beginning with those nearest to the scene.
    b. Control danger to human life, if necessary.

c. Identify the source of the spill.
d. Notify the appropriate member of the chain of command, as soon as is practical; they in turn will notify the Response coordinator (if a different individual).
e. Assess whether or not the spill can readily be stopped.
f. Contain or stop the spill at the source, if possible, by following these actions:
    i) If fuelling is in progress, STOP AT ONCE.
    ii) Close or shut off valves.
    iii) Place absorbent pads at the foot of the tank or barrel to prevent seepage into the ground or runoff of fuel.

2. Secondary steps to take:

    a. Determine status of the spill event.
    b. If not reported under 1d), report incident and steps taken to the appropriate member of the chain of command

3. If a fuel container is damaged and/or leaking, pump fuel from the damaged and/or leaking container into a refuse container.

4. Notify the 24-hour Spill Report Line, and receive further instructions from the appropriate contact agencies listed in Appendix A (e.g., disposal of contaminated soil or ice/snow in sealed containers for removal from site, etc.).

5. Complete and FAX a copy of the Spill Report (Appendix C)

6. Notify permitting authorities and the Lands Manager. If possible, resume cleanup and containment.

6.2.1 Mitigative Equipment and Proximity

A helicopter can be dispatched to the drill rigs from the campsite area within minutes.

Spill-response equipment is available from Kugluktuk, 35 minutes away by air, and or from Yellowknife. Miscellaneous equipment at the 5050 Nunavut camp area (Table 6-2) is available for spill response and cleanup, including hand tools, shovels (earth and snow), fire extinguishers, fuel transfer pumps, water pumps, miscellaneous hoses and fittings.

Personnel, including first aid attendant and cleanup crews are available for immediate dispatch from the camp site.

Table 6-2
General Response Inventory at the Camp

- Fire extinguishers (valid/recharged) in each structure.
- Water pump, hoses and fittings
- Hammers, shovels and picks of assorted sizes
- Assorted 10 L plastic pails
- Ice auger
- Plastic garbage bags
- Plastic tarps
- Extra bundles of absorbents
- Fuel-transfer pumps

6.3 Managing Fuel Spills in Various Environments

5050 Nunavut conducts activities in a variety of different environments that react differently to fuel spills. As such it is important that environment specific procedures be followed in order to minimize the potential environmental impact. These environments include rock, soil, ice, snow, and water. However, no matter the environment, spills must be managed following a similar set of general steps:

1. **Containment** of spill;
2. **Disposal** of spilled product;
3. **Remediation** of the affected area.

Further advice on how to proceed with managing a spill will be obtained from the 24-Hour Spill Report Line.

6.3.1 Procedure for Spills on Land and Rock

As soon as possible either during or after the incident, contact the 24-Hour Spill Report Line (ensuring the government agencies are informed).

The following procedures are to be followed for hydrocarbon spills on land (soil) rock outcrops, boulder fields, etc.

Containment

Construct a berm of peat, native soil or snow down slope of the seepage or spill.

Inform response coordinator or his/her designate to obtain plastic tarp(s) and absorbent sheeting on-site.

Place the tarp in such a way that the fuel can pool for collection and removal (i.e., at the foot of the berm). If there is a large volume of spilled product, pump the liquid into spare drums, and dispose of product by transporting to a liquid-waste disposal facility.

Control petroleum-product sheening on vegetation by applying a thin dusting of Spagh-Zorb or other ultra-dry absorbent to the groundcover.

Place absorbent matting on the rock to soak up spilled product, etc. Dispose of saturated matting in an empty drum, labelling and sealing the drum when it is full.

Removal

Remove the labelled and sealed drums offsite by plane or helicopter to Yellowknife where they are dealt with accordingly.

Remediation

Receive instruction from the appropriate member of the chain of command (Table 5-1) or contact agencies listed in Appendix A regarding collection of the contaminated soil or vegetation, its removal and site cleanup/restoration.

6.3.2 Fuel Spills on Water

As soon as possible, either during or after the incident, contact the 24-Hour Spill Report Line (ensuring the government agencies are informed).

It is important to limit immediately the extent of spills on water. The following is the procedure to be implemented when a spill incident occurs:

Containment

If the spill is small enough to be controlled by absorbent pads or a boom, deploy hydrophobic (water repellent) absorbent pads (blue matting) on water. Hydrophobic pads readily absorb hydrocarbons, and not water.

Containment booms should be deployed on the water surface to "fence in" the spill area gradually and to prevent it from spreading by encircling the spill with the boom. Absorbent mats will then be deployed to manage any hydrocarbon that may have escaped containment. Keep in mind that environmental factors such as high winds and wave action can adversely affect attempts at spill cleanup.

If the volume of the hydrocarbon spill is so great that it cannot be absorbed by the hydrophobic absorbent pads and or booms, the contained hydrocarbon will be pumped into refuse drums.

Removal

Once a boom is in place, a skimmer may be brought on-scene to aid in capture of the hydrocarbon; once captured, the product should be pumped to the empty refuse drums and held for disposal.

Remediation

Receive instruction from the appropriate member of the chain of command (Table 5-1) or contact agencies listed in Appendix A regarding collection of the contaminated soil or vegetation, its removal and site cleanup/restoration.

6.3.3 Fuel Spills on Snow and Ice

As soon as possible, either during or after the incident, contact the 24-Hour Spill Report Line (ensuring the government agencies are informed). Hydrocarbons spilled on snow behave much differently than hydrocarbons spilled on ice. As a result, the following two sections provide information and direction on what to do in these two different scenarios.

6.3.4 Spills on Snow

By its nature, snow is an absorbent, and fuel spilled on snow is collected with relative ease, e.g., by shovel, in the case of small spills.

Containment & Removal

Assess the nature of the spill. Necessary equipment might include shovels, plastic tarp(s), and empty drums.

Shovel or scrape contaminated snow and deposit in empty refuse drums.

If the spill is more extensive, build peat-bale berms or compacted-snow berms. Place absorbent pads behind the berm and secure them in place with more snow. The snow with the absorbent pads inside will serve to contain the flow of the spill. Continue this process until the horizontal flow has been contained.

Once contained, any liquid can be pumped into a refuse drum. Snow and absorbent pads should also be contained in refuse drum after excess liquid has been removed.

Remediation

Receive instruction from the appropriate member of the chain of command (Table 5-1) or contact agencies listed in Appendix A.

6.3.5 Spills on Ice

Before work (e.g. spill management) or travel can occur on an ice surface, the ice has to be the required thickness according to safety standards (Table 6-3 and Table 6-4).

Containment

Spills on ice are handled in similar fashion as those on snow. However, as ice presents the potential danger of immediate access to water, care must be taken to respond quickly to such spills. Should fuel seep or flow through cracks or breaks in the ice, despite all precautions, assistance should be sought immediately.

Construct a compacted-snow berm around the edge of the spill area.

Removal

Although hard ice will retard or prevent fuel entry to the receiving waters below, all contaminated snow and ice, as well as objects embedded in the ice (such as gravel) must be scraped from the ice surface, placed in refuse drums, and disposed of in an appropriate manner.

Remediation

Receive instruction from the appropriate member of the chain of command (Table 6-1) or contact agencies listed in Appendix A.

TABLE 6-3
Guide to Required Ice Thickness

Weight (Pounds)	Weight (Tons)	Ice Travel (Inches)	Ice Travel (cm)	Stationary Loads (Inches)	Stationary Loads (cm)
242,500	121	50	127	90	229
154,000	77	40	102	70	178
100,000	50	32	81	60	152
55,000	28	25	64	43	109
22,000	11	15	38	30	76
17,600	9	14	36	24	61
7,700	4	10	25	18	46

Expressed in inches and centimetres.

Weights and ice thickness measures rounded to nearest whole.

Table 6-4 below presents a numerical summary of the Transport Canada (1974) required fresh water ice thickness versus aircraft load from the AK-68-14-001 standard.

Table 6-4
Required Ice Thickness for Typical Aircraft Weights
AK-68-14-001 Transport Canada Standard

Weight			Required Fresh-Water Ice Thickness	
Lb	kg	kN	M	in
10,000	4,545	44.5	0.3	13.0
30,000	13,640	133.5	0.6	23.0
67,000	30,400	300	0.9	35.5
135,000	61,360	600	1.3	50.0
800,000	364,000	3,570	3.2	126.0

Source: Winter Operations Report 1995/96,
Kennecott/Aber, Lac de Gras, by 669107 Alberta Ltd.

McGregor Lake Campsite Spill & Contingency Plan

ADDENDIX A
Contact List

Contact Telephone Numbers	Telephone	Facsimile
Emergency Spill Hotline	(867) 920-8130	(867) 873-6924
INAC Water Resources Officer, Melissa Joy	*(867) 982-4302*	
INAC Resource Management Officer, Baba Pederson	*(867) 982-4306*	
INAC Manager of Field Operations, Peter Kusugak	*(867) 975-4644*	
Environment Canada 24-Hour Emergency Pager	*(867) 766-3737*	
5050 Nunavut / MIE Metals Corp. – Vancouver Office	*(604) 681-4001*	*(604) 681-4022*
Camp Manager, John McLean	*(867) 873-8666*	
Project Manager, Phu Van Bui	*(778) 233-3221*	*(604) 681-4022*
President, Gordon Addie	*(604) 512-0145*	*(604) 681-4022*
Workers Compensation Board	(867) 669-4409	(867) 873-0262
RCMP – Kugluktuk	(867) 982-1111	
Kitikmeot Inuit Association – Kugluktuk	(867) 982-3310	(867) 982-3311
Ministry of Environment – Rankin Inlet	(867) 645-8083	(867) 645-8085
Environment Canada Iqaluit	(867) 975-4464	
Department of Environment, Nunavut	(867) 975-7700	
Department of Fisheries and Oceans	(867) 645-2871	
Nunavut Impact Review Board	(867) 983-2593	
Nunavut Water Board	(867) 360-6338	(867) 360-6369
Franz Environmental Inc.	(604) 632-9941	(604) 632-9942
Diamond Drill: Major Drilling – Nunavut/NWT Cory Redwood	(867) 873-3358	
Kikiak Construction – Kugluktuk, Nunavut	(867) 982-4713	
Air Tindi – Yellowknife, NWT	(888) 545-6794	
Adlair Aviation – Yellowknife, NWT	(867) 873-5161	
Air Thelon – Yellowknife, NWT	(867) 920-7110	
Arctic Air – Yellowknife, NWT	(867) 873-1210	
Arctic Sunwest Charters – Yellowknife, NWT	(867) 873-4464	
Buffalo Airways – Yellowknife, NWT	(867) 873-6112	
Remote Helicopters – Slave Lake, Alberta	(780) 849-2222	
1984 Enterprises Inc, Vancouver, BC,	(604) 736-8142	

McGregor Lake Campsite
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APPENDIX B
MSDS

PETRO-CANADA

Material Safety Data Sheet

WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	B-3, D-2B		

Section 1. Chemical Product and Company Identification

Product Name	**DIESEL FUEL**	**Code**	W104, W293 SAP: 120, 121, 122, 287
Synonym	Diesel 50, Diesel 50 LS, #1 Diesel , #1 Diesel LS, Diesel LC, Seasonal Diesel, Seasonal Diesel LS, Diesel AA, Domestic Marine Diesel, International marine Diesel, Seasonal Diesel Locomotive, Domestic Marine diesel LS, diesel -20°C (LS), LSD, Low Sulphur Diesel, dyed diesel, marked diesel, coloured diesel, Naval Distillate, Ultra Low Sulphur Diesel, ULS Diesel, Mining Diesel, Mining Diesel Special, Mining Diesel Special LS, High Flash Mining Diesel, Furnace Oil, Stove Oil.	**Validated on**	**2/6/2004.**
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3	**In case of Emergency**	Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).
Material Uses	Diesel fuels are distillate fuels suitable for use in high and medium speed internal combustion engines of the compression ignition type. Mining Diesel has a higher flash point requirement, for safe use in underground mines.		

Section 2. Composition and Information on Ingredients

			Exposure Limits (ACGIH)		
Name	**CAS #**	**% (V/V)**	**TLV-TWA(8 h)**	**STEL**	**CEILING**
1) Diesel oil.	68334-30-5	>99.9	100 mg/m³ (as total hydrocarbons) *	Not established	Not established
2) Proprietary additives.	Not available	<0.1	Not established	Not established	Not established
Aromatic content is 50% maximum (benzene: nil). Sulphur content is 0-0.50%.					

Manufacturer Recommendation	* Avoid prolonged or repeated skin contact to diesel fuels which can lead to dermal irritation and may be associated with an increased risk of skin cancer.
Other Exposure Limits	Consult local, state, provincial or territory authorities for acceptable exposure limits.

Section 3. Hazards Identification.

Potential Health Effects	Combustible liquid. Exercise caution when handling this material. Contact with this product may cause skin and eye irritation. Prolonged or repeated contact may cause skin irritation, defatting, drying and dermatitis. Inhalation of this product may cause respiratory tract irritation and Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death. Ingestion of this product may cause gastro-intestinal irritation. Aspiration of this product may result in severe irritation or burns to the respiratory tract. For more information refer to Section 11 of this MSDS.

Section 4. First Aid Measures

Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Seek medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform artificial respiration. Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
Note to Physician	Not available

Section 5. Fire-fighting Measures

Flammability	Class II - combustible liquid (NFPA).	**Flammable Limits**	LOWER: 0.7%, UPPER: 6% (NFPA)
Flash Points	Diesel Fuel: Closed Cup: >40ºC (>104ºF) Marine Diesel Fuel: Closed Cup: >60ºC (>140ºF) Mining Diesel: Closed Cup: 52ºC (126ºF)	**Auto-Ignition Temperature**	225ºC (437ºF)
Fire Hazards in Presence of Various Substances	Flammable in presence of open flames, sparks, or heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite. May accumulate in confined spaces.	**Explosion Hazards in Presence of Various Substances**	Containers may explode in heat of fire. Do not cut, weld, heat, drill or pressurize empty container. Vapour explosion hazard indoors, outdoors or in sewers. Runoff to sewer may create fire or explosion hazard.
Products of Combustion	Carbon oxides (CO, CO2), nitrogen oxides (NOx), sulphur oxides (SOx), sulphur compounds (H2S), water vapour (H2O), smoke and irritating vapours as products of incomplete combustion. See Section 11 (Other Considerations) for information regarding the toxicity of the combustion products.		
Fire Fighting Media and Instructions	NAERG96, GUIDE 128, Flammable liquids (Non-polar/Water-immiscible). CAUTION: This product has a moderate flash point above 40ºC: Use of water spray when fighting fire may be inefficient. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. SMALL FIRES: Dry chemical, CO2, water spray or regular foam. LARGE FIRES: Water spray, fog or regular foam. Do not use straight streams. Move containers from fire area if you can do it without risk. Fires Involving Tanks or Car/Trailer Loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting devices or any discolouration of tank. ALWAYS stay away from the ends of tanks. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible withdraw from area and let fire burn. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.		

Section 6. Accidental Release Measures

Material Release or Spill	Consult current National Emergency Response Guide Book (NAERG) for appropriate spill measures if necessary. IN THE EVENT OF A LARGE SPILL CONSIDER THE FOLLOWING CONTROL MEASURES: Extinguish all ignition sources. Stop leak if safe to do so. Ventilate area. Dike spilled material. Use appropriate inert absorbent material to absorb spilled product. Collect used absorbent for later disposal. Avoid contact with spilled material. Avoid breathing vapours or mists of material. Avoid contaminating sewers, streams, rivers and other water courses with spilled material. Evacuate non-essential personnel. Ensure clean-up personnel wear appropriate personal protective equipment. Ground and bond all equipment used to clean up the spilled material, as it may be a static accumulator. Notify appropriate authorities immediately.

Section 7. Handling and Storage

Handling	COMBUSTIBLE MATERIAL. Handle with care. Avoid contact with any sources of ignition, flames, heat, and sparks. Avoid skin contact. Avoid eye contact. Avoid inhalation of product vapours or mists. Empty containers may contain product residue. Do not pressurize, cut, heat, or weld empty containers. Do not reuse containers without commercial cleaning and/or reconditioning. Personnel who handle this material should practice good personal hygiene during and after handling to help prevent accidental ingestion of this product. Properly dispose of contaminated leather articles including shoes that cannot be decontaminated. Avoid confined spaces and areas with poor ventilation. Ensure all equipment is grounded/bonded. Wear proper personal protective equipment (See Section 8).
Storage	Store away from heat and sources of ignition. Store in dry, cool, well-ventilated area. Store away from incompatible and reactive materials (See section 5 and 10). Ensure the storage containers are grounded/bonded.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection - ***The selection of personal protective equipment varies, depending upon conditions of use.***	
Eyes	Eye protection (i.e., safety glasses, safety goggles and/or face shield) should be determined based on conditions of use. If product is used in an application where splashing may occur, the use of safety goggles and/or a face shield should be considered.
Body	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.
Respiratory	Where concentrations in air may exceed the occupational exposure limits given in Section 2 (and those applicable to your area) and where engineering, work practices or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.
Hands	Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Bright oily liquid.	**Viscosity**	1.3 - 4.1 cSt @ 40ºC (104ºF)
Colour	Clear to yellow / brown (may be dyed for taxation purposes).	**Pour Point**	Variable, -50ºC to 0ºC (-58ºF to -32ºF)
Odour	Petroleum oil like.	**Softening Point**	Not applicable.
Odour Threshold	Not available	**Dropping Point**	Not applicable.
Boiling Point	150 - 371ºC (302-700ºF)	**Penetration**	Not applicable.
Density	0.80 - 0.85 kg/L @ 15ºC (59ºF)	**Oil / Water Dist. Coefficient**	Not available
Vapour Density	4.5 (Air = 1)	**Ionicity (in water)**	Not applicable.
Vapour Pressure	Not available	**Dispersion Properties**	Not available
Volatility	Semivolatile to volatile.	**Solubility**	Insoluble in cold water, soluble in non-polar hydrocarbon solvents.

Section 10. Stability and Reactivity

Corrosivity	Not available		
Stability	The product is stable under normal handling and storage conditions.	**Hazardous Polymerization**	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents and acids.	**Decomposition Products**	May release COx, NOx, SOx, H2S, H2O, smoke and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation, and ingestion.
Acute Lethality	Acute oral toxicity (LD50): 7500 mg/kg (rat).
Chronic or Other Toxic Effects	
Dermal Route:	This product contains a component (at >= 1%) that can cause skin irritation. Therefore, this product is considered to be a skin irritant. Prolonged or repeated contact may defat and dry skin, and cause dermatitis. (See Other Considerations)
Inhalation Route:	Inhalation of this product may cause respiratory tract irritation. Inhalation of this product may cause Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death.
Oral Route:	Ingestion of this product may cause gastro-intestinal irritation. Aspiration of this product may result in severe irritation or burns to the respiratory tract. Ingestion of this product may cause Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death.
Eye Irritation/Inflammation:	This product contains a component (at >= 1%) that can cause eye irritation. Therefore, this product is considered to be an eye irritant.
Immunotoxicity:	Not available
Skin Sensitization:	Contact with this product is not expected to cause skin sensitization, based upon the available data and the known hazards of the components.
Respiratory Tract Sensitization:	Contact with this product is not expected to cause respiratory tract sensitization, based upon the available data and the known hazards of the components.
Mutagenic:	This product is not known to contain any components at >= 0.1% that have been shown to cause mutagenicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a mutagen.
Reproductive Toxicity:	This product is not known to contain any components at >= 0.1% that have been shown to cause reproductive toxicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a reproductive toxin.
Teratogenicity/Embryotoxicity:	This product is not known to contain any components at >= 0.1% that have been shown to cause teratogenicity and/or embryotoxicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a teratogen/embryotoxin.
Carcinogenicity (ACGIH):	ACGIH A3: animal carcinogen. [Diesel oil] (See Other Considerations)
Carcinogenicity (IARC):	This product is not known to contain any chemicals at reportable quantities that are listed as Group 1, 2A, or 2B carcinogens by IARC.
Carcinogenicity (NTP):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.
Carcinogenicity (IRIS):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by IRIS.

Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.
Other Considerations	Avoid prolonged or repeated skin contact to diesel fuels which can lead to dermal irritation and may be associated with an increased risk of skin cancer. Diesel engine exhaust particulate is probably carcinogenic to humans (IARC Group 2A).

Section 12. Ecological Information

Environmental Fate	Not available	**Persistance/ Bioaccumulation Potential**	Not available
BOD5 and COD	Not available	**Products of Biodegradation**	Not available
Additional Remarks	No additional remark.		

Section 13. Disposal Considerations

Waste Disposal	Spent/ used/ waste product may meet the requirements of a hazardous waste. Consult your local or regional authorities. Ensure that waste management processes are in compliance with government requirements and local disposal regulations.

Section 14. Transport Information

TDG Classification	DIESEL FUEL, 3, UN1202, PGIII (CL-TDG)	**Special Provisions for Transport**	See Transportation of Dangerous Goods Regulations.

Section 15. Regulatory Information

Other Regulations	This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List). All components of this formulation are listed on the US EPA-TSCA Inventory. All components of this product are on the European Inventory of Existing Commercial Chemical Substances (EINECS). This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR. Please contact Product Safety for more information.

DSD/DPD (Europe)	Not evaluated.	**HCS (U.S.A.)**	CLASS: Irritating substance. CLASS: Target organ effects. CLASS: Combustible liquid having a flash point between 37.8°C (100°F) and 93.3°C (200°F).
ADR (Europe) (Pictograms)	**NOT EVALUATED FOR EUROPEAN TRANSPORT** **NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN.**	**DOT (U.S.A) (Pictograms)**	

HMIS (U.S.A.)

Health Hazard	2*
Fire Hazard	2
Reactivity	0
Personal Protection	H

NFPA (U.S.A.)

Rating	
0	Insignificant
1	Slight
2	Moderate
3	High
4	Extreme

Section 16. Other Information

References Available upon request.

* Marque de commerce de Petro-Canada - Trademark

Glossary

ACGIH - American Conference of Governmental Industrial Hygienists
ADR - Agreement on Dangerous goods by Road (Europe)
ASTM - American Society for Testing and Materials (
BOD5 - Biological Oxygen Demand in 5 days
CAN/CGA B149.2 Propane Installation Code
CAS - Chemical Abstract Services
CEPA - Canadian Environmental Protection Act
CERCLA - Comprehensive Environmental Response, Compensation and Liability Act
CFR - Code of Federal Regulations
CHIP - Chemicals Hazard Information and Packaging Approved Supply List
COD5 - Chemical Oxygen Demand in 5 days
CPR - Controlled Products Regulations
DOT - Department of Transport
DSCL - Dangerous Substances Classification and Labeling (Europe)
IRIS - Integrated Risk Information System
LD50/LC50 - Lethal Dose/Concentration kill 50%
LDLo/LCLo - Lowest Published Lethal Dose/Concentration
NAERG'96 - North American Emergency Response Guide Book (1996)
NFPA - National Fire Prevention Association
NIOSH - National Institute for Occupational Safety & Health
NPRI - National Pollutant Release Inventory
NSNR - New Substances Notification Regulations (Canada)
NTP - National Toxicology Program
OSHA - Occupational Safety & Health Administration
PEL - Permissible Exposure Limit
RCRA - Resource Conservation and Recovery Act
SARA - Superfund Amendments and Reorganization Act
SD - Single Dose
STEL - Short Term Exposure Limit (15 minutes)

DSD/DPD - Dangerous Substances or Dangerous Preparations Directives (Europe)
DSL - Domestic Substance List
EEC/EU - European Economic Community/European Union
EINECS - European Inventory of Existing Commercial Chemical Substances
EPCRA - Emergency Planning and Community Right to Know Act
FDA - Food and Drug Administration
FIFRA - Federal Insecticide, Fungicide and Rodenticide Act
HCS - Hazardous Communication System
HMIS - Hazardous Material Information System
IARC - International Agency for Research on Cancer
TDG - Transportation Dangerous Goods (Canada)
TDLo/TCLo - Lowest Published Toxic Dose/Concentration
TLm - Median Tolerance Limit
TLV-TWA - Threshold Limit Value-Time Weighted Average
TSCA - Toxic Substances Control Act
USEPA - United States Environmental Protection Agency
USP - United States Pharmacopoeia
WHMIS - Workplace Hazardous Material Information System

For Copy of MSDS
Internet: www.petro-canada.ca/msds

Western Canada, Ontario & Central Canada, telephone: 1-800-668-0220; fax: 1-800-837-1228
Quebec & Eastern Canada, telephone: 514-640-8308; fax: 514-640-8385

For Product Safety Information: (905) 804-4752

Prepared by Product Safety - JDW on 2/6/2004.

Data entry by Product Safety - JDW.

Material Safety Data Sheet

WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	**B-2, D-2A, D-2B**		

Section 1. Chemical Product and Company Identification

Product Name	**GASOLINE, UNLEADED**
Synonym	Regular, Unleaded Gasoline (US Grade), Mid-Grade, Plus, Super, WinterGas, SummerGas, Supreme, SuperClean WinterGas, RegularClean, PlusClean, Premium, marked or dyed gasoline, Super Premium (94 RO)
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3
Material Uses	Unleaded gasoline is used in spark ignition engines including motor vehicles, inboard and outboard boat engines, small engines such as chain saws and lawn mowers, and recreational vehicles.

Code	W102E
Validated on	**6/9/2004.**
In case of Emergency	Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).

Section 2. Composition and Information on Ingredients

			Exposure Limits (ACGIH)		
Name	**CAS #**	**% (V/V)**	**TLV-TWA(8 h)**	**STEL**	**CEILING**
Gasoline	8006-61-9	85-100	300 ppm (890 mg/m³)	500 ppm (1480 mg/m³)	Not established
Methyl tert-butyl ether	1634-04-4	0-15	40 ppm (144mg/m³)	Not established	Not established
Note: Petro-Canada does not use MTBE in the manufacturing of its gasoline, however MTBE can be introduced from time to time through the use of external gasoline blendstocks.					

Manufacturer Recommendation	Not applicable
Other Exposure Limits	Consult local, state, provincial or territory authorities for acceptable exposure limits.

Section 3. Hazards Identification.

Potential Health Effects	Possible cancer hazard. Inhalation of vapours can be irritating to respiratory tract and cause CNS depression with symptoms of nausea, headaches, vomiting, dizziness, fatigue, light-headedness, reduced coordination, unconciousness and possibly death. Skin and eye contact can cause irritation. Toxic if ingested. For more information, refer to Section 11.

Section 4. First Aid Measures

Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention if irritation persists.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Seek medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform artificial respiration. Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
Note to Physician	Not available

Section 5. Fire-fighting Measures

Flammability	Flammable liquid (NFPA).	**Flammable Limits**	Lower: 1.3%; Upper: 7.6% (NFPA).
Flash Points	Closed Cup: -50 to -38°C (-58 to -36°F), ASTM D56 Standard Test Method for Flash Point by Tag Closed Tester.	**Auto-Ignition Temperature**	257°C (495°F) (NFPA).
Fire Hazards in Presence of Various Substances	Extremely flammable in presence of open flames, sparks, and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. Rapid escape of vapour may generate static charge causing ignition.	**Explosion Hazards in Presence of Various Substances**	Do not cut, weld, heat, drill or pressurize empty container. Containers may explode in heat of fire. Vapours may form explosive mixtures with air.
Products of Combustion	Carbon oxides (CO, CO2), nitrogen oxides (NOx), polynuclear aromatic hydrocarbons, phenols, smoke and irritating vapours as products of incomplete combustion.		
Fire Fighting Media and Instructions	NAERG96, GUIDE 128, flammable/combustible liquid (non-polar/water-immiscible). CAUTION: This product has a very low flash point, use of water spray when fighting fire may be inefficient. SMALL FIRE: Use DRY chemicals, CO2, water spray or foam. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet. If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions. DO NOT extinguish a leaking gas flame unless leak can be stopped. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discolouration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. Avoid flushing spilled material into sewers, streams or other bodies of water. Self-contained breathing apparatus (SCBA) will be required if approaching the fire from downwind, or to enter enclosed areas or buildings.		

Section 6. Accidental Release Measures

Material Release or Spill	NAERG96, GUIDE 128, flammable/combustible liquid (non-polar/water-immiscible). Evacuate in a downwind direction for at least 300 meters (1000 feet). ELIMINATE ALL IGNITION SOURCES. Ventilate closed spaces before entering. By forced ventilation, maintain concentration of vapour below the range of explosive mixture. Avoid contact, fully-encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire. Stop leak if without risk. Use vapour suppressing foam or water spray to reduce vapours; it may reduce vapour, but it may not prevent ignition in closed spaces; isolate area until vapour has dispersed. Contain spill. Absorb with inert absorbents such as dry clay, or diatomaceous earth, or recover using electrically grounded explosion-proof pumps. Avoid inhaling dust of diatomaceous earth for it may contain silica (very fine particle size), making this a potential respiratory hazard. Place used absorbent in closed metal containers for later disposal or burn absorbent in a suitable combustion chamber. DO NOT FLUSH TO SEWERS, STREAMS OR OTHER BODIES OF WATER. Check with applicable jurisdiction for specific disposal requirements of spilled material and empty containers. Notify the appropriate authorities immediately.

Section 7. Handling and Storage

Handling	Keep away from heat, spark and other sources of ignition. Empty container may contain flammable/explosive residues or vapours. DO NOT reuse empty containers without commercial cleaning or reconditioning. Ground/bond line and equipment during pumping or transfer to avoid accumulation of static charge. DO NOT USE AS CLEANING FLUID OR SIPHON BY MOUTH. Wear proper protective equipment. Avoid inhalation and contact with skin or eyes. Practice good personal hygiene. Wash hands after handling and before eating. Launder work clothes frequently. Discard saturated leather goods.
Storage	Store in cool, dry, isolated, well-ventilated area, and away from direct sunlight, sources of ignition and incompatibles. Flammable materials should be stored in a separate safety storage cabinet or room. Ground all equipment containing material.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection - ***The selection of personal protective equipment varies, depending upon conditions of use.***	
Eyes	Eye protection (i.e., safety glasses, safety goggles and/or face shield) should be determined based on conditions of use. If product is used in an application where splashing may occur, the use of safety goggles and/or a face shield should be considered.
Body	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.

Respiratory	Where concentrations in air may exceed the occupational exposure limits given in Section 2 (and those applicable to your area) and where engineering, work practices or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.
Hands	Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Clear liquid.	**Viscosity**	Not available
Colour	Clear to slightly yellow, undyed liquid. May be dyed red for taxation purposes.	**Pour Point**	Not applicable.
Odour	Gasoline. MTBE has a terpene-like odour.	**Softening Point**	Not applicable.
Odour Threshold	Less than 1 ppm.	**Dropping Point**	Not applicable.
Boiling Point	25 to 220°C (77 to 428°F) Initial boiling point by ASTM D86 Standard Test Method.	**Penetration**	Not applicable.
Density	0.7 kg/L @ 15ºC (59ºF).	**Oil / Water Dist. Coefficient**	Not available
Vapour Density	3 to 4 (Air = 1) (NFPA).	**Ionicity (in water)**	Insoluble in water.
Vapour Pressure	<107 kPa @ 37.8ºC (100ºF)	**Dispersion Properties**	Not available
Volatility	Volatile.	**Solubility**	Hydrocarbon components virtually insoluble in water. Soluble in alcohol, ether, chloroform, and benzene. Dissolves fats, oils and natural resins.

Section 10. Stability and Reactivity

Corrosivity	Non corrosive.		
Stability	The product is stable under normal handling and storage conditions.	**Hazardous Polymerization**	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents, acids.	**Decomposition Products**	May release COx, NOx, phenols, polynuclear aromatic hydrocarbons, smoke and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry Skin contact, eye contact, inhalation, and ingestion.

Acute Lethality

Gasoline: Acute oral toxicity (LD50): 13 600 mg/kg (rat).
Acute dermal toxicity (LD50): >5000 mg/kg (rabbit).
Acute inhalation toxicity (LC50): >300 000 mg/m³/4h (rat).

MTBE: Acute oral toxicity (LD50): 29630 mg/kg (rat).
Acute dermal toxicity (LD50): >6800 mg/kg (rabbit).
Acute inhalation toxicity (LC50): 23 576 ppm/4h (rat).

Chronic or Other Toxic Effects

Dermal Route:	This product can cause skin irritation. Prolonged or repeated contact with skin may cause dermatitis.
Inhalation Route:	Inhalation of vapours can be irritating to repiratory tract and cause CNS depression with symptoms of nausea, headaches, vomiting, dizziness, fatigue, light-headedness, reduced coordination, unconciousness and possibly death.
Oral Route:	Swallowing or vomiting of the liquid may result in aspiration into the lungs. Can cause CNS depression. (See Inhalation Route for symptoms).
Eye Irritation/Inflammation:	Can cause irritation to the eyes.
Immunotoxicity:	Not available

Skin Sensitization:	This product is not expected to be a skin sensitizer, based on the available data and the known hazards of the components.
Respiratory Tract Sensitization:	This product is not expected to be a respiratory tract sensitizer, based on the available data and the known hazards of the components.
Mutagenic:	This product is not considered to be a mutagen, based on the available data and the known hazards of the components.
Reproductive Toxicity:	This product is not considered to be a reproductive hazard, based on the available data and the known hazards of the components.
Teratogenicity/Embryotoxicity:	This product is not considered to be a teratogen or an embryotoxin, based on the available data and the known hazards of the components.
Carcinogenicity (ACGIH):	ACGIH A3: animal carcinogen. [Gasoline, MTBE]
Carcinogenicity (IARC):	IARC Group 2B: possibly carcinogenic to humans. [Gasoline]
Carcinogenicity (NTP):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.
Carcinogenicity (IRIS):	Not available
Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.
Other Considerations	Unleaded gasoline caused kidney effects in male rats and liver effects in female mice.

Section 12. Ecological Information

Environmental Fate	Not available	**Persistance/ Bioaccumulation Potential**	Not available
BOD5 and COD	Not available	**Products of Biodegradation**	Not available
Additional Remarks	Not available		

Section 13. Disposal Considerations

Waste Disposal	Preferred waste management priorities are: (1) recycle or reprocess; (2) incineration with energy recovery; (3) disposal at licensed waste disposal facility. Ensure that disposal or reprocessing is in compliance with government requirements and local disposal regulations. Consult your local or regional authorities.

Section 14. Transport Information

TDG Classification	GASOLINE, 3, UN1203, PGII (CL-TDG)	**Special Provisions for Transport**	See Transportation of Dangerous Goods Regulations.

Section 15. Regulatory Information

Other Regulations

CEPA: This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List). EPA: All components of this formulation are listed on the US EPA-TSCA Inventory.

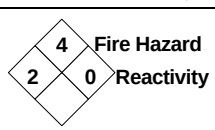
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR. Please contact Product Safety for more information.

DSD/DPD (Europe)	Not evaluated.	**HCS (U.S.A.)**	CLASS: Contains material which may cause cancer. CLASS: Flammable liquid having a flash point lower than 37.8°C (100°F). CLASS: Irritating substance. CLASS: Target organ effects.
ADR (Europe) (Pictograms)	**NOT EVALUATED FOR EUROPEAN TRANSPORT** **NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN.**	**DOT (U.S.A) (Pictograms)**	

HMIS (U.S.A.)

Health Hazard	2*
Fire Hazard	4
Reactivity	0

NFPA (U.S.A.)



Rating
0 Insignificant
1 Slight
2 Moderate

Personal Protection	H	**Specific hazard**	3 High 4 Extreme

Section 16. Other Information

References Available upon request.
* Marque de commerce de Petro-Canada - Trademark

Glossary

ACGIH - American Conference of Governmental Industrial Hygienists
ADR - Agreement on Dangerous goods by Road (Europe)
ASTM - American Society for Testing and Materials
BOD5 - Biological Oxygen Demand in 5 days
CAN/CGA B149.2 Propane Installation Code
CAS - Chemical Abstract Services
CEPA - Canadian Environmental Protection Act
CERCLA - Comprehensive Environmental Response, Compensation and Liability Act
CFR - Code of Federal Regulations
CHIP - Chemicals Hazard Information and Packaging Approved Supply List
COD5 - Chemical Oxygen Demand in 5 days
CPR - Controlled Products Regulations
DOT - Department of Transport
DSCL - Dangerous Substances Classification and Labeling (Europe)
DSD/DPD - Dangerous Substances or Dangerous Preparations Directives (Europe)
DSL - Domestic Substance List
EEC/EU - European Economic Community/European Union
EINECS - European Inventory of Existing Commercial Chemical Substances
EPCRA - Emergency Planning and Community Right to Know Act
FDA - Food and Drug Administration
FIFRA - Federal Insecticide, Fungicide and Rodenticide Act
HCS - Hazardous Communication System
HMIS - Hazardous Material Information System
IARC - International Agency for Research on Cancer
IRIS - Integrated Risk Information System
LD50/LC50 - Lethal Dose/Concentration kill 50%
LDLo/LCLo - Lowest Published Lethal Dose/Concentration
NAERG'96 - North American Emergency Response Guide Book (1996)
NFPA - National Fire Prevention Association
NIOSH - National Institute for Occupational Safety & Health
NPRI - National Pollutant Release Inventory
NSNR - New Substances Notification Regulations (Canada)
NTP - National Toxicology Program
OSHA - Occupational Safety & Health Administration
PEL - Permissible Exposure Limit
RCRA - Resource Conservation and Recovery Act
SARA - Superfund Amendments and Reorganization Act
SD - Single Dose
STEL - Short Term Exposure Limit (15 minutes)
TDG - Transportation Dangerous Goods (Canada)
TDLo/TCLo - Lowest Published Toxic Dose/Concentration
TLm - Median Tolerance Limit
TLV-TWA - Threshold Limit Value-Time Weighted Average
TSCA - Toxic Substances Control Act
USEPA - United States Environmental Protection Agency
USP - United States Pharmacopoeia
WHMIS - Workplace Hazardous Material Information System

For Copy of MSDS
Fuels & Solvents:
Western Canada, telephone: 403-296-4158; fax: 403-296-6551
Ontario & Central Canada, telephone: 1-800-668-0220; fax: 1-800-837-1228
Quebec & Eastern Canada, telephone: 514-640-8308; fax: 514-640-8385

For Product Safety Information: (905) 804-4752

Prepared by Product Safety - JDW on 6/9/2004.

Data entry by Product Safety - RS.

PETRO-CANADA

Material Safety Data Sheet

WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	B-2, D-2A, D-2B		

Section 1. Chemical Product and Company Identification

Product Name	**JET B AVIATION TURBINE FUEL**
Synonym	Jet B; Jet B DI; JP-4; Jet F-40; NATO F-40; Turbine Fuel, Aviation, Wide Cut Type (CAN/CGSB-3.22).
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3
Material Uses	Used as aviation turbine fuel. May contain a fuel system icing inhibitor.

Code	W219 SAP: 150, 151, 152
Validated on	**12/3/2001.**
In case of Emergency	Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).

Section 2. Composition and Information on Ingredients

			Exposure Limits (ACGIH)		
Name	**CAS #**	**% (V/V)**	**TLV-TWA(8 h)**	**STEL**	**CEILING**
1) Complex mixture of petroleum hydrocarbons (C6-C14).	64741-41-9	>99	Not established	Not established	Not established
2) Benzene	71-43-2	<0.5	0.5 ppm	2.5 ppm	Not established
3) Fuel System Icing Inhibitor (FSII) (if added*): Diethylene Glycol Monomethyl Ether	111-77-3	≤0.15	Not established	Not established	Not established
4) Anti-static, antioxidant and metal deactivator additives.	Not applicable	<0.1	Not applicable	Not applicable	Not applicable
* Please note that Jet B DI, JP-4, Jet F-40 and NATO F-40 all contain Fuel System Icing Inhibitor (FSII).					

Manufacturer Recommendation	Not applicable
Other Exposure Limits	Consult local, state, provincial or territory authorities for acceptable exposure limits.

Section 3. Hazards Identification.

Potential Health Effects	Skin and eye contact can cause irritation. Inhalation of vapours can cause irritation of the respiratory tract and CNS depression with symptoms of nausea, headaches, vomiting, dizziness, fatigue, light-headedness, reduced coordination, unconciousness and possibly death. Aspiration into the lungs may produce potentially fatal chemical pneumonitis (fluid in the lungs), severe lung damage, or respiratory failure. This product contains a cancer causing agent. For more information, refer to Section 11.

Section 4. First Aid Measures

Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Seek medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform artificial respiration. Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
Note to Physician	Not available

Section 5. Fire-fighting Measures

Flammability	Flammable liquid (NFPA).	**Flammable Limits**	LOWER: 1.3% UPPER: 8% (NFPA)
Flash Points	CLOSED CUP: -31ºC (-24°F) (NFPA)	**Auto-Ignition Temperature**	240°C (464°F) (NFPA)
Fire Hazards in Presence of Various Substances	Flammable in presence of open flames, sparks, and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite. May accumulate in confined spaces.	**Explosion Hazards in Presence of Various Substances**	Do not cut, weld, heat, drill or pressurize empty container. Containers may explode in heat of fire.
Products of Combustion	Carbon oxides (CO, CO2), nitrogen oxides (NOx), sulphur oxides (SOx), aldehydes, ketones, smoke and irritating vapours as products of incomplete combustion.		

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Available in French

Fire Fighting Media and Instructions	NAERG96, GUIDE 128, Flammable liquids (Non-polar/Water-immiscible). CAUTION: This product has a very low flash point: Use of water spray when fighting fire may be inefficient. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. SMALL FIRES: Dry chemical, CO2, water spray or regular foam. LARGE FIRES: Water spray, fog or regular foam. Do not use straight streams. Move containers from fire area if you can do it without risk. Fires Involving Tanks or Car/Trailer Loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting devices or any discolouration of tank. ALWAYS stay away from the ends of tanks. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible withdraw from area and let fire burn. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

Section 6. Accidental Release Measures

Material Release or Spill	NAERG96, GUIDE 128, Flammable Liquids (Non-polar/ Water-immiscible). ELIMINATE ALL IGNITION SOURCES. Avoid contact. Stop leak if without risk. Contain spill. Absorb with inert absorbents, dry clay, or diatomaceous earth. Avoid inhaling dust of diatomaceous earth for it may contain silica in very fine particle size, making this a potential respiratory hazard. Place used absorbent in closed metal containers for later disposal or burn absorbent in a suitable combustion chamber. DO NOT FLUSH TO SEWERS, STREAMS OR OTHER BODIES OF WATER. Check with applicable jurisdiction for specific disposal requirements of spilled material and empty containers. Notify the appropriate authorities immediately.

Section 7. Handling and Storage

Handling	Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk. DO NOT reuse empty containers without commercial cleaning or reconditioning. Ground/bond line and equipment during pumping or transfer to avoid accumulation of static charge. DO NOT ingest. Do not breathe gas/vapour/spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately. Avoid contact with skin and eyes. Practice good personal hygiene. Wash hands after handling and before eating. Launder work clothes frequently. Discard saturated leather goods.
Storage	Store in tightly closed containers in cool, dry, isolated, well-ventilated area, and away from incompatibles. Ground all equipment containing material. Keep away from direct sunlight.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection - ***The selection of personal protective equipment varies, depending upon conditions of use.***	
Eyes	Eye protection (i.e., safety glasses, safety goggles and/or face shield) should be determined based on conditions of use. If product is used in an application where splashing may occur, the use of safety goggles and/or a face shield should be considered.
Body	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.
Respiratory	Where concentrations in air may exceed the occupational exposure limits given in Section 2 (and those applicable to your area) and where engineering, work practices or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.
Hands	Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Clear liquid.	**Viscosity**	Not available (similar to gasoline)
Colour	Clear and colourless.	**Pour Point**	Freezing Point: <-51ºC (<-60ºF) for Jet B/Jet B DI; <-58ºC (<-72ºF) for Jet Fuel F-40.
Odour	Gasoline like.	**Softening Point**	Not applicable.
Odour Threshold	Not available	**Dropping Point**	Not applicable.
Boiling Point	50 to 270°C (122 to 518°F)	**Penetration**	Not applicable.
Density	0.75 to 0.80 kg/L @ 15ºC (59ºF).	**Oil / Water Dist. Coefficient**	Not available
Vapour Density	3.5 (Air = 1)	**Ionicity (in water)**	Not available
Vapour Pressure	21 kPa (158 mmHg) @ 37.8ºC (100ºF).	**Dispersion Properties**	Not available
Volatility	Volatile.	**Solubility**	Insoluble in water. Partially miscible in some alcohols. Miscible in other petroleum solvents.

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Section 10. Stability and Reactivity

Corrosivity	Not available		
Stability	The product is stable under normal handling and storage conditions.	**Hazardous Polymerization**	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents and acids.	**Decomposition Products**	May release COx, NOx, SOx, aldehydes, ketones, smoke and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation and ingestion.
Acute Lethality	**Based on toxicity of similar product.** Acute oral toxicity (LD50): >20000 mg/kg (rat). Acute dermal toxicity (LD50): >5000 mg/kg (rabbit). Acute inhalation toxicity (LC50): >5000 mg/m³/4h (rat). **Benzene** Acute oral toxicity (LD50): 930 mg/kg (rat). Acute dermal toxicity (LD50): >9400 mg/kg (rabbit). Acute inhalation toxicity (LC50): 13200 ppm/4h (rat). **Diethylene Glycol Monomethyl Ether** Acute oral toxicity (LD50): 4140-5180 mg/kg (rat). Acute dermal toxicity (LD50): >2000 mg/kg (rabbit). Acute inhalation toxicity (LC50): >50000 mg/m³/4h (rat).
Chronic or Other Toxic Effects	
Dermal Route:	Skin contact can cause irritation.
Inhalation Route:	Inhalation of vapours can cause irritation of the respiratory tract and CNS depression with symptoms of nausea, headaches, vomiting, dizziness, fatigue, light-headedness, reduced coordination, unconciousness and possibly death.
Oral Route:	Aspiration into the lungs may produce potentially fatal chemical pneumonitis (fluid in the lungs), severe lung damage, or respiratory failure.
Eye Irritation/Inflammation:	Eye contact can cause irritation.
Immunotoxicity:	Not available
Skin Sensitization:	This product is not expected to be a skin sensitizer, based on the available data and the known hazards of the components.
Respiratory Tract Sensitization:	This product is not expected to be a respiratory tract sensitizer, based on the available data and the known hazards of the components.
Mutagenic:	Benzene is tumorigenic by RTECS criteria.
Reproductive Toxicity:	This product is not expected to be a reproductive hazard, based on the available data and the known hazards of the components.
Teratogenicity/Embryotoxicity:	Fetotoxicity, embryotoxicity and/or teratogenicity have been observed in rats or rabbits following oral or dermal administration, in the absence of maternal toxicity. [Diethylene Glycol Monomethyl Ether]
Carcinogenicity (ACGIH):	ACGIH A1: confirmed human carcinogen. [Benzene]
Carcinogenicity (IARC):	IARC Group 1: carcinogenic to Humans. [Benzene]
Carcinogenicity (NTP):	NTP Group 1: known to be a carcinogen. [Benzene]
Carcinogenicity (IRIS):	Not available
Carcinogenicity (OSHA):	Benzene is an OSHA known carcinogen.
Other Considerations	No additional remark.

Section 12. Ecological Information

Environmental Fate	Not available	**Persistance/ Bioaccumulation Potential**	Not available
BOD5 and COD	Not available	**Products of Biodegradation**	Not available
Additional Remarks	No additional remark.		

Section 13. Disposal Considerations

Waste Disposal Preferred waste management priorities are: (1) recycle or reprocess; (2) incineration with energy recovery; (3) disposal at licensed waste disposal facility. Ensure that disposal or reprocessing is in compliance with government requirements and local disposal regulations. Consult your local or regional authorities.

Section 14. Transport Information

TDG Classification Currently: Fuel, aviation, turbine engine, 3, UN1863, PGII
As of August 15, 2002: FUEL, AVIATION, TURBINE ENGINE, 3, UN1863, PGII

Special Provisions for Transport Not applicable.

Section 15. Regulatory Information

Other Regulations This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List).

All components of this formulation are listed on the US EPA-TSCA Inventory.

All components of this product are on the European Inventory of Existing Commercial Chemical Substances (EINECS).

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Please contact Product Safety for more information.

DSD/DPD (Europe) Not evaluated.

HCS (U.S.A.) CLASS: Contains material which may cause cancer.
CLASS: Flammable liquid having a flash point lower than 37.8°C (100°F).
CLASS: Toxic.
CLASS: Irritating substance.
CLASS: Target organ effects.

ADR (Europe) (Pictograms) NOT EVALUATED FOR EUROPEAN TRANSPORT

NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN.

DOT (U.S.A) (Pictograms)

HMIS (U.S.A.)

Health Hazard	2*
Fire Hazard	3
Reactivity	0
Personal Protection	H

NFPA (U.S.A.)

Rating	
0	Insignificant
1	Slight
2	Moderate
3	High
4	Extreme

Section 16. Other Information

References Available upon request.
* Marque de commerce de Petro-Canada - Trademark

Glossary

ACGIH - American Conference of Governmental Industrial Hygienists
ADR - Agreement on Dangerous goods by Road (Europe)
ASTM - American Society for Testing and Materials (
BOD5 - Biological Oxygen Demand in 5 days
CAN/CGA B149.2 Propane Installation Code
CAS - Chemical Abstract Services
CEPA - Canadian Environmental Protection Act
CERCLA - Comprehensive Environmental Response, Compensation and Liability Act
CFR - Code of Federal Regulations
CHIP - Chemicals Hazard Information and Packaging Approved Supply List
COD5 - Chemical Oxygen Demand in 5 days
CPR - Controlled Products Regulations
DOT - Department of Transport
DSCL - Dangerous Substances Classification and Labeling (Europe)
DSD/DPD - Dangerous Substances or Dangerous Preparations Directives (Europe)
DSL - Domestic Substance List
EEC/EU - European Economic Community/European Union
EINECS - European Inventory of Existing Commercial Chemical Substances
EPCRA - Emergency Planning and Community Right to Know Act
FDA - Food and Drug Administration
FIFRA - Federal Insecticide, Fungicide and Rodenticide Act
HCS - Hazardous Communication System
HMIS - Hazardous Material Information System
IARC - International Agency for Research on Cancer
IRIS - Integrated Risk Information System
LD50/LC50 - Lethal Dose/Concentration kill 50%
LDLo/LCLo - Lowest Published Lethal Dose/Concentration
NAERG'96 - North American Emergency Response Guide Book (1996)
NFPA - National Fire Prevention Association
NIOSH - National Institute for Occupational Safety & Health
NPRI - National Pollutant Release Inventory
NSNR - New Substances Notification Regulations (Canada)
NTP - National Toxicology Program
OSHA - Occupational Safety & Health Administration
PEL - Permissible Exposure Limit
RCRA - Resource Conservation and Recovery Act
SARA - Superfund Amendments and Reorganization Act
SD - Single Dose
STEL - Short Term Exposure Limit (15 minutes)
TDG - Transportation Dangerous Goods (Canada)
TDLo/TCLo - Lowest Published Toxic Dose/Concentration
TLm - Median Tolerance Limit
TLV-TWA - Threshold Limit Value-Time Weighted Average
TSCA - Toxic Substances Control Act
USEPA - United States Environmental Protection Agency
USP - United States Pharmacopoeia
WHMIS - Workplace Hazardous Material Information System

For Copy of MSDS

Prepared by Product Safety - TAR on 12/3/2001.

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Western Canada, telephone: 403-296-4158; fax: 403-296-6551 **Ontario & Central Canada, telephone: 1-800-668-0220; fax: 1-800-837-1228** **Quebec & Eastern Canada, telephone: 514-640-8308; fax: 514-640-8385** **For Product Safety Information: (905) 804-4752**	**Data entry by Product Safety - JDW.**

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

PETRO-CANADA

Material Safety Data Sheet

WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	**Not controlled**		

Section 1. Chemical Product and Company Identification

Product Name	**PETRO-CANADA SUPREME 5W-30, 10W-30, 10W-40, 20W-50 MOTOR OIL**	**Code**	410-344, MOSP53 410-341, MOSP13 410-342, MOSP14 410-343, MOSP25
Synonym	Not available.	**Validated on**	**8/31/2004.**
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3	**In case of Emergency**	Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).
Material Uses	Supreme is designed for the lubrication of all gasoline, propane and CNG engines where the manufacturer recommends the use of API SM quality oils. SAE 5W-30 and 10W-30 grades also meet the requirements of ILSAC GF-4.		

Section 2. Composition and Information on Ingredients

			Exposure Limits (ACGIH)		
Name	**CAS #**	**% (W/W)**	**TLV-TWA(8 h)**	**STEL**	**CEILING**
Mixture of severely hydrotreated and hydrocracked base oil (petroleum) and other proprietary, non-hazardous additives.	Mixture	100	5 mg/m³ (oil mist)	10 mg/m³ (oil mist)	Not established

Manufacturer Recommendation	Not applicable
Other Exposure Limits	Consult local, state, provincial or territory authorities for acceptable exposure limits.

Section 3. Hazards Identification.

Potential Health Effects	Prolonged or repeated contact may cause skin irritation, defatting, drying and dermatitis. Not expected to cause more than slight skin or eye irritation. With its relatively low vapour pressure, this product is not expected be inhaled in any appreciable quantity at ambient conditions. If heated to high temperatures or subjected to mechanical actions which produce vapours or mists, inhalation may cause respiratory tract irritation. Ingestion may produce a laxative effect. For more information refer to Section 11 of this MSDS.

Section 4. First Aid Measures

Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Seek medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform artificial respiration. Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
Note to Physician	Not available

Section 5. Fire-fighting Measures

Flammability	May be combustible at high temperature.	**Flammable Limits**	Not available.
Flash Points	OPEN CUP: 223°C (433.4°F) (Cleveland)	**Auto-Ignition Temperature**	Not available
Fire Hazards in Presence of Various Substances	Low fire hazard. This material must be heated before ignition will occur.	**Explosion Hazards in Presence of Various Substances**	Do not cut, weld, heat, drill or pressurize empty container. Containers may explode in heat of fire.

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Products of Combustion	Carbon oxides (CO, CO2), nitrogen oxides (NOx), sulphur oxides (SOx), calcium oxides (CaOx), phosphorus compounds (POx), zinc oxides, boron oxides and molybdenum, smoke and irritating vapours as products of incomplete combustion.
Fire Fighting Media and Instructions	NAERG96, GUIDE 171, Substances (low to moderate hazard). If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (0.5 mile) in all directions; also, consider initial evacuation for 800 meters (0.5 mile) in all directions. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discolouration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. SMALL FIRE: use DRY chemicals, foam, water spray or CO2. LARGE FIRE: use water spray, fog or foam. For small outdoor fires, portable fire extinguishers may be used, and self contained breathing apparatus (SCBA) may not be required. For all indoor fires and any significant outdoor fires, SCBA is required. Respiratory and eye protection are required for fire fighting personnel.

Section 6. Accidental Release Measures

Material Release or Spill	Consult current National Emergency Response Guide Book (NAERG) for appropriate spill measures if necessary. Extinguish all ignition sources. Stop leak if safe to do so. Dike spilled material. Use appropriate inert absorbent material to absorb spilled product. Collect used absorbent for later disposal. Avoid contact with spilled material. Avoid contaminating sewers, streams, rivers and other water courses with spilled material. Notify appropriate authorities immediately.

Section 7. Handling and Storage

Handling	Avoid contact with any sources of ignition, flames, heat, and sparks. Avoid skin contact. Avoid eye contact. Avoid inhalation of product vapours or mists. Empty containers may contain product residue. Do not pressurize, cut, heat, or weld empty containers. Do not reuse containers without commercial cleaning and/or reconditioning. Personnel who handle this material should practice good personal hygiene during and after handling to help prevent accidental ingestion of this product. Properly dispose of contaminated leather articles including shoes that cannot be decontaminated.
Storage	Store away from incompatible and reactive materials (See section 5 and 10). Keep container tightly closed. Store in dry, cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection - ***The selection of personal protective equipment varies, depending upon conditions of use.***	
Eyes	Eye protection (i.e., safety glasses, safety goggles and/or face shield) should be determined based on conditions of use. If product is used in an application where splashing may occur, the use of safety goggles and/or a face shield should be considered.
Body	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.
Respiratory	Where concentrations in air may exceed the occupational exposure limits given in Section 2 (and those applicable to your area) and where engineering, work practices or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.
Hands	Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Viscous liquid.	**Viscosity**	5W-30: 62.3 cSt @ 40°C (104°F), 10.6 cSt @ 100ºC (212ºF). VI=160 10W-30: 67.4 cSt @ 40°C (104°F), 10.5 cSt @ 100ºC (212ºF). VI=143 10W-40: 97.2 cSt @ 40°C (104°F), 14.1 cSt @ 100ºC (212ºF). VI=143 20W-50: 170 cSt @ 40°C (104°F), 19.0 cSt @ 100ºC (212ºF). VI=127
Colour	Light amber.	**Pour Point**	5W-30: -36°C (-33ºF) 10W-30: -36°C (-33ºF) 10W-40: -30°C (-22ºF) 20W-50: -24°C (-11ºF)
Odour	Mild petroleum oil like.	**Softening Point**	Not applicable.
Odour Threshold	Not available.	**Dropping Point**	Not applicable.
Boiling Point	Not available.	**Penetration**	Not applicable.

Density	0.8566 - 0.8775 kg/L @ 15°C (59°F).	**Oil / Water Dist. Coefficient**	Not available.
Vapour Density	Not available.	**Ionicity (in water)**	Not available
Vapour Pressure	Negligible at ambient temperature and pressure.	**Dispersion Properties**	Not available
Volatility	Non-volatile	**Solubility**	Insoluble in water.

Section 10. Stability and Reactivity

Corrosivity	Copper corrosion, 3h, 121°C (ASTM D0130): 1a		
Stability	The product is stable under normal handling and storage conditions.	**Hazardous Polymerization**	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents and acids.	**Decomposition Products**	May release COx, H2S, methacrylate monomers, alkyl mercaptans, smoke and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation, and ingestion.
Acute Lethality	Acute toxicity information is not available for the product as a whole, therefore, data for some of the ingredients is provided below: Acute oral toxicity (LD50): >5000 mg/kg (rat). Acute dermal toxicity (LD50): >2000 mg/kg (rabbit). Acute inhalation toxicity (LC50): >2500 mg/m³/4h (rat).
Chronic or Other Toxic Effects	
Dermal Route:	Prolonged or repeated contact may defat and dry skin, and cause dermatitis. Short-term exposure is expected to cause only slight irritation, if any.
Inhalation Route:	With its relatively low vapour pressure, this product is not expected be inhaled in any appreciable quantity at ambient conditions. If heated to high temperatures or subjected to mechanical actions which produce vapours or mists, inhalation may cause respiratory tract irritation.
Oral Route:	Ingestion of this product may lead to aspiration of the liquid, especially if vomiting occurs. This may result in chemical pneumonitis (inflammation of the lungs) and/or pulmonary edema (an accumulation of fluid in the lungs). May produce a laxative effect.
Eye Irritation/Inflammation:	Short-term exposure is expected to cause only slight irritation, if any.
Immunotoxicity:	Not available.
Skin Sensitization:	Contact with this product is not expected to cause skin sensitization, based upon the available data and the known hazards of the components.
Respiratory Tract Sensitization:	Contact with this product is not expected to cause respiratory tract sensitization, based upon the available data and the known hazards of the components.
Mutagenic:	This product is not known to contain any components at >= 0.1% that have been shown to cause mutagenicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a mutagen.
Reproductive Toxicity:	This product is not known to contain any components at >= 0.1% that have been shown to cause reproductive toxicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a reproductive toxin.
Teratogenicity/Embryotoxicity:	This product is not known to contain any components at >= 0.1% that have been shown to cause teratogenicity and/or embryotoxicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a teratogen/embryotoxin.
Carcinogenicity (ACGIH):	This product is not known to contain any chemicals at reportable quantities that are listed as Group A1 or A2 carcinogens by ACGIH.
Carcinogenicity (IARC):	This product is not known to contain any chemicals at reportable quantities that are listed as Group 1, 2A, or 2B carcinogens by IARC.
Carcinogenicity (NTP):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.
Carcinogenicity (IRIS):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by IRIS.
Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.
Other Considerations	No additional remark.

Section 12. Ecological Information

Environmental Fate	Not available	**Persistance/ Bioaccumulation Potential**	Not available
BOD5 and COD	Not available.	**Products of Biodegradation**	Not available.
Additional Remarks	No additional remark.		

Section 13. Disposal Considerations

Waste Disposal	Spent/ used/ waste product may meet the requirements of a hazardous waste. Consult your local or regional authorities. Ensure that waste management processes are in compliance with government requirements and local disposal regulations.

Section 14. Transport Information

TDG Classification	Not a hazardous material for transport according to the TDG Regulations. (Canada)	**Special Provisions for Transport**	Not applicable.

Section 15. Regulatory Information

Other Regulations

This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List).

All components of this formulation are listed on the US EPA-TSCA Inventory.

All components of this product are on the European Inventory of Existing Commercial Chemical Substances (EINECS).

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

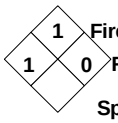
Please contact Product Safety for more information.

DSD/DPD (Europe)	Not evaluated.	**HCS (U.S.A.)**	Does not meet the definitions of a health or physical hazard according to the OSHA - Hazard Communication Standard. (United States)
ADR (Europe) (Pictograms)	**NOT EVALUATED FOR EUROPEAN TRANSPORT** **NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN.**	**DOT (U.S.A) (Pictograms)**	

HMIS (U.S.A.)

Health Hazard	1
Fire Hazard	1
Reactivity	0
Personal Protection	B

NFPA (U.S.A.)



Rating
0 Insignificant
1 Slight
2 Moderate
3 High
4 Extreme

Section 16. Other Information

References Available upon request.

* Marque de commerce de Petro-Canada - Trademark

Glossary

ACGIH - American Conference of Governmental Industrial Hygienists
ADR - Agreement on Dangerous goods by Road (Europe)
ASTM - American Society for Testing and Materials
BOD5 - Biological Oxygen Demand in 5 days
CAN/CGA B149.2 Propane Installation Code
CAS - Chemical Abstract Services
CEPA - Canadian Environmental Protection Act
CERCLA - Comprehensive Environmental Response, Compensation and Liability Act
CFR - Code of Federal Regulations
CHIP - Chemicals Hazard Information and Packaging Approved Supply List
COD5 - Chemical Oxygen Demand in 5 days
CPR - Controlled Products Regulations
DOT - Department of Transport
DSCL - Dangerous Substances Classification and Labeling (Europe)
DSD/DPD - Dangerous Substances or Dangerous Preparations
IRIS - Integrated Risk Information System
LD50/LC50 - Lethal Dose/Concentration kill 50%
LDLo/LCLo - Lowest Published Lethal Dose/Concentration
NAERG'96 - North American Emergency Response Guide Book (1996)
NFPA - National Fire Prevention Association
NIOSH - National Institute for Occupational Safety & Health
NPRI - National Pollutant Release Inventory
NSNR - New Substances Notification Regulations (Canada)
NTP - National Toxicology Program
OSHA - Occupational Safety & Health Administration
PEL - Permissible Exposure Limit
RCRA - Resource Conservation and Recovery Act
SARA - Superfund Amendments and Reorganization Act
SD - Single Dose
STEL - Short Term Exposure Limit (15 minutes)
TDG - Transportation Dangerous Goods (Canada)
TDLo/TCLo - Lowest Published Toxic Dose/Concentration

Directives (Europe)
DSL - Domestic Substance List
EEC/EU - European Economic Community/European Union
EINECS - European Inventory of Existing Commercial Chemical Substances
EPCRA - Emergency Planning and Community Right to Know Act
FDA - Food and Drug Administration
FIFRA - Federal Insecticide, Fungicide and Rodenticide Act
HCS - Hazard Communication Standard
HMIS - Hazardous Material Information System
IARC - International Agency for Research on Cancer
TLm - Median Tolerance Limit
TLV-TWA - Threshold Limit Value-Time Weighted Average
TSCA - Toxic Substances Control Act
USEPA - United States Environmental Protection Agency
USP - United States Pharmacopoeia
WHMIS - Workplace Hazardous Material Information System

For Copy of MSDS

The Canadian Controlled Products Regulations (CPR) (Under the Hazardous Products Act, part of the WHMIS legislation) only apply to WHMIS Controlled (i.e., hazardous) products. Therefore, the CPR and the 3-year update rule specified therein do not apply to WHMIS Non-Controlled products. Although this is true, customarily Petro-Canada reviews and updates Non-Controlled product MSDS if a customer requests such an update. These Non-Controlled product updates are given a lower priority than Controlled products but are handled as soon as practicable. If you would like to verify if the MSDS you have is the most current, or you require any further information, please contact:

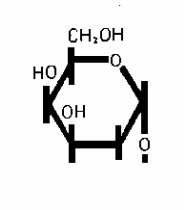
Internet: www.petro-canada.ca

Lubricants:
Western Canada, telephone: 1-800-661-1199; fax: (780) 464-9564
Ontario & Central Canada, telephone: 1-800-268-5850 and (905) 822-4222; fax: 1-800-201-6285
Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 800-201-6285

For Product Safety Information: (905) 804-4752

Prepared by Product Safety - TLM on 8/31/2004.

Data entry by Product Safety - RS.



Poly-Drill Drilling Systems
1824 - 104 Avenue, S.W.
Calgary, Alberta, Canada T2W-OA8
(403) 259-5112 FAX (403) 255-7185
email: polydril@telus.net
www.poly-drill.com

poly-drill.com

MATERIAL SAFETY DATA SHEET/FICHE SIGNALETIQUE

1. PRODUCT IDENTIFICATION

PRODUCT TRADE NAME(S): Poly Drill O.B.X.
WHMIS CLASSIFICATION: Non-regulated
TDG Classification: Non dangerous goods
DATE: November 17, 2004

A liquid polymer containing guar gum, mineral oil, vegetable oil, acrylamide copolymer and a surfactant: Evaluation of the ingredient(s) has found no ingredient(s) hazardous as per WHMIS regulations.

2. PHYSICAL DATA

Boiling Point: Not available
Specific Gravity: 0.9 g/cm
Solubility in Water: disperses in water(forms viscous, slippery solution).
pH: 3.8 (1% concentration)
Density (g/ml): Not available
Physical State: Liquid
Appearance and Odor: Brown. Odor slight.

3. FIRE AND EXPLOSION DATA

Flash Point (method used): (PMCC) greater than 100 C.
Conditions of flammability: Very low risk.
Hazardous combustion products: None known.
Upper and Lower flammable limits: Not available.
Extinguishing media: Carbon dioxide, dry chemicals, foam, in preference to water spray

4. REACTIVITY

Chemical stability: Stable under normal conditions.
Hazardous Polymerization: Will not occur.
Incompatible substances: Avoid strong oxidants such as liquid chlorine, concentrated oxygen, sodium or calcium hypo chloride.
Hazardous decomposition products: None known

5. HEALTH HAZARD DATA

TOXICITY RATING: Practically non-harmful.
Routes of Exposure and Effects:

SKIN: Slight irritant: prolonged contact may cause skin irritation or dermatitis in some individuals
EYE: No effects of exposure expected with the exception of possible irritation.
INHALATION: Due to low volatility of mineral distillates a small inhalation hazard exists.

INGESTION: can cause nausea, vomiting, cramps, diarrhea
Chronic exposure limits: None
Sensitization of product: Not suspected to be a sensitizer.
Teratongenicity: Not available.
Mutagenicity: Not available.
Carcinogenicity: None of the components of this product are listed as carcinogens by IARC and ACGIH

6. EMERGENCY AND FIRST AID PROCEDURES

SKIN: Wash exposed area with soap and water. Remove contaminated clothing. Launder contaminated clothing before re-use. If irritation or abnormalities persist, call a physician.

EYE: Immediately flush eyes with water for 15 minutes, lifting upper and lower lids occasionally. Get medical attention.

INHALATION: Remove to fresh air. If breathing becomes difficult, give oxygen and call a physician.

INGESTION: Do not induce vomiting: Call a physician immediately or poison control center. Never give anything by mouth to an unconscious person. Seek medical advice.

8. INDUSTRIAL HYGIENE CONTROL MEASURES

Respiratory Protection: None normally required.
Ventilation: If mist and/or vapors are present, use air purifying respirator of self-contained breathing apparatus, but this is rarely required.
Eye Protection: Safety glasses, if personally preferred
Gloves: Generally not necessary. Personal preference.

7. HANDLING AND USE PRECTIONS

Storage requirements: keep container closed when no in use. Store in a cool dry location away from oxidizing and reducing agents.
Waste Disposal: product should be disposed of in accordance with applicable local, Provincial and Federal regulations.
Steps must be taken if product is released or spilled: clean spill areas thoroughly to avoid hazardous slippery conditions.

8. TOXICOLOGICAL PROPERTIES

G50 Microtox Analysis prepared by HydroQual Laboratories, Calgary, AB--97/6/26 Test#970978:

Test Description	EC20	EC50	Pass/Fail
MTX	>91	>91	PASS

9. DEPARTMENT OF TRANSPORTATION INFORMATION

PROPER SHIPPING NAME/HAZARD CLASS MAY VARY BY PACKAGING, PROPERTIES, AND MODE OF TRANSPORTATION. TYPICAL PROPER SHIPPING NAMES FOR THIS PRODUCT ARE:

ALL TRANSPORTATION MODES: PRODUCT IS NOT REGULATED DURING TRANSPORATION

Shipping Name: Liquid Drilling Additive
Hazard Class: Not hazardous

Hazardous Substances: None
Cautionary Labeling: None required

10. OTHER INFORMATION

This information contained herein is given in good faith, but no warranty, expressed or implied is made

Poly-Drill Drilling Systems
1824 - 104 Avenue, S.W.
Calgary, Alberta, Canada T2W-OA8
(403) 259-5112 FAX (403) 255-7185
email: polydril@telus.net
www.poly-drill.com

poly-drill.com

MATERIAL SAFETY DATA SHEET/FICHE SIGNALETIQUE

1. PRODUCT IDENTIFICATION

PRODUCT TRADE NAME: Poly-Drill 133-X
PRODUCT DESCRIPTION: LIQUID ANIONIC POLYMER
CHEMICAL DESCRIPTION: Polymer, Surfactant(s), Water, Hydrocarbon solvent
UPDATED: March 15, 2004

NFPA704M/HMIS RATING
HEALTH: 0/1 FLAMMABILITY: 1/1 REACTIVITY: 0/0 OTHER:
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

2. COMPOSITION

A liquid polymer: Evaluation of the ingredient(s) has found no ingredient(s) hazardous as per WHMIS regulations. None of the substances in this product are hazardous.

3. PHYSICAL DATA

Flash Point: >100°C (PMCC)
Specific Gravity (@ 25°C.): 1.08
Solubility in Water: Emulsifiable
pH: 8.1 (1.0% solution)
Freeze Point: -10 °C (14 Degrees F)
Density (g/ml): 1.08 at 25 °C
Physical State: Liquid
Appearance: Blue liquid
Odor: Hydrocarbon

Note: These physical properties are typical values for this product.

4. FIRE AND EXPLOSION DATA

INCOMPATIBILITY: Avoid contact with strong oxidizers (eg. Chlorine, peroxides, chromates, nitric acid, perchlorates, concentrated oxygen, permanganates) which can generate heat, fires, explosions and the release of toxic fumes.

THERMAL DECOMPOSTION PRODUCTS: In the event of combustion CO, oxides of carbon (COx), oxides of nitrogen (NOx) may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

5. FIRE FIGHTING MEASURES

FLASH POINT: >100°C (PMCC)

EXTINGUISHING MEDIA: Based on the NFPA guide, use dry chemical, foam, carbon dioxide or other extinguishing agent suitable for Class B fires. Use water to cool containers exposed to fire. For larger fires, use water spray or fog, thoroughly drenching the burning material.

UNSUITABLE EXTINGUISHING MEDIA:
Do not use water unless flooding amounts are available.

UNUSUAL FIRE AND EXPLOSION HAZARD: May evolve oxides of nitrogen (NOx) under fire conditions.

6. HEALTH HAZARD DATA

EMERGENCY OVERVIEW:
CAUTION: May cause irritation to skin and eyes. Avoid contact with skin, eyes and clothing. Do not take internally.

Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

PRIMARY ROUTE(S) OF EXPOSURE: Eye & Skin

EYE CONTACT: Can cause mild to moderate irritation
SKIN CONTACT: Can cause mild, short-lasting irritation

SYMPTOMS OF EXPOSURE: A review of available data does not identify any symptoms from exposure not previously mentioned.

AGGRAVATION OF EXISTING CONDITIONS: A review of available data does not identify any worsening of existing conditions.

7. EMERGENCY AND FIRST AID PROCEDURES

SKIN: Wash exposed area with soap and water. If irritation or abnormalities persist, call a physician.
EYE: Immediately flush eyes with water for 15 minutes, if irritation or abnormalities persist, call a physician.
INHALATION: Remove to fresh air. If breathing becomes difficult, give oxygen and call a physician.
INGESTION: Do not induce vomiting: Call a physician immediately.

CAUTION: If unconscious, having trouble breathing or in convulsions, do not induce vomiting or give water. Call for medical assistance immediately.

8. HANDLING, ACCIDENTAL RELEASE MEASURES & DISPOSAL CONSIDERATIONS

Storage: Keep container tightly closed when not in use.

DISPOSAL:
In Ontario, the waste class under Regulation 347 is: 233L

SMALL SPILLS:
Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area.

LARGE SPILLS:
Contain liquid using absorbent material, by digging trenches or by dyking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Contact approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated.

Dispose of wastes in an approved incinerator or waste treatment/disposal site, in accordance with all applicable regulations. Do not dispose of wastes in local sewer or with normal garbage.

ENVIRONMENTAL PRECAUTIONS
This product should NOT be directly discharged into lakes, ponds, streams, waterways or public water supplies.

As a non-hazardous liquid waste, it should be solidified with stabilizing agents (such as sand, fly ash, or cement) so that no free liquid remains before disposal to an industrial waste landfill. A non-hazardous liquid waste can also be incinerated in accordance with local, state, provincial and federal regulations.

9. INDUSTRIAL HYGIENE CONTROL MEASURES

OCCUPATIONAL EXPOSURE LIMITS:
This product does not contain any substance that has an established exposure limit.

Respiratory Protection: None normally required.

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a positive pressure, self-contained breathing apparatus is recommended.

Ventilation: General ventilation is recommended.

Eye Protection: Safety glasses, if personally preferred
Gloves: Generally not necessary. Personal preference. Examples of impermeable gloves available on the market are neoprene, nitrile, PVC, natural rubber, viton, and butyl (compatibility studies have not been performed).

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

10. TOXICOLOGICAL PROPERTIES

SENSITIZATION:
This product is not expected to be a sensitizer.

A "LC50-96" Pass/Fail Bioassay test. This test determines the lethality of a fluid on young aquatic organisms . The fluid fails if 50% or more of the animals are dead after 96 hours in the fluid.

96 hour static acute LC50 to Rainbow Trout = Greater than 1,000 mg/L
96 hour no observed effect concentration = 125 mg/L based on no mortality or abnormal effects
96 hour static acute LC50 to Sheepshead Minnow = Greater than 1,000 mg/L
96 hour no observed effect concentration = 1,000 mg/L (highest concentration tested) based on no mortality or abnormal effects.
96 hour static acute LC50 to Mysid Shrimp = 400 mg/L
96 hour no observed effect concentration = 180 mg/L based on no mortality or abnormal effects.
96 hour static acute LC50 to Daphnia Magna - 400 mg/L
96 hour no observed effect concentration = 56 mg/L (lowest concentration tested) based on no mortality or abnormal effects.

Microtoxicity

The Microtox bioassay has been established as the reference test for mud additive toxicity testing.

Test Method: Luminescent Bacteria, IC50@ 15 min
Reference: Appendix 1: Microtox Bioassay Procedure, Drilling Waste Management, Guide G50. 1993. Alberta Energy and Utilities Board, Calgary, AB, Canada.
Sample: Poly Drill 1330, sample #97324-1 for test #970723, 97/05/09 by D. Lintott
Preparation: Sample was diluted to 2 g/L, which formed thick, slightly cloudy liquid. The sample was then centrifuged for 1 hour.

Test Results:

SAMPLE	TREATMENT	%CTL	IC20%	IC50	RESULT
97324-1	None	N/A	14 (9-22)	>91	PASS

The following results are for a 1% aqueous solution of product.

CARCINOGENCITY:
None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Government Industrial Hygienists (ACGIH).

HUMAN HAZARD CHARACTERIZATION:
Based on our Hazard Characterization, the potential human hazard is: LOW

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION:
Based on our Hazard Characterization, the potential environmental hazard is: LOW.

11. DEPARTMENT OF TRANSPORTATION INFORMATION

PROPER SHIPPING NAME/HAZARD CLASS MAY VARY BY PACKAGING, PROPERTIES, AND MODE OF TRANSPORTATION. TYPICAL PROPER SHIPPING NAMES FOR THIS PRODUCT ARE:

ALL TRANSPORTATION MODES: PRODUCT IS NOT REGULATED DURING TRANSPORATION

Shipping Name: Liquid Drilling Additive
Hazard Class: Not hazardous
Cautionary Labeling: None required

14. OTHER INFORMATION

This information contained herein is given in good faith, but no warranty, expressed or implied is made

MATERIAL SAFETY DATA SHEET

SECTION 1 – PRODUCT INFORMATION

Product Name: Propane
Trade Name: LPG (Liquified Petroleum Gas), LP-Gas
Chemical Formula: C_3H_8

WHMIS CLASSIFICATION
Class A - Compressed Gas
Class B, Division 1 - Flammable Gas

Supplier: Superior Propane Inc.
1111 - 49th Avenue N.E.
Calgary, AB T2E 8V2
Business: (403) 730-7500

Local Market
Emergency Number: _____
(Non Medical)

Application and Use: Propane is commonly used as a fuel for heating, cooking, automobiles, forklift trucks, crop drying and welding and cutting operations. Propane is used in industry as a refrigerant, solvent and as a chemical feedstock.

SECTION 2 – HAZARDOUS INGREDIENTS

COMPONENTS	CAS NO.	% Volume (v/v)	LD50
Propane	74 -98-6	90% - 99%	Not Applicable
Propylene	115 -07-1	0% - 5%	Not Applicable
Ethane	74 -84-0	0% - 5%	Not Applicable
Butane and heavier hydro carbons	106 -97-8	0% - 2.5%	Not Applicable

Occupational Exposure Limit:
Based upon animal test data, the acute toxicity of this product is expected to be inhalation: 4 hour LC50 = 280,000 ppm (Rat).
Note: Composition is typical for HD-5 Propane per The Canadian General Standard Board CGSB 3.14 National Standard of Canada. Exact composition will vary from shipment to shipment.

SECTION 3 – CHEMICAL AND PHYSICAL DATA

Form: Liquid and vapour while stored under pressure.
Boiling Point: -42°C @ 1 atm.
Freezing Point: -188°C
Evaporation Rate: Rapid (Gas at normal ambient conditions).
Vapour Pressure: 1435 kPa (maximum) @ 37.8°C
Vapour Density: 1.52 (Air = 1)
Coefficient of Water/Oil Distribution: Not available.
pH: Not available.

Solubility in water: Slight, 6.1% by volume @ 17.8°C
Specific Gravity: 0.51 (water = 1)
Appearance/Odour: Colourless liquid and vapour while stored under pressure. Colourless and odourless gas in natural state at any concentration. Commercial propane has an odourant added, ethyl mercaptan, which has an odour similar to boiling cabbage.*
Odour Threshold: 4800 ppm

* With proper handling, transportation and storage, adding a chemical odourant such as eth-merc has proven to be a very effective warning device, but all odourants have certain limitations. The effectiveness of the odourant may be diminished by a person's sense of smell, by competing odours and by oxidation which may cause a potentially dangerous situation.

SECTION 4 – FIRE OR EXPLOSION HAZARD

Flash Point: -103.4°C
Method: Closed cup.
Flammable Limits: Lower 2.4%, Upper 9.5%
Auto Ignition Temperature: 432°C
Products Evolved Due To Heat Or Combustion: Carbon monoxide can be produced when primary air and secondary air are deficient while combustion is taking place.
Fire and Explosive Hazards: Explosive air-vapour mixtures may form if allowed to leak to atmosphere.
Sensitivity To Impact: No.
Sensitivity To Static Discharge: Yes.

Fire Extinguishing Precautions: Use water spray to cool exposed cylinders or tanks. Do not extinguish fire unless the source of the escaping gas that is fueling the fire can be turned off. Fire can be extinguished with carbon dioxide and/or dry chemical (BC). Container metal shells require cooling with water to prevent flame impingement and the weakening of metal. If sufficient water is not available to protect the container shell from weakening, the area will be required to be evacuated. If gas has not ignited, liquid or vapour may be dispersed by water spray or flooding.
Special Fire Fighting Equipment: Protective clothing, hose monitors, fog nozzles, self-contained breathing apparatus.

SECTION 5 – REACTIVITY DATA

Stability: Stable.
Conditions To Avoid: Keep separate from oxidizing agents. Gas explodes spontaneously when mixed with chloride dioxide.
Incompatibility: Remove sources of ignition and observe distance requirements for storage tanks from combustible material, drains and openings to building.

Hazardous Decomposition Products: Deficient primary and secondary air can produce carbon monoxide.
Hazardous Polymerization: Will not occur.

SECTION 6 – TOXICOLOGICAL PROPERTIES OF MATERIAL

ROUTES OF ENTRY:

Inhalation: Simple asphyxiant. No effect at concentrations of 10,000 ppm (peak exposures). Higher concentrations may cause central nervous system disorder and/or damage. Lack of oxygen may cause dizziness, loss of coordination, weakness, fatigue, euphoria, mental confusion, blurred vision, convulsions, breathing failure, coma and death. Breathing high vapour concentrations (saturated vapours) for a few minutes may be fatal. Saturated vapours may be encountered in confined spaces and/or under conditions of poor ventilation. Avoid breathing vapours or mist.
Skin and Eye Contact: Exposure to vapourizing liquid may cause frostbite (cold burns) and permanent eye damage.
Ingestion: Not considered to be a hazard.
Acute Exposure: The acute toxicity of this product is expected to be inhalation: 4 hour LC50=280,000ppm (Rat).
Chronic Exposure: There are no reported effects from long term low level exposure.
Sensitization to Product: Skin–unknown, Respiratory–unknown.
Occupational Exposure Limits: American Conference of Governmental Industrial Hygienists (ACGIH) lists as a simple asphyxiant. ACGIH TLV: 1000 ppm.
Carcinogenicity, Reproductive Toxicity, Teratogenicity, Mutagenicity: No effects reported.

SECTION 7 – PREVENTIVE MEASURES

Eyes: Safety glasses, are recommended when transferring product.
Skin: Insulated gloves required if contact with liquid or liquid cooled equipment is expected. Wear gloves and long sleeves when transferring product.
Inhalation: Where concentration in air would reduce the oxygen level below 18% air or exceed occupational exposure limits in section 6, self-contained breathing apparatus is required.
Ventilation: Explosion proof ventilation equipment required in confined spaces.

SECTION 8 – EMERGENCY AND FIRST AID PROCEDURES

FIRST AID:

Eyes: Should eye contact with liquid occur, flush eyes with lukewarm water for 15 minutes. Obtain immediate medical care.
Skin: In case of "Cold Burn" from contact with liquid, immediately place affected area in lukewarm water and keep at this temperature until circulation returns. If fingers or hands are frostbitten, have the victim hold his hand next to his body such as under the armpit. Obtain immediate medical care.
Ingestion: None considered necessary.
Inhalation: Remove person to fresh air. If breathing is difficult or has stopped, administer artificial respiration. Obtain immediate medical care.

SPILL OR LEAK:

Eliminate leak of possible.
Eliminate source of ignition.
Ensure cylinder is upright.
Disperse vapours with hose streams using fog nozzles. Monitor low areas as propane is heavier than air and can settle into low areas. Remain upwind of leak. Keep people away. Prevent vapour and/or liquid from entering into sewers, basements or confined areas.

SECTION 9 – TRANSPORTATION, HANDLING AND STORAGE

– Transport and store cylinders and tanks secured in an upright position in a ventilated space away from ignition sources (so the pressure relief valve is in contact with the vapour space of the cylinder or tank).
– Cylinders that are not in use must have the valves in the closed position and be equipped with a protective cap or guard.
– Do not store with oxidizing agents, oxygen, or chlorine cylinders.
– Empty cylinders and tanks may contain product residue. Do not pressurize, cut, heat or weld empty containers.
– Transport, handle and store according to applicable federal and provincial codes and regulations.

Transportation of Dangerous Goods (TDG)
– TDG Classification: Flammable Gas 2.1
– TDG Shipping Name: Liquified Petroleum Gas (Propane)
– TDG Special Provisions: 56, 90, 102
– PIN Number: UN1075

SECTION 10 – PREPARATION

Superior Propane Inc., Regulations & Safety Department. (403) 730-7500 Date prepared: November 2001.
Supersedes: September 1999.

McGregor Lake Campsite
Spill & Contingency Plan

APPENDIX C
NT-NU Spill Report Form

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR	REPORT TIME	☐ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER _____-_____
B	OCCURRENCE DATE: MONTH – DAY – YEAR	OCCURRENCE TIME		

C	LAND USE PERMIT NUMBER (IF APPLICABLE)	WATER LICENCE NUMBER (IF APPLICABLE)
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION	REGION ☐ NWT ☐ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN
E	LATITUDE DEGREES MINUTES SECONDS	LONGITUDE DEGREES MINUTES SECONDS

F	RESPONSIBLE PARTY OR VESSEL NAME	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION	
G	ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION	
H	PRODUCT SPILLED	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER
I	SPILL SOURCE	SPILL CAUSE	AREA OF CONTAMINATION IN SQUARE METRES
J	FACTORS AFFECTING SPILL OR RECOVERY	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS		

L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC

SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN

FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

Instructions for Completing the NT-NU Spill Report Form

This form can be filled out electronically and e-mailed as an attachment to spills@gov.nt.ca. Until further notice, please verify receipt of e-mail transmissions with a follow-up telephone call to the spill line. Forms can also be printed and faxed to the spill line at 867-873-6924. Spills can still be phoned in by calling collect at 867-920-8130.

A. Report Date/Time	The actual date and time that the spill was reported to the spill line. If the spill is phoned in, the Spill Line will fill this out. **Please do not fill in the Report Number**: the spill line will assign a number after the spill is reported.
B. Occurrence Date/Time	Indicate, to the best of your knowledge, the exact date and time that the spill occurred. Not to be confused with the report date and time (see above).
C. Land Use Permit Number /Water Licence Number	This only needs to be filled in if the activity has been licenced by the Nunavut Water Board and/or if a Land Use Permit has been issued. Applies primarily to mines and mineral exploration sites.
D. Geographic Place Name	In most cases, this will be the name of the city or town in which the spill occurred. For remote locations – outside of human habitations – identify the most prominent geographic feature, such as a lake or mountain and/or the distance and direction from the nearest population center. **You must include the geographic coordinates** (Refer to Section E).
E. Geographic Coordinates	This only needs to be filled out if the spill occurred outside of an established community such as a mine site. Please note that the location should be stated in degrees, minutes and seconds of Latitude and Longitude.
F. Responsible Party Or Vessel Name	This is the person who was in management/control/ownership of the substance at the time that it was spilled. In the case of a spill from a ship/vessel, include the name of the ship/vessel. Please include full address, telephone number and e-mail. Use box K if there is insufficient space. **Please note that, the owner of the spilled substance is ultimately responsible for any spills of that substance, regardless of who may have actually caused the spill.**
G. Contractor involved?	Were there any other parties/contractors involved? An example would be a construction company who is undertaking work on behalf of the owner of the spilled substance and who may have contributed to, or directly caused the spill and/or is responding to the spill.
H. Product Spilled	Identify the product spilled; most commonly, it is gasoline, diesel fuel or sewage. For other substances, avoid trade names. Wherever possible, use the chemical name of the substance and further, identify the product using the four digit UN number (eg: UN1203 for gasoline; UN1202 for diesel fuel; UN1863 for Jet A & B)
I. Spill Source	Identify the source of the spill: truck, ship, home heating fuel tank and, if known, the cause (eg: fuel tank overfill, leaking tank; ship ran aground; traffic accident, vandalism, storm, etc.). Provide an estimate of the extent of the contaminated/impacted area (eg: 10 m^2)
J. Factors Affecting Spill	Any factors which might make it difficult to clean up the spill: rough terrain, bad weather, remote location, lack of equipment. Do you require advice and/or assistance with the cleanup operation? Identify any hazards to persons, property or equipment: for example, a gasoline spill beside a daycare centre would pose a safety hazard to children. Use box K if there is insufficient space.
K. Additional Information	Provide any additional, pertinent details about the spill, such as any peculiar/unique hazards associated with the spilled material. State what action is being taken towards cleaning up the spill; disposal of spilled material; notification of affected parties. If necessary, append additional sheets to the spill report. Number the pages in the same format found in the lower right hand corner of the spill form: eg. “Page 1 of 2", “Page 2 of 2" etc. **Please number the pages to ensure that recipients can be certain that they received all pertinent documents.** If only the spill report form was filled out, number the form as “Page 1 of 1".
L. Reported to Spill Line by	Include your full name, employer, contact number and the location from which you are reporting the spill. Use box K if there is insufficient space.
M. Alternate Contact	Identify any alternate contacts. This information assists regulatory agencies to obtain additional information if they cannot reach the individual who reported the spill.
N. Report Line Use Only	**Leave Blank**. This box is for the **Spill Line’s use only**.

McGregor Lake Campsite
Spill and Contingency Plan

APPENDIX D
Uranium Exploration Plan

Introduction

5050 Nunavut Limited ("the Company"), a wholly owned subsidiary of MIE Metals Corporation, was incorporated under the laws of Nunavut and presently holds Nunavut Water Board License No. 2BE-MCG0810 with expiry date of July 19, 2010. The Company's Land ownership comprises of 64 mineral claims totaling 53,734.30 hectares and two Inuit Owned Land parcels totaling of 19,711.70 hectares surrounding All Night Lake and McGregor Lake. Claims are located between 70 and 100 kilometres south of Kugluktuk and are situated over a north-south trending layered mafic to ultramafic intrusive body called the Muskox Intrusion that geologically hosts nickel, copper and platinum group elements (Ni-Cu-PGE) as well as uranium within the adjacent sedimentary basin. Exploration efforts by the Company since 2005 have targeted both Ni-Cu-PGE and uranium mineralization in the following areas:

1. McGregor Lake south – for Ni-Cu-PGE
2. All Night Lake Area – for uranium
3. Tabb lake Area – for uranium

In 2007, 5050 Nunavut Limited was approved for an exploration camp located at Iceberg Creek on the southern shores of McGregor Lake. Upon written request by the Kitikmeot Inuit Association, the camp was relocated to a pre-existing camp on the northern shores of McGregor Lake, established and operated by Inco Limited in the early 1950's and 1960's. Subsequently the camp was referbished and expanded to accommodate 30 persons.

A 10,000 meters of NQ diamond drilling program began in 2007. To date, only four NQ diamond drill holes totaling 2,858 m was completed on claim M1 and one diamond drill hole totaling 266 meters was completed on claim DM72. 5050 Nunavut Limited intends to complete the remaining 6,876 meters of NQ diamond drilling, including planned diamond drilling surrounding All Night Lake in search of uranium.

Locations of proposed boreholes in the Tabb Lake area are shown on Figure 2, of which initially four or five boreholes will be drilled with a depth range of 200-250m. If required, 2 boreholes will be drilled on the adjacent joint venture claims with UNOR Inc. Locations of proposed boreholes for All Night Lake

area are shown on Figure 3, of which initially six or seven boreholes will be drilled with a depth range of 150 to 200 m.

Uranium Exploration Plan

The following uranium exploration plan is submitted to address the environmental and water issues related to uranium exploratory drilling. As required by Part F of our License, this plan is based on the Mineral Exploration Guidelines for Saskatchewan, 2005.

Drilling Operations

1. The uranium exploration drill program will start in the first week of July and no ice drilling will be carried out.

2. Core Drilling (NQ size) will be carried out using a Boyles 37 drill rig supplied and operated by Major Drilling Group International Inc.

3. Approximate location of boreholes is provided on Figure 2 (Tabb Lake area) and Figure 3 (All Night Lake area) attached with this plan.

4. No borehole will be located within 100 m of a water body or water coarse.

5. No clearing is involved in drill site preparation.

6. The drill site footprint will not exceed an area of 20m by 20m and minimum distance of 100 m will be kept between the drill site footprint and the nearest water body.

7. A minimum distance of 100 m will be maintained between the drill site area and any water body in the vicinity.

8. The drill rig will be leveled using timbers and no soil stripping is involved in the drill site preparation.

9. Where possible, all efforts will be used to prevent drill mud, return water, and cuttings (sludge) from running uncontrolled from the drill site or to within 100 m of a water body or water course. If required, appropriate erosion control methods will be implemented.

10. Where possible, biodegradable mud and non-toxic drill additives are being used for the copper nickel, PGE drill program, and will also be used for uranium program.

11. Drill mud solids or cuttings with uranium concentration greater than 0.05 percent will be collected and disposed of down the drill hole and sealed.

12. Any drill hole that encounters mineralization with a uranium content greater than 1.0% over a length >1 meter, and with a meter-percent concentration >5.0, will be sealed by grouting over the entire length of the mineralization zone and not less than 10 meters above or below each mineralization zone.

13. All artesian drill holes will be reported to NWB within 30 days of its discovery.

14. All artesian drill holes will be sealed to prevent discharge to the environment.

Core Storage

1. Core storage areas will be located a minimum of 100 meters from the high waterline of all the water bodies in the vicinity.

2. All core will be stored in standard core boxes and each box will be identified with weatherproof labels.

3. 5050 Nunavut Limited will be responsible for all core drilled and if the property is sold or reassigned the new operator will be responsible for all core.

4. Gamma levels in the core storage area, measured at 1 meter from surface of the storage area will be reduced to 1.0 μSv and in no instance will the level be allowed to exceed 2.5 μSv. Instruments that measure radiation in counts per second will be converted to μSv according to the specification of that instrument.

Reclamation

5050 Nunavut Limited recognizes that reclamation is an integral part of exploration and has developed a plan to return the disturbed areas to an acceptable natural and productive state. The key element of the plan is minimizing impacts and avoiding surface disturbances which will help in reducing reclamation requirements and costs for the program.

1. Reclamation of each drill site will be carried out by removing all infrastructures, facilities, and waste from each drill site.

2. The drill rig will be leveled using timbers and no soil stripping is involved in the drill site preparation.

3. In a location where there is a reasonable chance of erosion, appropriate erosion control methods like soil stabilization through berms, water and mud collection sumps, recirculation of drill fluids, and placing slash material will be implemented.

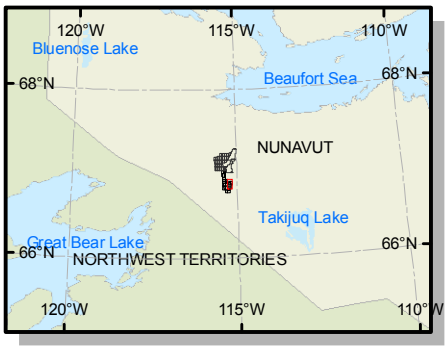
4. 5050 Nunavut Limited will ensure that the aforementioned measures and all other measures mentioned in its Water License are implemented to the satisfaction of Nunavut Water Board.

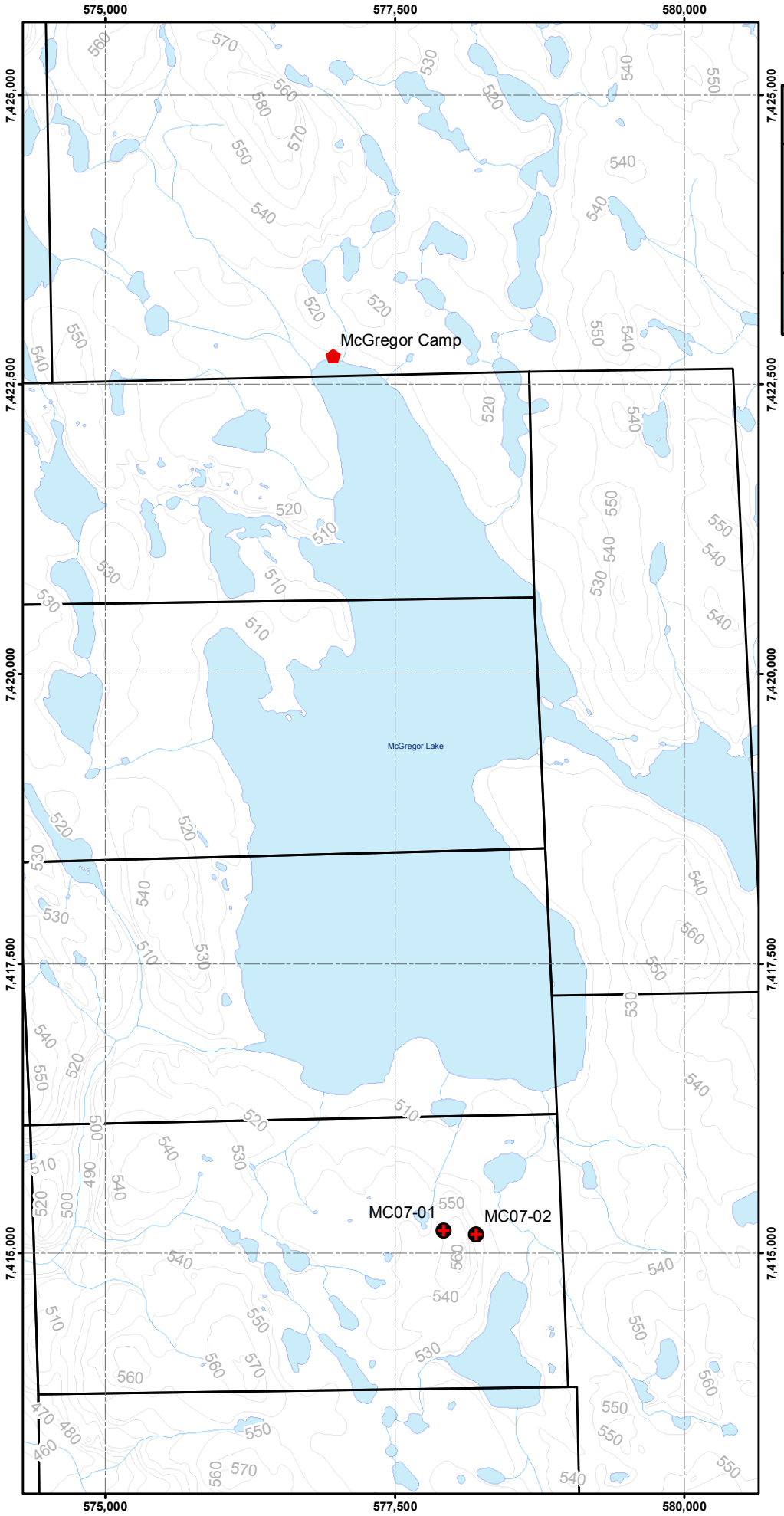
If there are questions or concerns regarding 5050 Nunavut Limited's Uranium Exploration Plan, please contact the Company's representative at the contact information below. Thank you.

Phu Van Bui, Project Geologist & Manager
Tel: 604-681-4001 ext. 111
pvanbui@miemetals.com.

Head Office
5050 Nunavut Limited & MIE Metals Corporation
Suite 507 – 700 West Pender Street
Vancouver, British Columbia
Canada V6C 1G8
Tel: 604-681-4001
Fax: 604-681-4022

5050 Nunavut Ltd





LEGEND

- McGregor Camp Site
- 2007 DDH Location
- Claim boundary
- River
- Elevation Contour [m]
- Lake

N
W E
S

FIGURE 1

MAP DATE: 2010-04-13

SURIFICAL TOPOGRAPHY

2007 DRILL PROGRAM

MCGREGOR LAKE AREA

NUNAVUT

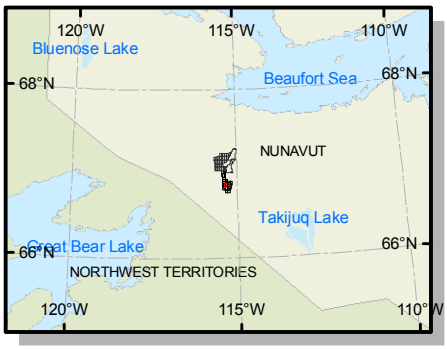
Scale 1:50 000

0 250 500 1,000 1,500 2,000

Meters

Universal Transverse Mercator Projection
North American Datum 1983

5050 Nunavut Ltd



LEGEND

- Claim boundary
- Proposed Uranium Drillholes
- River
- Elevation Contour [m]
- Lake

FIGURE 2

MAP DATE: 2010-04-12

SURIFICAL TOPOGRAPHY

2007 DRILL PROGRAM

BEAR VALLEY AREA

NUNAVUT

Scale 1:20 000

0 125 250 500 750 1,000
Meters

Universal Transverse Mercator Projection
North American Datum 1983

5050 Nunavut Ltd

560,000 565,000 570,000

7,450,000 7,445,000 7,440,000

LEGEND

- Claim boundary
- IOL Kitikmoet Surface Rights
- Proposed DDH Uranium
- River
- Elevation Contour [m]
- Lake

FIGURE 3

MAP DATE: 2010-04-13

SURIFICAL TOPOGRAPHY

PROPOSED BOREHOLE LOCATION

ALL NIGHT LAKE

NUNAVUT

Scale 1:75 000

0 0.5 1 2 3

Kilometers

Universal Transverse Mercator Projection

North American Datum 1983

McGregor Lake Campsite
Spill & Contingency Plan

APPENDIX E
Nunavut Waste Generation Number

Government of Nunavut
Department of Environment
Environmental Protection Division

Request for Territorial Identification Number

Hazardous Waste Generator # NUG 100022

Please complete this questionnaire, as accurately as possible, by providing the information requested below. This information is to be submitted – preferably in electronic format – to: Manager, Pollution Control, Box 1000, Stn. 1360, Iqaluit, NU. X0A0H0. e-mail: reno@gov.nu.ca.

The purpose of this questionnaire is to ensure that the Department of Environment is able to track the movement of hazardous waste in Nunavut and further, is assured that the agency/firm/company/individual in possession of, offering for transport, or receiving hazardous waste, is able to manage that waste in a manner which complies with current environmental acts, regulations, guidelines and standards of practice. **Please refer to the attached *Environmental Guideline for the General Management of Hazardous Waste* for additional details.**

Generator numbers will not be issued until the questionnaire has been completed to the satisfaction of the Department of Environment. For those companies who have already been issued with Generator Numbers, you are required to fill out this questionnaire and return it to the Department of Environment as soon as possible.

1. Company name:

5050 Nunavut Limited (subsidiary of MIE Metals Corporation)

2. Mailing address:

Suite 507 – 700 West Pender Street, Vancouver, British Columbia, V6C 1G8
Phone: 604-681-4001, Fax: 604-681-4022

3. Site location:

McGregor Lake (Map Sheet No. 86J, 86O, 86N)
Inuit Land Parcel No. CO 52, 53, 60, 61, & 62
Lat. 115º 15' 44" W Long. 66º 51' 30" N

4. Company contact (include title):

Phu Van Bui, Project Manager
Phone: 604-681-4001 ext. 111, Fax: 604-681-4022
Email: pvanbui@miemetals.com

5. Company official (include title):

Gordon Addie, President
Phone: 604-681-4001 ext. 109, Fax: 604-681-4022
Email: gaddie@miemetals.com

6. Type of business:

Mineral Exploration and Mining

7. Type of Waste Generated.

- Provide name and description of each site from which waste is intended to be removed:
  McGregor Lake camp and various borehole locations in the area.
- Provide a description of the waste, proper shipping name, TDGR Product Identification Number and where applicable, the process resulting in the production of the waste.
  The following hazardous waste is expected form the drilling and camping exploration activities:
    - Waste oil, greases (Class 3.1 TDG)
    - Antifreeze (Class 9.1 TDG)
    - Calcium or sodium chloride salt (Class 9.1 TDG)
    - Lead acid batteries (Class 8 TDG)
    - Cleaners (Class 9.1 TDG)
    - There is a chance of encountering uranium in the drill cores (Class 7 TDG) for which Canadian Nuclear Safety Commission will be consulted and "Canadian Guidelines for the Management of Naturally Occurring Radioactive Materials (NORM)" will be used as guiding document. For the long term storage of drill core, radiation level will be maintained as per NORM. In practice it is anticipated that the major uranium intersections will be transported to the Saskatchewan Research Council (SRC) Geoanalytical laboratories for testing and storage at their nuclear materials storage facility. The transportation of samples will be carried out as per NORM Guidelines.
- Is this a one time only generation or will your company be generating hazardous waste on a regular basis? If so, how often and what types of waste do you anticipate generating?
  The exploration work period of operation will be: March – May (spring break up), June-September (fall freeze-up) and October – November. The above listed waste will be generated three to four times in a year.

8. Emergency Response/Management:

• Do you have a spill/emergency plan for accidents involving the hazardous material under your control? If so, please provide a copy (preferably electronic) to DOE.

Yes, this plan will be part of our camp permitting. The copy will be provided before start of the camp.

• If not, is your company prepared to manage emergencies involving this material? How?
• Is the management of the hazardous waste in your possession being undertaken by a third party?

No.

• If yes, please provide the name of that firm as well as a company contact name, phone number and address. Briefly describe that firm's experience in managing hazardous waste.

9. Intended carrier (if applying for a number in general anticipation of shipping hazardous waste at an unspecified time, please provide this information at a later date):

This information will be provided later, the number is being applied in general anticipation of shipping hazardous waste at an unspecified time.

• Please include full name, company location, address, contact person and number, provincial/territorial ID number and mode (5) of transport (ship, rail, road, air).
• Is the carrier capable of managing this hazardous material in the event of a spill or other emergency?
• Is this carrier a recognized and reputable firm capable of managing the hazardous material being consigned to them?
• For how long has this carrier been in business?

10. Intended Receiver (if applying for a number in general anticipation of shipping hazardous waste at an unspecified time, please provide this information at a later date):

This information will be provided later, the number is being applied in general anticipation of shipping hazardous waste at an unspecified time.

• Please include full name of company, location, address, contact person, telephone number, e-mail address and Provincial/Territorial ID number.
• Is this receiver a recognized and reputable firm capable of managing the hazardous material being consigned to them?
• For how long has this receiver been in business?

McGregor Lake Campsite
Spill & Contingency Plan

APPENDIX F
Daily Wildlife Log

Daily Wildlife Log

505 Nunavut Limited., McGregor Lake Campsite

Date	Species Sighted	No.of Individuals	Activity of Sighting	Time of Sighting	Location from Camp	Name of Observer

Species sighted: Caribou, Fox, Wolf, Bear, Wolerine, Other (describe)

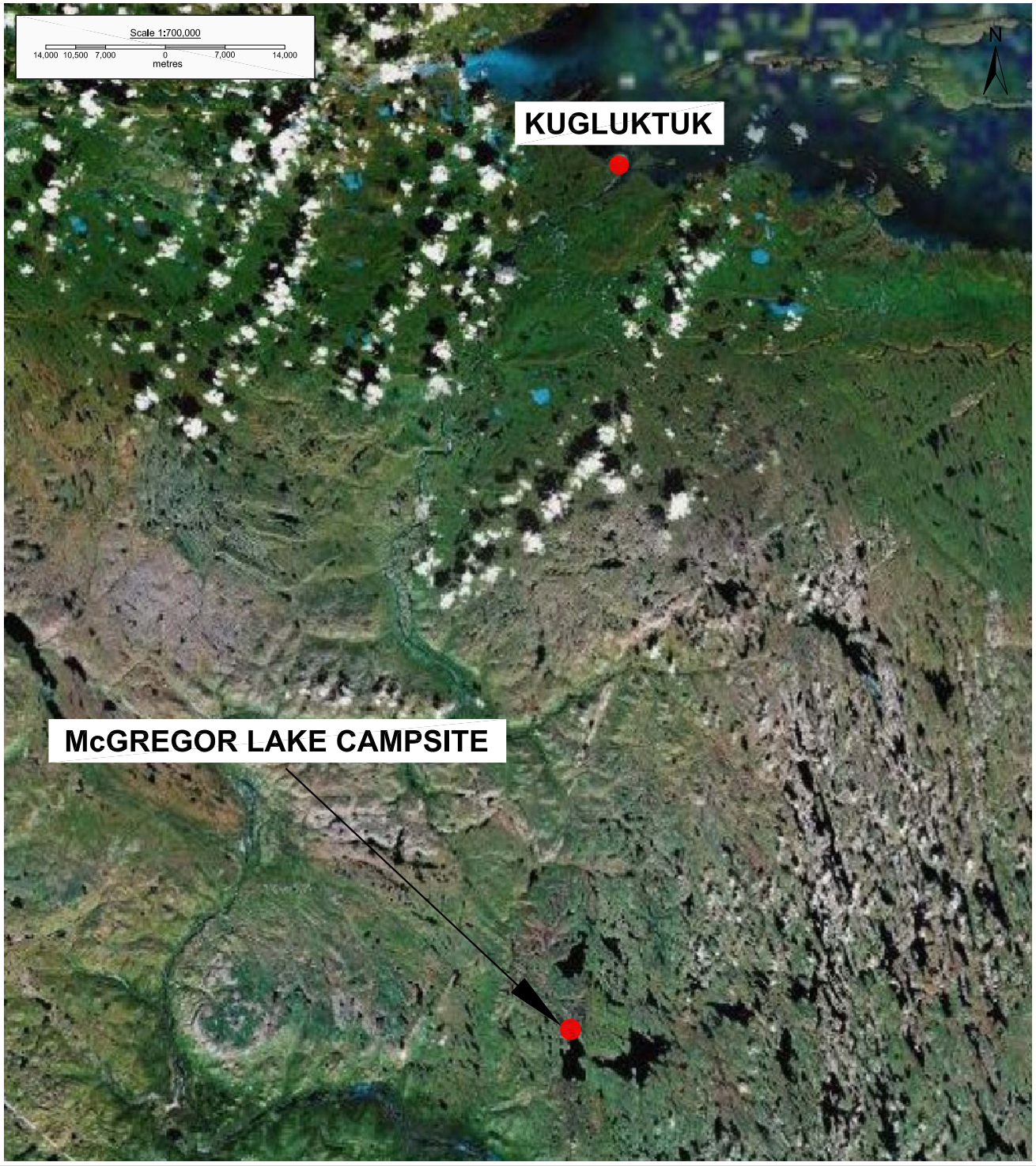
Number of Indivuduals: If < than 10; record actual #. If > than 10 record approximate #. If no individuals were spotted for the day; record zero.

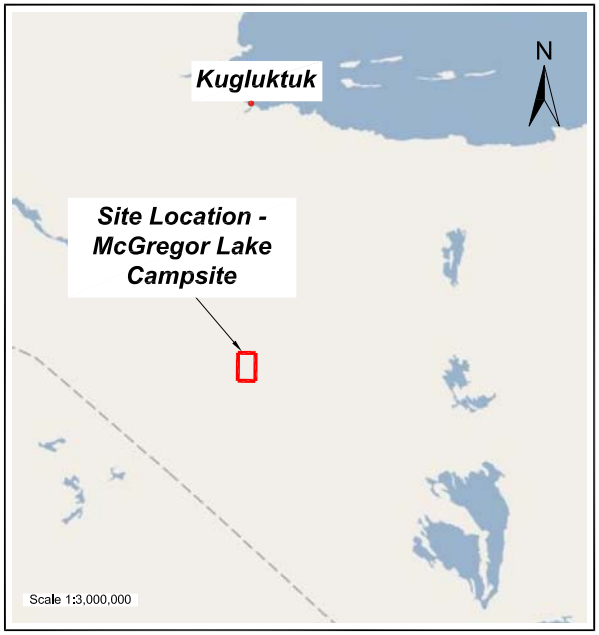
Activity of Individuals: sleeping, grazing, standing, walking, running, grooming, etc

Location from camp: North, East, South, West

McGregor Lake Campsite
Spill & Contingency Plan

APPENDIX G
Figures





Title:
SITE LOCATION

Project:
CAMPSITE PERMIT RENEWAL AND AMENDMENT

Client:
5050 NUNAVUT LTD.

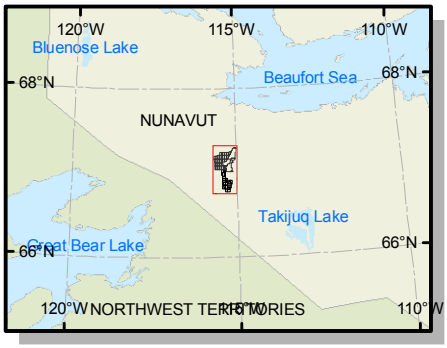
FRANZ ENVIRONMENTAL INC.
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

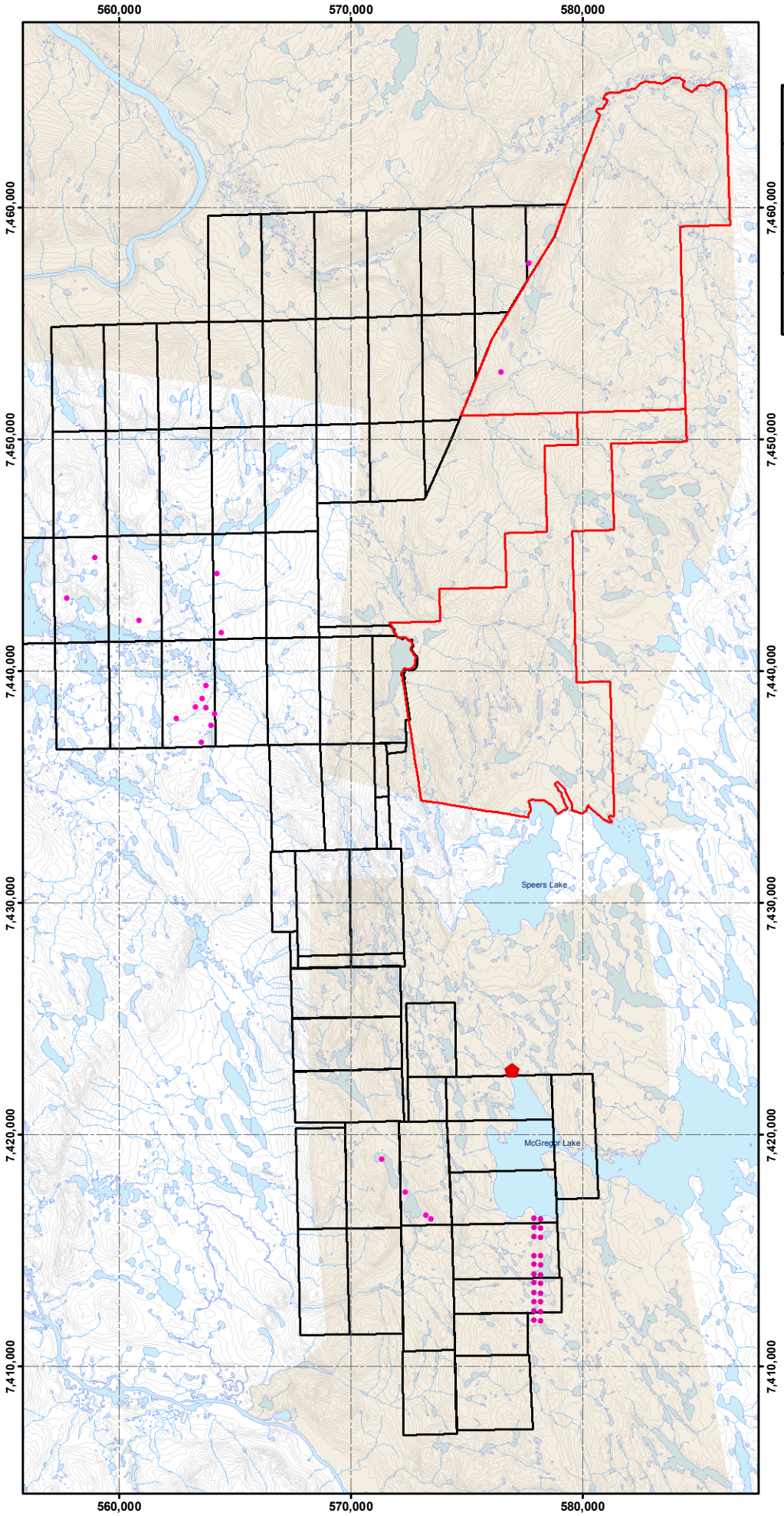
Date:
DECEMBER 2007

FIGURE 1-1

1436-0701/CAD/HL/Figure 1-1 - Site Location.dwg

5050 Nunavut Ltd





LEGEND

- Proposed DH Location
- McGregor Camp Site
- IOL Agreements
- Claim boundary
- IOL Kitikmoet Surface Rights
- River
- Elevation Contour [m]
- Lake

N
W E
S

FIGURE 1-2

MAP DATE: 2010-04-12

SURIFICAL TOPOGRAPHY

PROPOSED EXPLORATION AREA

MCGREGOR LAKE & ALL NIGHT LAKE

NUNAVUT

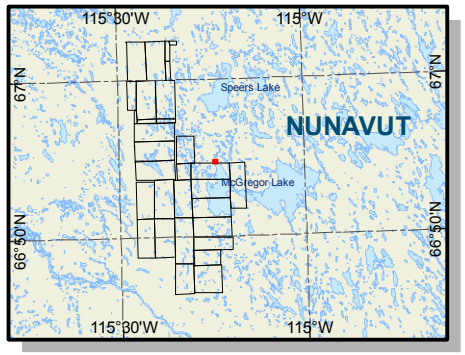
Scale 1:250 000

0 1 2 4 6 8 10

Kilometers

Universal Transverse Mercator Projection
North American Datum 1983

5050 Nunavut Ltd



576,900 577,000 577,100 577,200

7,422,700 7,422,600 7,422,500 7,422,400

520 519 518 517

HELIPAD

FUEL STORAGE AREA

SLEEPING AREA

KITCHEN

DRY

FIRST AID

SLEEPING AREA

GENERATOR ROOM

CORE SHACK

OUT HOUSE

CORE BOXES

CORE BOXES

SLEEPING AREA

BUILDING (Not in use)

McGregor Lake

LEGEND

- Elevation Contour [m]
- Seasonal River
- Lake

N W E S

FIGURE 1-3

MAP DATE: 2010-04-12

SURIFICAL TOPOGRAPHY

CAMP SITE LAYOUT

MCGREGOR LAKE

NUNAVUT

Scale 1:2,000

0 25 50 100

Meters

Universal Transerve Mercator Projection

North American Datum 1927