SPILL PREVENTION AND RESPONSE PLAN

NORTH COUNTRY GOLD CORP.

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1.0 INTRODUCTION

The North Country Gold Corp (NCG) Spill Prevention and Response Plan (SPRP) shall be in effect from February 01, 2003 to February 2015. All future amendments will be posted and recorded on the attached amendment record form on page II.

This Spill Response Plan is to be posted at operational remote sites.

NCG endeavors to take every reasonable precaution toward ensuring the protection and conservation of the natural environment, the safety and health of NCG employees, sub-contractors and contractors and (protecting) the community (at large) from any harmful effects of its materials and operations.

1.1 PURPOSE

The overall purpose of the SPRP is to mitigate, to the fullest extent possible, the risk of environmental contamination from the accidental release of deleterious materials by providing clear procedures for their storage and handling as well as clear plans of action in the case of such a release.

Spill Response Plan will;

- promote the safe and careful use of potentially hazardous materials;
- promote the safe and effective recovery of spilled potentially hazardous materials;
- minimize the environmental impacts of spills to water or land;
- provide site-specific information on the facilities and contingencies in place;
- identify roles, responsibilities, and reporting procedures for spill events;
- provide readily accessible emergency information to cleanup crews, management and government agencies, and;
- comply with federal and territorial regulations and guidelines pertaining to the preparation of contingency plans and notification requirements in the event of an emergency or spill.

1.2 ENVIRONMENTAL POLICY

The present SPRP has been prepared in accordance with the commitments made in NCG'S environmental policy (see Corporate and Social Responsibility Plan), which are to:

- Assess the potential environmental impacts of any new undertaking with an objective to minimize adverse impacts;
- Design and operate facilities to ensure that effective controls are in place to minimize risks to health, safety and the environment;
- Implement an emergency response plan to minimize the impacts of unforeseen events;

- Provide a professional environmental for staff to plan and direct environmental compliance programs and to assist in training and education activities;
- Provide training and resources to develop environmentally responsible employees;
- Ensure that environmental factors are included in the purchase of equipment and materials;
- Ensure that contractors operate according to the company's environmental policy and procedures;
- Comply with all applicable environmental laws and regulations;
- Communicate with employees, the public, government agencies and other stakeholders on activities involving health, safety and the environment;
- Regularly verify environmental performance and implement any required corrective action;
- Minimize the generation of hazardous, as well as non-hazardous, waste and ensure proper disposal of all waste materials;
- Implement measures to conserve natural resources such as energy and water, and;
- Rehabilitate sites in accordance with regulatory criteria and within established time-frames.

2.0 FACILITIES

North Country Gold Corp operates 4 camps and a number of drill sites in the Committee Bay area (**Table 1**).

Hayes camp is the main camp in the area and is supported by a natural esker airstrip and a prepared winter icestrip on Sandspit Lake located next to the camp. Bullion, Ingot and Crater camps are smaller camps used as bases for seasonal exploration in various parts of the area. Camp layouts are detailed in **Appendix II**. Drill sites are located in geologically favorable various parts of the area where small amounts of drill equipment and/or fuel may be temporarily stored for future use (small remote fuel caches).

Table 1 – North Country Gold Corp camp and cache locations.

CAMPS	Easting or Latitude	Northing or Longitude
Hayes Camp		
UTM (Nad83 z15)	564613	7394173
Lat/Long	66°39'30"	91°32'11"
Bullion Camp		
UTM (Nad83 z15)	494850	7363850
Lat/Long	66°23'39"	93°06'55"
Ingot Camp		
UTM (Nad83 z15)	516500	7386100
Lat/Long	66°35'40"	92°37'34"
Crater Camp		
UTM (Nad83 z15)	677781	7478788
Lat/Long	67°22'19"	88°51'24"
Three Bluffs Drilling		
UTM (Nad83 z15)	569153	7392660
Lat/Long	66°38'42"	91°26'12"
Ibex Cache		
UTM (Nad83 z15)	493060	7342810
Lat/Long	66°12'19"	93°9'14"
West Plains Cache		
UTM (Nad83 z15)	479650	7334330
Lat/Long	66°7'43"	93°27'2"

2.1 BUILDINGS AND STRUCTURES

Hayes Camp Infrastructure

Structures

Existing:	14	12X14’ sleepers
	1	12x14’ storage weatherhaven
	1	12x28’ shop
	1	12x14’ first aid tent
	1	12x14’ logistic/camp office
	1	12x28’ geology office
	1	12x60’ core processing and cutting tent
	1	12x14’ generator shed
	1	12x28’ drillers dry
	1	12x28’ camp dry
	1	12x40’ kitchen
	3	pactco units

New 2011	11	12x14' Sleepers
	1	200m^3 commercial kitchen
	1	200m^3 commercial washroom
	1	200m^3 dining room/Rec room
	2	600m^3 shop

Vehicles, Heavy Equipment and Infrastructure

Existing:	3	Bravo Ski Doo's
	4	Polaris Edge Trail Snowmachines
	1	Polaris 4x4 Quad (Serial# ES 320PFE081)
	1	Yamaha Kodiak 4x4 Quad (VIN # JY4J03W12C053792)
	1	JD Skidder 640D (S/N DW640DC512810) c/w spare tire and set of chains c/w 5'x14' Berm
	1	Caterpillar D6D Dozer (S/N 4X2864) c/w 5'x14' Berm
	1	Caterpillar IT-24 Loader (c/w forks, extension forks, bucket, plow blade & spare tire) c/w 5'x14' Berm
	1	Incinerator (CY-1020-FA "D") c/w 10'x20' Berm
	1	100kw Generator
	2	Pickup Trucks
	1	2HP air compressor
	4	Water Pumps.
	3	Ice augers
	2	20Kw generators
	5	>10Kw generators

New 2011	1	CAT320D Excavator
	2	CAT 730AT Truck
	1	CAT CS563SD Packer
	1	CAT 143H Grader
	1	Screening Plant
	1	Mechanics Truck
	1	Fuel Service Truck
	2	35,000 l Enviro-Fuel Tanks
	1	Wear Parts Sea Can
	1	Shop and Oil Sea Can
	1	2 pickup trucks
	6	Side by Side quads
	2	200Kw Generators
	1	3k GPD Waste Water Treatment Plant
	1	100 Kg/hr Incinerator
	1	Drill water supply system
	1	Rock Jaw Crusher
	1	Snow Blower attachment for Loader

Drilling Equipment

Existing:	2	LF70 Diamond Drills plus miscellaneous drill equipment and spares
	2	A5 Diamond Drills plus miscellaneous drill equipment and spares
	4	Drill water supply pumps and hose
New 2011	3	A5 Diamond Drills plus miscellaneous drill equipment and spares
	2	RC "Super Hornet" Drill Rigs and miscellaneous drill equipment and spares
	1	Heat Trace Drill water supply system including pipe, water storage tanks, boiler, and transfer pump

Air Transport Equipment

Existing	Twin Otter
	500 Helicopter
	206HR Helicopter
	B2 Airstar Helicopter
	C130 Hercules
New 2011	DCH5- Buffalo or similar

2.2 FUEL STORAGE

The fuel storage monitoring program is detailed in Section 6 of this plan and in more detail in the Fuel Management Plan.

All fuels, such as diesel, jet A/B and gasoline, are stored in 205 litre (45 gal) metal drums. In 2011 two 35,000 litre double walled enviro-tanks will be brought to site. These enviro-tanks will be housed such that all fittings, pipes, etc. are within secondary containment. Propane is stored in standard 100 lb tanks.

3.0 PETROLEUM & CHEMICAL STORAGE AND INVENTORY

The hazardous materials stored on site consist of the following substances:

- P-50 Diesel,
- Jet A and/or Jet B turbo fuel,
- Gasoline,
- Grease (mechanical lubricants),
- Hydraulic Oil,
- Engine Oil,
- Waste Oil (awaiting removal from camp for proper disposal),
- Propane,
- Other materials potentially hazardous to the safety of personnel and the environment

The Material Safety Data Sheets (MSDS) for the hazardous materials stored at the exploration camp can be found in **Appendix IV**.

All hazardous materials/supplies are flown into, and out of, sites. A Waste Manifest will accompany the movement of all hazardous wastes.

3.1 PETROLEUM PRODUCT TRANSFER

Manual, electric and engine powered pumps, along with appropriate filtration devices, may be used for the transfer of petroleum products from their storage drums to their end-use fuel tanks. A fuel service truck will be brought to site in 2011 once the two double walled enviro-tanks are on site and established. The fuel truck will transport the fuel from the airplanes to the enviro-tanks.

Cigarette smoking, sparks, open flames and any other potential ignition sources are prohibited from any fuel storage and fuel transfer site at all times. As a general guideline, all equipment is to be turned off during refueling.

3.2 REMOTE LOCATION STORAGE AND HANDLING PROCEDURES

At times, North Country Gold Corp. may establish temporary remote fuel caches for seasonal company use. Typically these caches would consist of 19 drums or less comprising Jet fuel and/or P-50. These remote fuel caches will be in accordance with CSA approved methods of storage of drummed product, and are very temporary most often used to support field activities further afield from the camps and camp fuel caches. A spill kit will be located at each fuel cache. As well, the helicopter carries additional absorbent pads.

4.0 RISK ASSESSMENT AND MITIGATION OF RISK

Following, is a list of sources:

1) Drummed product: Leaks or ruptures may occur. This includes drums of Jet A, Diesel, Gasoline, Waste Fuel, and Waste Oil.

2) Fuel cylinders: Propane, leaks may occur at the valves. All cylinders are secured at all times.

3) Vehicles and equipment: Wheeled vehicles and equipment, aircraft (fixed and rotary wing), snowmobiles, generators, pumps. Incidents involving leaking or dripping fuels and oils may occur due to malfunctions, impact damage, and lack of regular maintenance, improper storage, or faulty operation.

Regular inspection and maintenance in accordance with recognized and accepted

standard practices at all camps and fuel caches, reduces risks associated with the categories listed above. Large fuel caches of 20 drums or more will be inspected daily.

Spill response training is provided to all personnel with particular attention to those personnel who handle fuels and other petroleum products. This training will include a presentation, “mock” spill, review of spill kit contents and their use and reporting.

Spill Kits will be located at all camps, fuel caches and drill shacks. A description of contents is listed in Section 7.0.

5.0 RESPONDING TO FAILURES AND SPILLS

In the case of any spill or other environmental emergency, it is necessary to react in the most immediate, safe, and environmentally responsible manner. No spill or incident is so minor that it can be ignored and every spill must be reported.

5.1 BASIC STEPS

The basic steps of the response plan are as follows:

1. *Ensure* the safety of all persons at all times.

2. *Identify* and find the spill substance and its source, and, if possible, stop the process or shut off the source.

3. *Inform* the on-site co-ordinator or his/her designate at once, so that he/she may take the appropriate actions. Appropriate action includes the notification of the spill to the 24 hour Spill Line and INAC Water Resource Officer, a copy of the Spill Report form can be found in Appendix I.

4. *Contain* the spill or environmental hazard, as per its nature.

5. *Implement* any necessary cleanup and/or remedial action.

5.2 CHAIN OF COMMAND

1. *Immediately* notify and report to the 24-Hour Spill Line at (867) 920-8130 (Fax: 867-873-6924), the INAC Water Resources Officer in Nunavut at (867) 975-4548, and Environment Canada personnel at 867-975-4644.

2. ***A Spill Report Form (Appendix I)*** is filled out as completely as possible before or after contacting the 24 Hour Spill Line. A copy of the guidelines for completing the spill report form can be found in Appendix III.

3. Notify Jo Price, Project Manager, at (780) 437-6624.

5.3 EMERGENCY CONTACT LIST - SPILL REPORTING AND RESPONSE

CONTACT	TELEPHONE NUMBER
INAC Water Resource Officer, Iqaluit	(867) 975-4548
Environment Canada	(867) 975-4644, 24 hr page (867) 766-3737
Government of Nunavut Department of Environment	(867) 975-5910
Kitkmeot Inuit Association	(867) 983-2458
DFO	(867) 979-8007
NCG, Jo Price, Project Manager	(780) 437-6624
Andrew Turner, APEX Geoscience	(780) 439-5380
Yellowknife Fire Department	(867) 873-2222
Rankin Inlet RCMP	(867) 645-0123
Stanton Regional Hospital – Yellowknife	(867) 920-4111
Discovery Mining Services	(867) 920-4600
Nunavut Water Board	(867) 360-6338
Hayes Camp Manager	**(604) 759-0627, 24 Hour Number**
Allison Rippin Armstrong, Environmental Consultant	(780) 995-2499

While the camp is <u>operational</u>, the Camp Manager can be reached at:

(604) 759-0627 - this is a 24 hour phone line.

6.0 TAKING ACTION

6.1 PREVENTATIVE MEASURES

The following actions illustrate a proactive approach to environmental stewardship. In addition, these actions minimize the potential for spills during fuel handling, transfer and storage:

1. Fuel transfer hoses with cam lock mechanisms are used.

2. Carefully monitor fuel content in the receiving vessel during transfer. Always have additional absorbent pads on hand while transferring fuel.

3. Clean up drips and minor spills immediately.

4. Regularly inspect drums, tanks and hoses for leaks or potential to leak and for proper storage.

5. Create fuel caches in natural depressions that are located a **minimum** of 31 metres from the normal high-water mark of any water body.

6. Train personnel, especially those who will be operators, in proper fuel handling and spill response procedures.

North Country Gold will support the following general principles for spill prevention:

- provide up to date and accessible Material Safety Data Sheets (MSDS) for all hazardous materials;
- regularly inspect fuel/chemical storage areas and maintain on site the records of the inspections;
- provide training for with respect to approved procedures for handling hazardous materials, and procedures to clean up spills;
- encourage workers to take reasonable measures to prevent spills;
- keep drums/containers sealed or closed when not in use;
- keep storage areas secure from unauthorized access;
- segregate incompatible materials;
- ensure chemical storage areas are adequately protected from weather and physical damage, and;
- provide adequate spill response materials at storage areas.

6.1.2 RESPONSIBILITIES DURING TRANSPORT

Shipper:

- Ensures proper loading, restraint, containment and documentation, which complies with TDG guidelines

- Ensures that goods are classified and labeled appropriately. Provide placards if required
- Ensures safety at all times
- Ensures proper communication with carrier

Carrier:

- Supervises and ensures proper loading, restraint, containment and documentation which comply with all TDG regulations
- Ensures correct volumes for transport, attach placards if necessary, maintains or replaces safety marks
- Checks and delivers TDG manifest to receiver
- Ensures safety of all personnel and equipment

Receiver:

- Supervises unloading procedures
- Complies with TDG guidelines
- Ensures safety of containment facilities
- Ensures maintenance of all pumps and loading/unloading equipment on site
- Provides on-site emergency communications (telephone, radio)
- Completes regular site inspections of storages facilities
- Records all shipment manifests
- Keeps on-site inventory of all dangerous goods
- Maintains safety procedures at all times

On-Site Coordinator:

- Supervises and organizes spill containment equipment and personnel
- Reports to internal and external parties
- Ensures proper safety equipment is available
- Notifies all personnel of current hazards
- Provides adequate training for safety and materials handling
- Maintains proper safety procedures at all times
- Must be compliant with all TDG guidelines

6.2 MITIGATIVE MEASURES

1. First steps to take when a spill occurs:
   - Ensure your own safety and that of others around you, beginning with those nearest to the scene.
   - Control danger to human life, if necessary.
   - Identify the source of the spill.
   - Notify your supervisor, request assistance if needed.
   - Assess whether or not the spill can be readily stopped.
   - Contain or stop the spill at the source.

2. Secondary steps to take:
   - Determine status of the spill event
   - If necessary, pump fuel from a damaged and/or leaking tank or drum into a refuge container
   - Notify the 24-hour Spill Report Line
   - Complete and Fax a copy of the Spill Report Form *(Appendix I).*
   - Notify permitting authorities.
   - If possible, resume cleanup and containment.

6.3 SPILL RESPONSE ACTIONS

DIESEL FUEL, HYDRAULIC OIL, AND LUBRICATING OIL

Take action only if safety permits – stop the source flow if safe to do so and eliminate all ignition sources. **Never smoke** when dealing with these types of spills.

On Land

Build a containment berm using soil material or snow and place a plastic tarp at the foot of the berm for easy capture of the spill after all vapours have dissipated.
Remove the spill by using absorbent pads or excavating the soil, gravel or snow.
Remove spill splashed on vegetation using particulate absorbent material.
Contact regulatory agencies for approval before commencing with the removal of any soil, gravel, or vegetation.

On Muskeg

Do not deploy personnel and equipment on marsh or vegetation.
Remove pooled oil with sorbent pads and/or skimmer.
Flush with low pressure water to herd oil to collection point.
Burn only in localized areas, e.g., trenches, piles or windrows.
Do not burn if root systems can be damaged (low water table).
Minimize damage caused by equipment and excavation.

On Water

Contain spill as close to release point as possible.
Use containment boom to capture spill for recovery after vapours have dissipated.
Use absorbent pads to capture small spills.
Use skimmer for larger spills.

On Ice and Snow

Build a containment berm around spill using snow.
Remove spill using absorbent pads or particulate sorbent material.
The contaminated ice and snow must be scraped and shovelled into plastic buckets with lids, 205 litre drums, and/or polypropylene bags.

Storage and Transfer

All contaminated water, ice, snow, soil, and clean up supplies will be stored in closed, labelled containers. All containers will be stored in a well ventilated area away from incompatible materials.

Disposal

Any contaminated material will be shipped from site to an appropriate and approved facility. The DOE monitors the movement of hazardous wastes from generators, carriers to receivers, through a tracking document (Waste Manifest). A Waste Manifest will accompany all movements.

6.3 SPILL RESPONSE ACTIONS

GASOLINE AND JET B AVIATION FUEL

Take action only if safety permits – stop the source flow if safe to do so and eliminate all ignition sources. **Never smoke** when dealing with these types of spills.

On Land

Build a containment berm using soil material or snow and place a plastic tarp at the foot of the berm for easy capture of the spill after all vapours have dissipated.
Remove the spill by using absorbent pads or excavating the soil, gravel or snow.
Remove spill splashed on vegetation using particulate absorbent material.
Contact regulatory agencies for approval before commencing with the removal of any soil, gravel, or vegetation.

On Muskeg

Do not deploy personnel and equipment on marsh or vegetation.
Remove pooled gasoline or Jet B with sorbent pads and/or skimmer.
Flush with low pressure water to herd oil to collection point.
On advice from regulatory agencies, burn only in localized areas, e.g., trenches, piles or windrows.
Do not burn if root systems can be damaged (low water table).
Minimize damage caused by equipment and excavation.

On Water

Contain spill as close to release point as possible.
Use containment boom to capture spill for recovery after vapours have dissipated.
Use absorbent pads to capture small spills.
Use skimmer for larger spills.

On Ice and Snow

Build a containment berm around spill using snow.
Remove spill using absorbent pads or particulate sorbent material.
The contaminated ice and snow must be scraped and shovelled into plastic buckets with lids, 205 litre drums, and/or polypropylene bags.

Storage and Transfer

All contaminated water, ice, snow, soil, and clean up supplies will be stored in closed, labelled containers. All containers will be stored in a well ventilated area away from incompatible materials.

Disposal

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6.3 SPILL RESPONSE ACTIONS

PROPANE

Take action only if safety permits. Gases stored in cylinders can explode when ignited. Keep vehicles away from area. **Never smoke** when dealing with these types of spills.

On Land
Do not attempt to contain the propane release.

On Water
Do not attempt to contain the propane release.

On Ice and Snow
Do not attempt to contain the propane release.

General
It is not possible to contain vapours when released.
Water spray can be used to knock down vapours if there is no chance of ignition.
Small fires can be extinguished with dry chemical of CO_2.
Personnel should withdraw immediately from area unless a small leak is stopped immediately after it has been detected.
If tanks are damaged, gas should be allowed to disperse and no recovery attempt should be made.
Personnel should avoid touching release point on containers since frost forms very rapidly.
Keep away from tank ends.

Storage and Transfer
It is not possible to contain vapours when released.

Disposal
Any contaminated material will be shipped from site to an appropriate and approved facility. The DOE monitors the movement of hazardous wastes from generators, carriers to receivers, through a tracking document (Waste Manifest). A Waste Manifest will accompany all movements.

6.3 CHEMICAL SPILLS

1) Assess the hazard of the spilled material. REFER TO THE MSDS SHEETS NOW. Members of the emergency response team who might be susceptible in certain situations, (such as asthmatics, where fumes or airborne particles are evident), should be replaced with alternates.

2) Assemble the necessary safety equipment before response (e.g. latex or other protective gloves, goggles, or safety glasses, masks or breathers, etc.)

3) Apply absorbents to soak up liquids.

4) Place plastic sheeting over solid chemicals, such as dusts and powders, to prevent their disbursement by wind or investigation by birds or other mammals.

5) Neutralize acids or caustics. Place spilled material and contaminated cleanup supplies in an empty refuge drum and seal for disposal.

6) Contact the 24-Hour Spill Line. Continue through the steps outlined in Section 5.

7.0 SPILL EQUIPMENT

NCG has installed high-density vinyl containment “insta-berms” at Hayes Camp for the main generator shed, the incinerator, the water pump (at the lake), the re-fueling area and approximately 20 individual berms for tent oil stove fuel drums. Fire extinguishers are provided in all the buildings, at the helicopter pads, the refueling area and the incinerator area, as well as any other area where flammable substances are stored and/or handled. Spill kits will be located at fuel caches, fueling stations, airstrip, and other locations where spills of hazardous substances could occur. In 2011, all fuel caches with a volume greater than 4,000 litres will be stored within secondary containment.

7.1 SPILL KITS

Spill kits in bright blue or yellow 200 L containers include:

- basic personal protective equipment including goggles and latex gloves,
- absorbent materials including socks, pillows, pads and granular substances
- 50 Sonic bonded pads 17”x19”x3/8”
- 4 Socks 4’ x 3” dia
- 1 SPHAG Sorb ¾ cu ft.
- 1 Plug-it sealing compound 500 ml
- 1 pair Nitrile gloves Large
- 2 pillows 18”x18”
- large 36”x52” lettered plastic bags for containing and transferring (for disposal) contaminated sorbent materials.

Also on-site are the following:

- 2 Rolls of absorbent matting 38”x144’
- 2 Packs (100’s) of Enviro matting 16”x20”
- 4 Shovels (min)
- 6 (min) Empty 45 gal. drums for storing contaminated soil for disposal

Spill kits are located at:

- Camp fuel cache
- Helicopter/Fixed Wing fuel cache
- Drilling fuel cache
- Generator shack
- Core shack generator
- Reconnaissance caches and active drill sites

Additional sorbent materials for use at refueling sites for stoves and furnaces throughout camp are stored in the storage shelter, and at the drillers’ storage and repair tent. Containment booms, absorbent materials, and extra insta-berms for use in responding to any spills are located in the storage shelter at Hayes.

A checklist of the required items for each spill response kit or equipment storage area will be provided. Spill response supplies will be checked against the lists on a quarterly basis and any deficiencies remedied immediately. The checklists will be reviewed whenever new chemicals are added to on-site activities to ensure that relevant spill cleanup supplies are present. MSDS for all the chemicals present in the vicinity of the spill kit will be kept near the kits, and will be updated as necessary to ensure that all MSDS data are up to date. The expiry dates of the MSDS will be tracked for every chemical present on site to help identify and replace those that are about to expire. MSDS are provided by the chemical suppliers. (See Appendix IV for sample MSDS).

8.0 TRAINING

To ensure the effectiveness of the Spill Prevention and Response Plan (SPRP), the Site Manager will be responsible for:

- evaluating the training needs of all staff and contractors in terms of spill prevention and spill clean-up, and then ensuring that all staff are given appropriate required training;
- completing an annual detailed review and update of the SPRP, with particular stress on the objectives and methods;
- ensuring that the SPRP remains up-to-date, and that updated versions are distributed to the personnel on site, and external agencies, organizations and selected qualified external responders;
- ensuring that updates to new emergency communications information (new phone numbers, changes in reporting structure, etc.) are distributed as soon as the new information becomes available;
- keeping a formal record of distribution and amendments to the SPRP;
- ensuring that emergency spill response exercises and inspections are conducted at least semiannually;
- ensuring that the results of the regular inspections are used to improve spill response practices, and improve relevant plans accordingly, and;
- completing annual internal audits of the EMS, including SPRP, and arranging for external audits of the system every three years by independent specialists.

<u>On-Site Personnel</u>

A designated Emergency Response Team (ERT) consisting of on-site personnel will be established. North Country Gold Corp will ensure that the ERT is trained and present at all times. All members of the team will be trained and familiar with emergency and spill response resources, including their location and access, the SPRP, and appropriate emergency spill response methodologies. ERT training will be conducted annually to ensure that sufficient team members are present and to ensure that training is up to date.

The following training will be included:

- a review of the spill response plan and responsibilities of the ERT members;
- the nature, status, and location of fuel and chemical storage facilities;
- the on-site and off-site spill response equipment, and how to use it;
- emergency contact lists;
- desktop exercises of “worst case” scenarios, and;
- the likely causes and possible effects of spills.

All personnel and contractors at the project site will be familiar with spill reporting requirements. This will be ensured by conducting an orientation and training program on initial spill response procedures for all contractors and new personnel. Attendance will be tracked on site and re-training will be completed annually. Fuel-handling crews will be fully trained in the safe operation of the facilities, spill prevention techniques, and initial spill response. These crews will be re-trained annually; retraining schedules will be tracked on site.

The Site Manager, will ensure that records of current training are retained, employee training expiry dates are tracked, and re-training is completed in a timely manner.

Contractors

Where pertinent, contractors will be required to have WHMIS, TDG and OSHA training as well as undergo site-specific health and safety training. Specialist responders will be expected to have technical environmental, health and safety training specific to their role as a qualified external contractor. NCG will request proof of qualifications for the areas external contractors are intended to support. All contractors working on site will be expected to complete site-specific training to ensure they are familiar with the risk and processes at the sites.

Practice Drills

North Country Gold is aware that without practice, no Plan has value.

At least one practice drill will be held per season to give personnel a chance to practice emergency response skills. Each practice will be evaluated and a report prepared with the objective of learning where gaps and deficiencies (either in skills or physical resources) exist, and in what areas more practice is required.

Appendix I

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

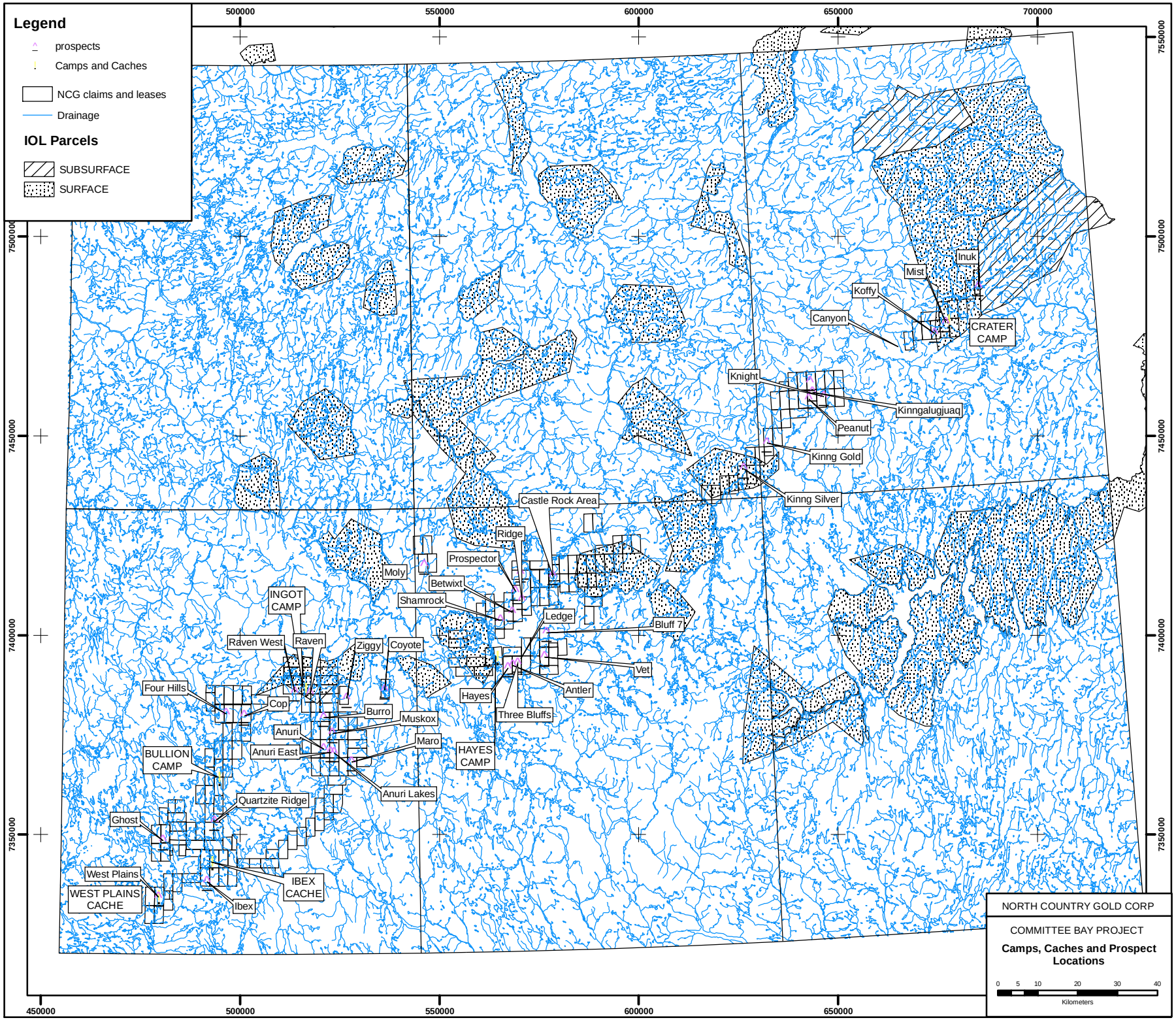
SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN

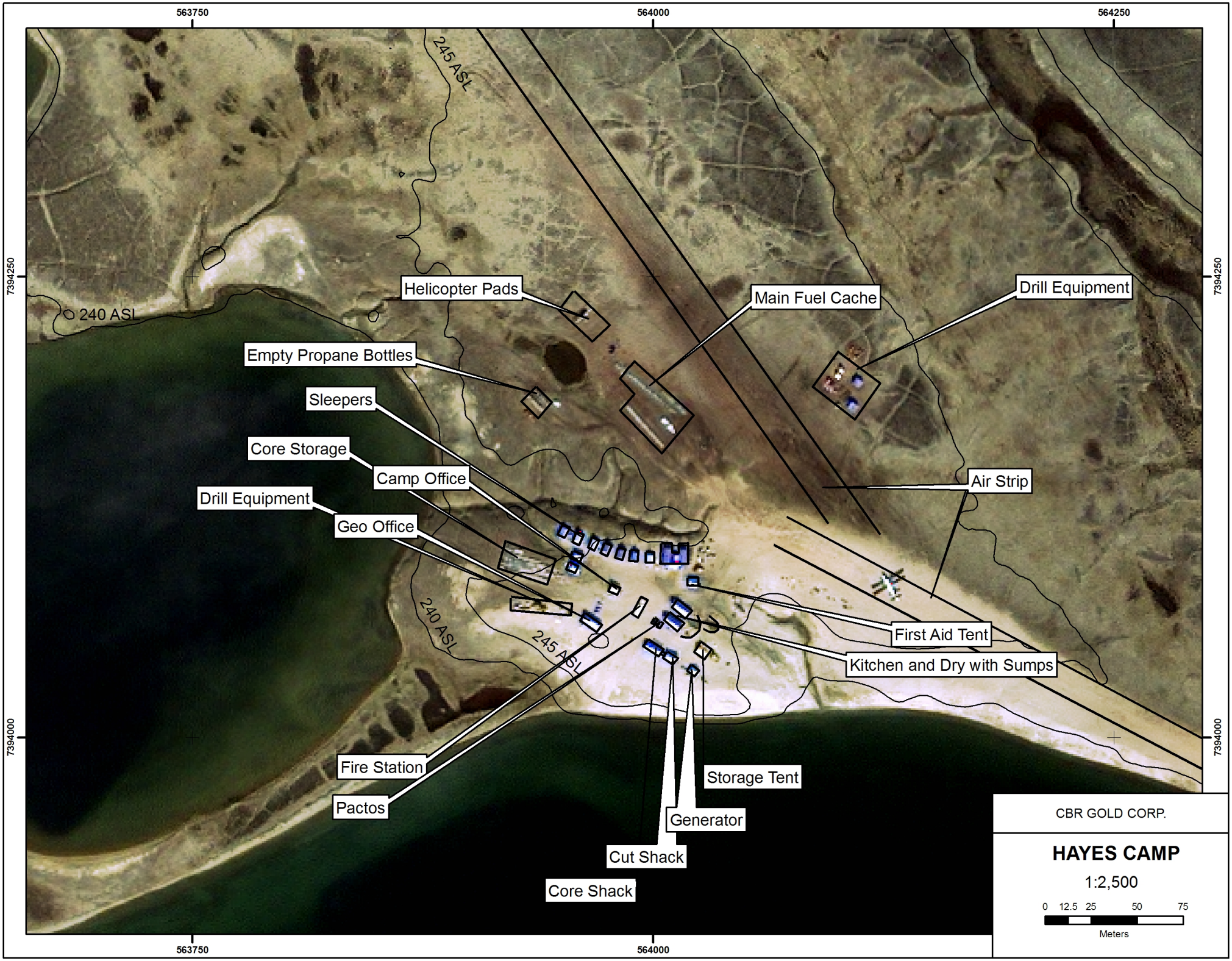
FILE STATUS ☐ OPEN ☐ CLOSED

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

Appendix II

Maps and Figures


Legend
prospects
Camps and Caches
NCG claims and leases
Drainage
IOL Parcels
SUBSURFACE
SURFACE
500000
550000
600000
650000
700000
7550000
7500000
7450000
7400000
7350000
450000
Inuk
Mist
Koffy
Canyon
CRATER CAMP
Knight
Kinngalugjuaq
Peanut
Kinng Gold
Kinng Silver
Castle Rock Area
Ridge
Prospector
Moly
Betwixt
Shamrock
INGOT CAMP
Ledge
Bluff 7
Raven West
Raven
Ziggy
Coyote
Vet
Four Hills
Antler
Cop
Hayes
Burro
Three Bluffs
Muskox
Anuri
Maro
Anuri East
HAYES CAMP
BULLION CAMP
Anuri Lakes
Quartzite Ridge
Ghost
West Plains
IBEX CACHE
WEST PLAINS CACHE
Ibex
NORTH COUNTRY GOLD CORP
COMMITTEE BAY PROJECT
Camps, Caches and Prospect Locations
0 5 10 20 30 40
Kilometers


563750
564000
564250
7394250
7394000
245 ASL
240 ASL
Helicopter Pads
Main Fuel Cache
Drill Equipment
Empty Propane Bottles
Sleepers
Core Storage
Camp Office
Drill Equipment
Geo Office
Air Strip
First Aid Tent
Kitchen and Dry with Sumps
Fire Station
Pactos
Storage Tent
Generator
Cut Shack
Core Shack
CBR GOLD CORP.
HAYES CAMP
1:2,500
0 12.5 25 50 75
Meters

91°34'W 563400 563600 563800 564000 91°33'W 564200 564400 564600 564800 91°32'W 565000 565200

7394800 7394500 7394200 7393900 7393600

66°39'30"N

N

Kugaaruk (220 km)

Proposed Hayes Camp and Airstrip Commercial Lease Boundary

Total Area = 42.48 ha

Airstrip length = 900.00m / 2952.76ft

Core Storage

35kL Diesel Tanks

Generators

Core processing

Office

Workshop

Fuel Cache

Borrow Area 1
Area = 0.40 ha

Waste Water Treatment Plant and Sludge Press

Parking

Sleepers

Water intake

Borrow Area 2
Area = 0.49 ha

Incinerator

Borrow Area 3
Area = 1.24 ha

Proposed 30ft Bridge Location Placement

Proposed Road to Three Bluffs

Repulse Bay (235 km)

Rankin Inlet (430 km)

Legend

- Spill Kit
- Airstrip
- Borrow Area
- Buildings
- Water
- Electrical
- Levelled Pad
- Proposed Road
- Proposed Hayes Camp and Airstrip Commercial Lease Boundary
- Proposed Road Commercial Lease Boundary
- 1m Contours

NORTH COUNTRY GOLD CORP

CL-1-1

PROPOSED HAYES CAMP AND AIRSTRIP COMMERCIAL LEASE BOUNDARY

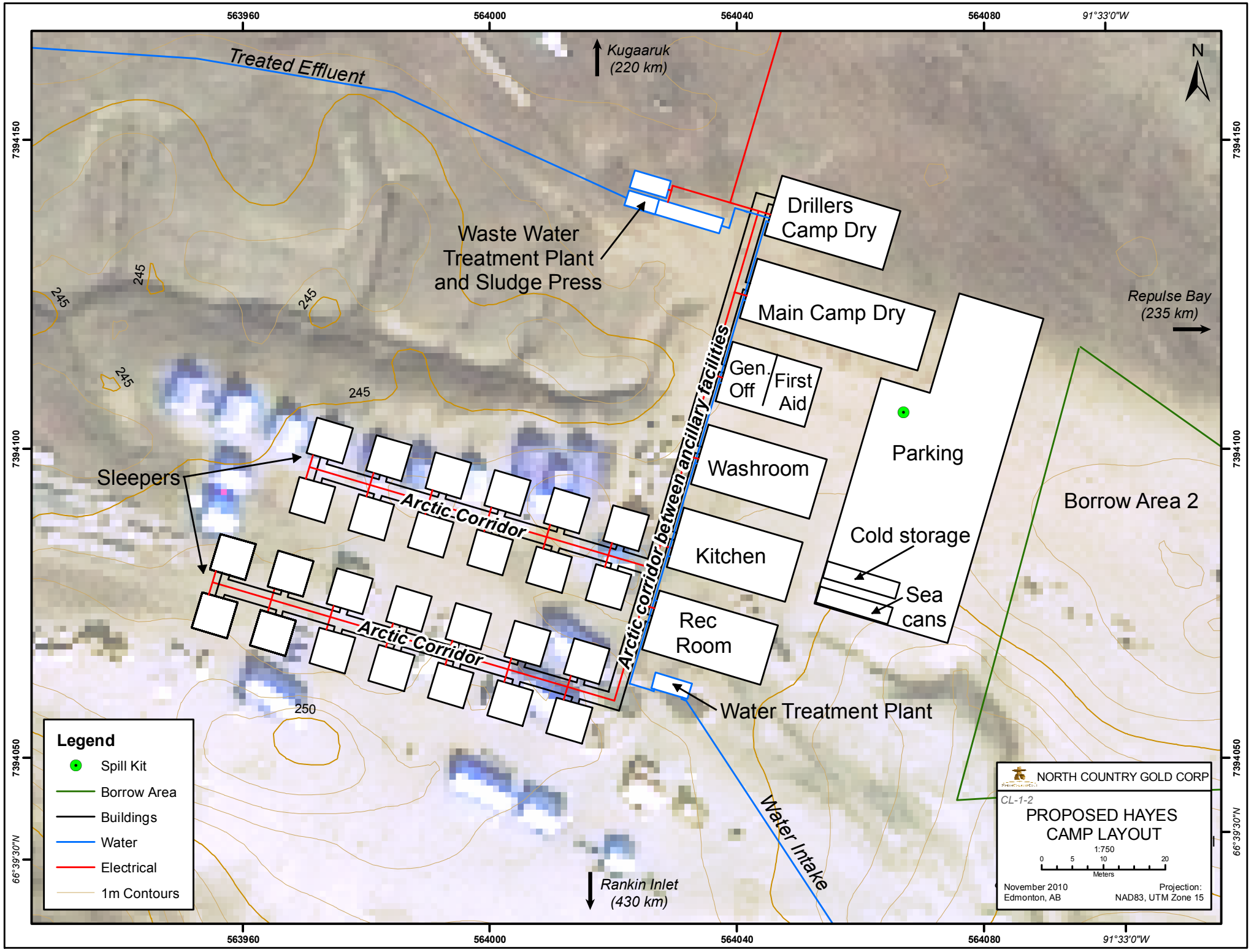
1:5,000

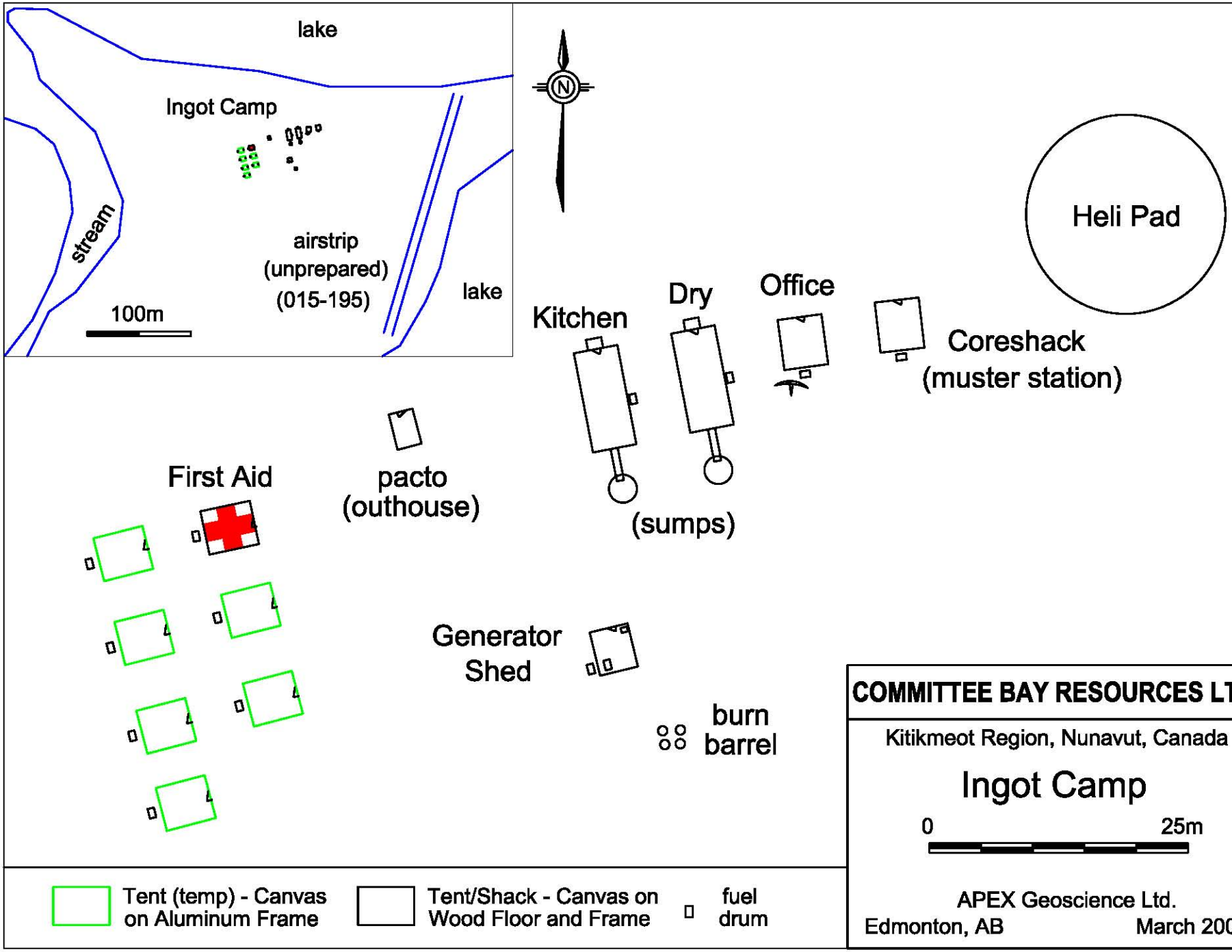
0 62.5 125 250

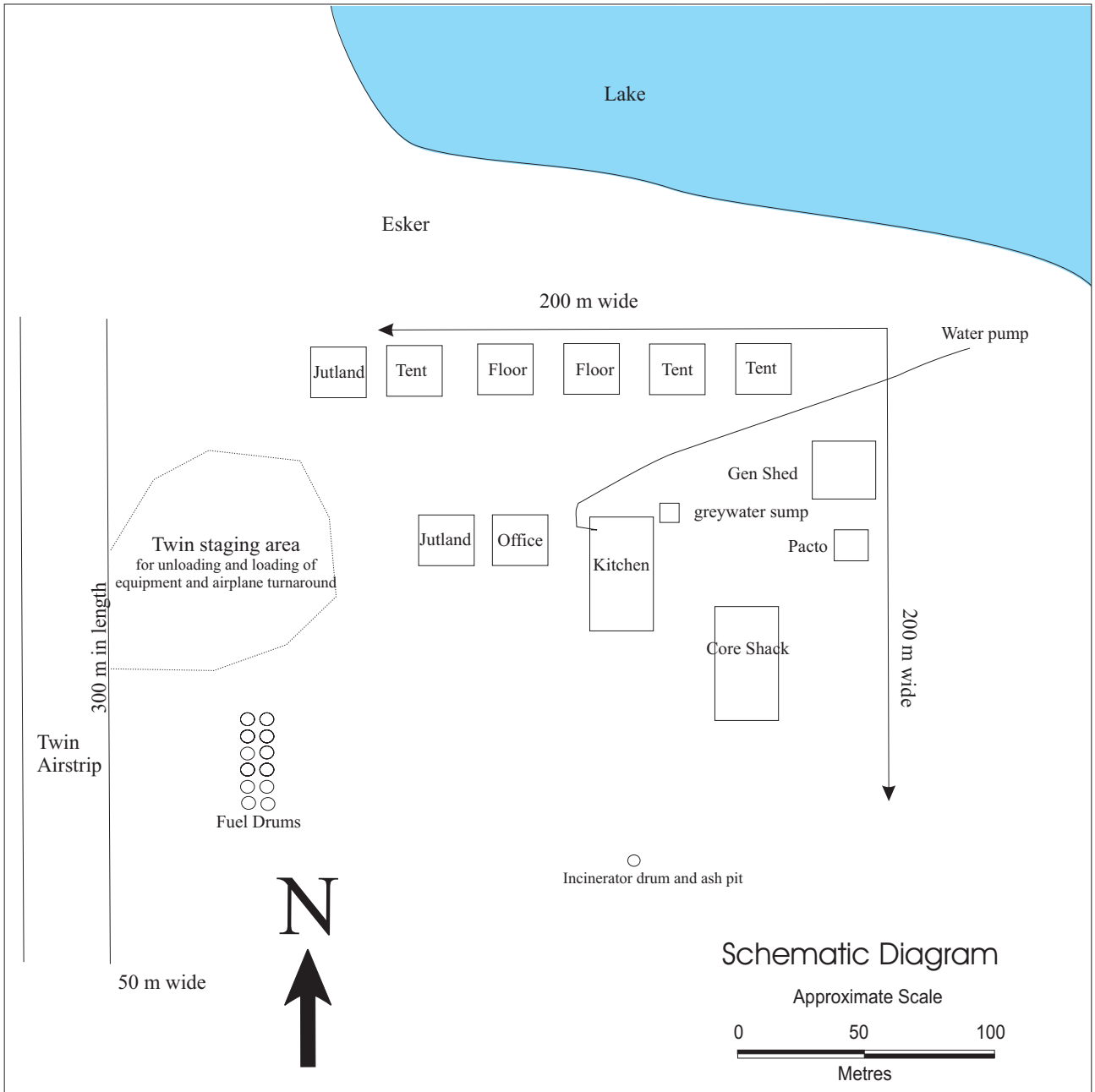
Meters

November 2010
Edmonton, AB

Projection:
NAD83, UTM Zone 15

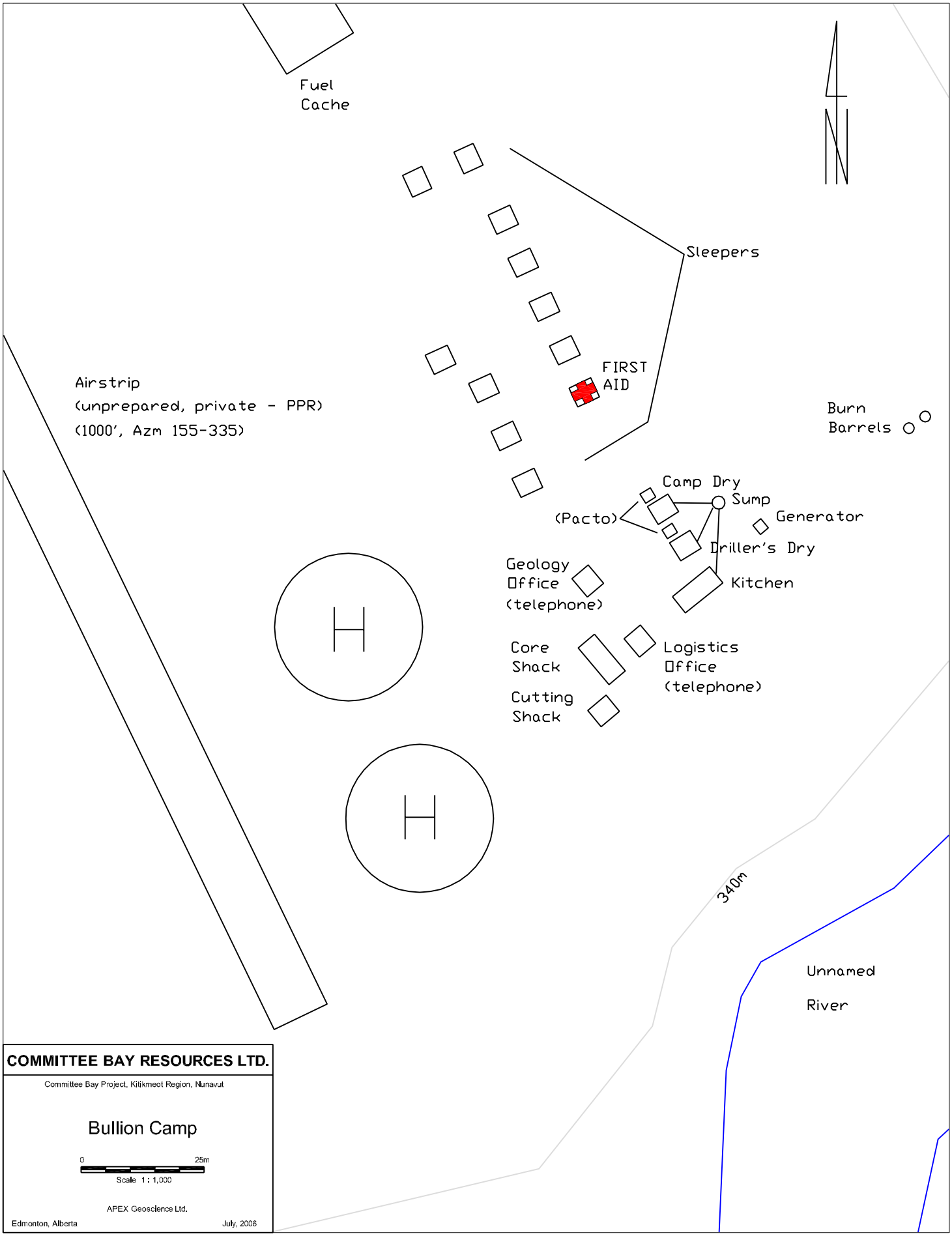

563960
564000
564040
564080
91°33'0"W
7394150
7394100
7394050
66°39'30"N
Treated Effluent
Kugaaruk
(220 km)
N
Waste Water
Treatment Plant
and Sludge Press
Drillers
Camp Dry
Main Camp Dry
Repulse Bay
(235 km)
Gen.
Off
First
Aid
Parking
Washroom
Kitchen
Rec
Room
Cold storage
Sea
cans
Borrow Area 2
Sleepers
Arctic Corridor
Arctic Corridor
Arctic corridor between ancillary facilities
245
250
Water Treatment Plant
Water Intake
Rankin Inlet
(430 km)
Legend
Spill Kit
Borrow Area
Buildings
Water
Electrical
1m Contours
NORTH COUNTRY GOLD CORP
CL-1-2
PROPOSED HAYES
CAMP LAYOUT
1:750
0 5 10 20
Meters
November 2010
Edmonton, AB
Projection:
NAD83, UTM Zone 15


lake
Ingot Camp
stream
airstrip
(unprepared)
(015-195)
lake
100m
N
Heli Pad
Kitchen
Dry
Office
Coreshack
(muster station)
First Aid
pacto
(outhouse)
(sumps)
Generator
Shed
burn
barrel
Tent (temp) - Canvas
on Aluminum Frame
Tent/Shack - Canvas on
Wood Floor and Frame
fuel
drum
COMMITTEE BAY RESOURCES LTD.
Kitikmeot Region, Nunavut, Canada
Ingot Camp
0
25m
APEX Geoscience Ltd.
Edmonton, AB
March 2007



Crater Lake Camp and Airstrip Layout

The camp is used for as a base for grassroots mineral exploration, with Twin Otter and/or helipcopter support. The Camp and Airstrip were built in 1997 and has since been used intermittently during the summer exploration season. The airstrip is a natural gravel strip that was originally hand picked to remove larger boudlers. No mechanically strip preparation was required for Twin Otters equipped with tundra tyres. Equipment (fuel, lumber, staking posts, etc) and personnel and crew members have been mobilised in and out of camp using the airstrip and/or helicopters.



COMMITTEE BAY RESOURCES LTD.

Committee Bay Project, Kitikmeot Region, Nunavut

Bullion Camp

0 25m

Scale 1 : 1,000

APEX Geoscience Ltd.

Edmonton, Alberta July, 2008

Appendix III

Completing the Spill Report Form

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 environment: 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**.

Appendix IV

MSDS Sheets

MATERIAL SAFETY DATA SHEET

Product Name:
Diesel Fuel (3092)

SECTION 1 – PRODUCT IDENTIFICATION AND USE

Product name Diesel Fuel
Chemical name None
Common names and synonyms API No. 2 fuel oil. Home heating oil No. 2. Number 2 burner oil.
Product use Fuel
WHMIS classification Combustible liquid Class B Div 3
(Very) toxic Class D Div 1 Subdivision A – sulphur (S)-containing, or Div 2 Subdivision B – no S

PIN # UN 1202
TDG, DOT class Class 3
Packing group III
Shipping Name Diesel Fuel

Hazard codes

NFPA	Health	4 for S-containing. 1 if no S	**HMIS**	Health	4 for S-containing. 1 if no S
	Flammability	2		Flammability	2
	Reactivity	0		Reactivity	0

NFPA & HMIS Ratings: 0=Insignificant/No Hazard. 1=Slight Hazard. 2=Moderate Hazard. 3=High/Serious Hazard. 4=Extreme/Severe Hazard.

Supplier Irving Oil Limited, Refining Division
Box 1260, Saint John
New Brunswick Canada E2L 4H6

Phone (506) 202-2000
Emergency (Chemtrec) 1-800-424-9300
Refinery (506) 202-3000

SECTION 2 – HAZARDOUS INGREDIENTS

Ingredients	**CAS#**	**Wt** (%)	**ACGIH-TLVs** (2004)	**OSHA PELs** (2004) (general industry)	**NIOSH RELs** (2004)	**LD_{50}** (rat, oral)	**LC_{50}** (rat, 4 hours)
Diesel fuel	68476-30-2	100	100 mg/m^3 TWA (vapour & aerosol)	NAv for this product name or CAS#		>5 g/kg	~5g/m^3
May contain:							
Benzene	71-43-2	Trace	0.5 ppm TWA 2.5 ppm STEL	10 ppm TWA 25 ppm CEILING 50 ppm PEAK	0.1 ppm TWA 1.0 ppm STEL	0.9 g/kg	13,200 ppm
Polycyclic aromatic hydrocarbons (PAHs)	Various	Up to 10	Various	Various	Various	Various	Various
which may include:							
Naphthalene	91-20-3	Trace	10 ppm TWA 15 ppm STEL	10 ppm TWA	10 ppm TWA 15 ppm STEL	0.49 g/kg	>170 mg/m^3
May also contain:							
Sulphur	7704-34-9	Varied	NAv	NAv	NAv	>0.008 g/kg	NAv
which may result in the evolution of:							
Hydrogen sulphide (H_2S)	7783-04-6	NAp	10 ppm TWA 15 ppm STEL	20 ppm CEILING 50 ppm PEAK	10 ppm CEILING	NAp	444 ppm

Product may also contain dye, at concentrations well below the lowest reporting limit, i.e., 0.1%.

Diesel fuel is a complex mixture of hydrocarbons. Its exact composition depends on the source of the crude oil from which it was produced and the refining methods used. Diesel fuel contains hundreds of individual organic chemicals. This section identifies only some of the well-known chemical constituents.

SECTION 3 – PHYSICAL DATA

Form Slightly viscous, oily, liquid
Colour Yellowish-brown
Odour Rotten eggs if sulphur present; kerosene-like if sulphur-free
Note: H_2S deadens the sense of smell. Absence of rotten egg smell does not mean absence of H_2S.
Odour threshold <0.15 ppm for H_2S. Not available for sulphur-free product.
Coefficient of water/oil distribution 3.3 to 7.06 (Log K_{ow})

Specific gravity 0.830 to 0.879 @ 20˚C
Vapour density NAv
Vapour pressure 2.12 to 26.4 mm Hg @ 21˚C
Evaporation rate NAv
Boiling point 160 to 358˚C (321 to 676˚F)
Freezing point NAv
pH NAp

SECTION 4 – FIRE AND EXPLOSION HAZARDS

Flammability ☒ Yes ☐ No **Conditions** Easily ignited by heat, sparks or flames.
Flash point 38 to 54˚C (100 to 130˚F) (cc) **Auto ignition temperature** 257°C (494˚F)
Lower flammable limit 0.6 to 1.3% **Upper flammable limit** 6 to 7.5%
Explosion data: Sensitivity to: **Mechanical impact** Not expected to be sensitive **Static discharge** Vapour: yes
Means of extinction In general, do not extinguish fire unless flow can be stopped. Use carbon dioxide, dry chemical, or foam. Cool containers with flooding quantities of water until well after the fire is out.
Special precautions Vapour is heavier than air. It will spread along the ground & collect in low or confined areas (sewers, basements). Travels to source of ignition and flashes back. Containers may explode when heated.
Hazardous combustion products Carbon monoxide. Nitrogen oxides. PAHs and other aromatic hydrocarbons. H_2S and sulphur dioxide (SO_2) if product contains sulphur.

UNITED LABORATORIES — MATERIAL SAFETY DATA SHEET

320 37th Avenue • St. Charles, Illinois 60174 • To Reorder, Call 800-323-2594

PRODUCT IDENTIFICATION
UNITED 923
HYDRASLIK SAE 10W

USE / DESCRIPTION
Hydraulic Oil

REVISION DATE
April 29, 2002

FOR MEDICAL AND TRANSPORTATION EMERGENCIES:
INFOTRAC: 800-535-5053

HEALTH (0 = Maximum Safety) — 1

Always follow Label Directions and Cautions.

4 Extreme. **3** High. **2** Moderate. **1** Slight. **0** Minimal.

See Health Hazard Data Section of this M.S.D.S. for more detailed information.

FLAMMABILITY (0 = Maximum Safety) — 1

Susceptibility of Material to Burning.

4 Extremely flammable.
3 Ignites at normal temperature.
2 Ignites when moderately heated.
1 Must be preheated to burn.
0 Will not burn.

REACTIVITY (0 = Maximum Safety) — 0

Susceptible to Release of Energy.

4 May detonate-vacate area if Materials are exposed to fire.
3 Strong shock of heat may detonate-use monitors from behind explosion resistant barriers.
2 Violent chemical change possible-use hose stream from distance
1 Unstable if heated-use precaution.
0 Normally stable.

PERSONAL PROTECTION

HAZARDOUS COMPONENTS
IDENTITY, EXPOSURE LIMITS AND S.A.R.A. TITLE III INFORMATION

HAZARDOUS COMPONENTS	CAS NUMBER	ACGIH TWA	ACGIH STEL	OSHA PEL	OTHER RECOMMENDED LIMITS	S.A.R.A. TITLE III QUANTITIES
Petroleum Hydrocarbon Blend	64742-58-1	5 mg/m³*	Not established	5 mg/m³*	NIOSH STEL 10 mg/m³*	None
	64742-54-7	5 mg/m³*	Not established	5 mg/m³*	NIOSH STEL 10 mg/m³*	None
	64742-57-0	5 mg/m³*	Not established	5 mg/m³*	NIOSH STEL 10 mg/m³*	None

* These values are for oil mist. There is little likelihood of mist-formation under normal use of this product.

PHYSICAL / CHEMICAL CHARACTERISTICS

BOILING POINT
Above 350°F.

SPECIFIC GRAVITY (H_20 = 1)
Less than 1.0

VAPOR PRESSURE (mm Hg.)
(At 77° F.) Not determined

MELTING POINT
Not determined

VAPOR DENSITY (Air = 1)
Not determined

EVAPORATION RATE
(Ether = 1) Slower

SOLUBILITY IN WATER
Negligible

VOLATILE ORGANIC COMPOUNDS (V.O.C.)
(Pounds Per Gallon Of Product) Negligible

APPEARANCE AND ODOR
Red liquid with mild odor.

pH
Not applicable

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used)	FLAMMABLE LIMITS	LEL	UEL
Over 200°F	Not determined	Not determined	Not determined

EXTINGUISHING MEDIA
Foam, dry chemical, carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES
Use water stream to cool fire-exposed containers. Burning product may float on water floods. Prevent runoff from entering sewers, streams or public water courses. Firefighters should wear full protective equipment and NIOSH-approved self-contained breathing apparatus in any indoor fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Avoid contact with strong oxidants, heat, sparks and flame.

(CONTINUED ON REVERSE SIDE)

REACTIVITY DATA

STABILITY: **STABLE** [X] **UNSTABLE** [ ]

CONDITIONS TO AVOID
None known.

INCOMPATIBILITY (Materials To Avoid)
Avoid strong oxidizing agents.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS
When heated strongly, as in a fire, this product may produce oxides of carbon, sulfur, hydrogen chloride, phosphorus.

HAZARDOUS POLYMERIZATION: **WILL NOT OCCUR** [X] **MAY OCCUR** [ ]

CONDITIONS TO AVOID
None known

HEALTH HAZARD DATA

HEALTH HAZARDS
EYES: May result in eye irritation. SKIN: May result in skin irritation. INHALATION: Inhalation of high vapor concentrations at elevated temperatures, may result in respiratory irritation. IF SWALLOWED: May result in gastrointestinal tract irritation.

CARCINOGENICITY: **NTP?** No **IARC MONOGRAPHS?** No **OSHA REGULATED?** No

This product contains a chemical known to the state of California to cause cancer or reproductive toxicity? No

SIGNS AND SYMPTOMS OF OVEREXPOSURE
EYES: Irritation SKIN: Irritation INHALATION: Irritation IF SWALLOWED: Gastrointestinal tract irritation

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY OVEREXPOSURE
None known

TARGET ORGANS:
Skin

EMERGENCY AND FIRST AID PROCEDURES
EYES: Flush with water for 15 minutes while holding eye lids open. If irritation persists, call a physician or poison control center.

SKIN: Wash with soap and water. If irritation persists, call a physician or poison control center. INHALATION: Remove to fresh air. If breathing difficulties arise, call a physician or poison control center.. IF SWALLOWED: DO NOT induce vomiting. Call a physician or poison control center.

PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Prevent entry into sewers or waterways by diking. Absorb small amounts using inert material. Place in a suitable container for disposal.

WASTE DISPOSAL METHOD
Consult local, state or federal authorities for proper disposal guidelines.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Keep containers closed when not in use. Avoid eye and skin contact. Store away from heat, sparks, flame and strong oxidants.

Keep out of reach of children.

CONTROL MEASURES
FOR USE WHERE SIGNIFICANT EYE, SKIN OR INHALATION EXPOSURE IS LIKELY

RESPIRATORY PROTECTION (Specify Type)
If TLV is exceeded, use NIOSH/MSHA approved respirator for oil mists.

VENTILATION: **MECHANICAL (General)** Normally not required

LOCAL EXHAUST Generally adequate

PROTECTIVE GLOVES
Nitrile, neoprene or oil resistant gloves are recommended.

EYE PROTECTION
Safety glasses are recommended

OTHER PROTECTIVE CLOTHING OR EQUIPMENT
Oil resistant apron is recommended to prevent contamination.

WORK HYGENIC PRACTICES
Remove contaminated clothing and launder before reusing. Wash hands and face with soap and water after using this product.

UNITED LABORATORIES — MATERIAL SAFETY DATA SHEET

320 37th Avenue • St. Charles, Illinois 60174 • To Reorder, Call 800-323-2594

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UNITED 923
HYDRASLIK SAE 10W

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3 Ignites at normal temperature.
2 Ignites when moderately heated.
1 Must be preheated to burn.
0 Will not burn.

REACTIVITY (0 = Maximum Safety) — 0

Susceptible to Release of Energy.

4 May detonate-vacate area if Materials are exposed to fire.
3 Strong shock of heat may detonate-use monitors from behind explosion resistant barriers.
2 Violent chemical change possible-use hose stream from distance
1 Unstable if heated-use precaution.
0 Normally stable.

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IDENTITY, EXPOSURE LIMITS AND S.A.R.A. TITLE III INFORMATION

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	64742-54-7	5 mg/m³*	Not established	5 mg/m³*	NIOSH STEL 10 mg/m³*	None
	64742-57-0	5 mg/m³*	Not established	5 mg/m³*	NIOSH STEL 10 mg/m³*	None

* These values are for oil mist. There is little likelihood of mist-formation under normal use of this product.

PHYSICAL / CHEMICAL CHARACTERISTICS

BOILING POINT
Above 350°F.

SPECIFIC GRAVITY (H_20 = 1)
Less than 1.0

VAPOR PRESSURE (mm Hg.)
(At 77° F.) Not determined

MELTING POINT
Not determined

VAPOR DENSITY (Air = 1)
Not determined

EVAPORATION RATE
(Ether = 1) Slower

SOLUBILITY IN WATER
Negligible

VOLATILE ORGANIC COMPOUNDS (V.O.C.)
(Pounds Per Gallon Of Product) Negligible

APPEARANCE AND ODOR
Red liquid with mild odor.

pH
Not applicable

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used)	FLAMMABLE LIMITS	LEL	UEL
Over 200°F	Not determined	Not determined	Not determined

EXTINGUISHING MEDIA
Foam, dry chemical, carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES
Use water stream to cool fire-exposed containers. Burning product may float on water floods. Prevent runoff from entering sewers, streams or public water courses. Firefighters should wear full protective equipment and NIOSH-approved self-contained breathing apparatus in any indoor fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Avoid contact with strong oxidants, heat, sparks and flame.

(CONTINUED ON REVERSE SIDE)

REACTIVITY DATA

STABILITY: **STABLE** [X] **UNSTABLE** [ ]

CONDITIONS TO AVOID
None known.

INCOMPATIBILITY (Materials To Avoid)
Avoid strong oxidizing agents.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS
When heated strongly, as in a fire, this product may produce oxides of carbon, sulfur, hydrogen chloride, phosphorus.

HAZARDOUS POLYMERIZATION: **WILL NOT OCCUR** [X] **MAY OCCUR** [ ]

CONDITIONS TO AVOID
None known

HEALTH HAZARD DATA

HEALTH HAZARDS
EYES: May result in eye irritation. SKIN: May result in skin irritation. INHALATION: Inhalation of high vapor concentrations at elevated temperatures, may result in respiratory irritation. IF SWALLOWED: May result in gastrointestinal tract irritation.

CARCINOGENICITY: **NTP?** No **IARC MONOGRAPHS?** No **OSHA REGULATED?** No

This product contains a chemical known to the state of California to cause cancer or reproductive toxicity? No

SIGNS AND SYMPTOMS OF OVEREXPOSURE
EYES: Irritation SKIN: Irritation INHALATION: Irritation IF SWALLOWED: Gastrointestinal tract irritation

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY OVEREXPOSURE
None known

TARGET ORGANS:
Skin

EMERGENCY AND FIRST AID PROCEDURES
EYES: Flush with water for 15 minutes while holding eye lids open. If irritation persists, call a physician or poison control center.

SKIN: Wash with soap and water. If irritation persists, call a physician or poison control center. INHALATION: Remove to fresh air. If breathing difficulties arise, call a physician or poison control center.. IF SWALLOWED: DO NOT induce vomiting. Call a physician or poison control center.

PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Prevent entry into sewers or waterways by diking. Absorb small amounts using inert material. Place in a suitable container for disposal.

WASTE DISPOSAL METHOD
Consult local, state or federal authorities for proper disposal guidelines.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Keep containers closed when not in use. Avoid eye and skin contact. Store away from heat, sparks, flame and strong oxidants.

Keep out of reach of children.

CONTROL MEASURES
FOR USE WHERE SIGNIFICANT EYE, SKIN OR INHALATION EXPOSURE IS LIKELY

RESPIRATORY PROTECTION (Specify Type)
If TLV is exceeded, use NIOSH/MSHA approved respirator for oil mists.

VENTILATION: **MECHANICAL (General)** Normally not required

LOCAL EXHAUST Generally adequate

PROTECTIVE GLOVES
Nitrile, neoprene or oil resistant gloves are recommended.

EYE PROTECTION
Safety glasses are recommended

OTHER PROTECTIVE CLOTHING OR EQUIPMENT
Oil resistant apron is recommended to prevent contamination.

WORK HYGENIC PRACTICES
Remove contaminated clothing and launder before reusing. Wash hands and face with soap and water after using this product.

MATERIAL SAFETY DATA SHEET

SECTION 1 – PRODUCT INFORMATION

Product Name:	Propane
Trade Name:	LPG (Liquefied Petroleum Gas), LP-Gas
Chemical Formula:	C_3H_8
WHMIS Classification:	Class A – Compressed Gas Class B, Division 1 – Flammable Gas

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

24-Hour Emergency Contact: Canutec (613) 996-6666

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	CASE NO.	% VOLUME (v/v)	LD_{50} (RAT, ORAL)
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 ethyl mercaptan 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 T emperature: 432°C

Hazardous Combustion Products: 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 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 T o A void: 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: Skin Contact, Eye Contact, Inhalation

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: Contact with Liquefied Petroleum Gas may cause frostbite or cold burns. Propane acts as a simple asphyxiant as oxygen content in air is displaced by the propane. At increasing concentration levels, propane may cause dizziness, headaches, loss of coordination, fatigue, unconsciousness and death.

Chronic Exposure: No reported effects from long term low level exposure.

Sensitization to Product: Not known to be a sensitizer.

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.

Other Toxicological Effects: None

SECTION 7 – PREVENTATIVE MEASURES

Eyes:	Safety glasses or chemical goggles 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:	Use in well-ventilated areas. Use with explosion proof mechanical ventilation in confined spaces or poorly ventilated areas.

SECTION 8 – EMERGENCY AND FIRST AID PROCEDURES

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 if 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: Liquefied Petroleum Gas (Propane)

PIN Number: UN1075

SECTION 10 – PREPARATION INFORMATION

Prepared by: Superior Propane
Health Safety and Environment Team

Telephone: (403) 730-7500
Revision: November 1, 2006
Supersedes: May 9, 2005

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**	**Code**	W219 SAP: 150, 151, 152
Synonym	Jet B; Jet B DI; JP-4; Jet F-40; NATO F-40; Turbine Fuel, Aviation, Wide Cut Type (CAN/CGSB-3.22).	**Validated on**	**2/8/2005.**
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	Used as aviation turbine fuel. May contain a fuel system icing inhibitor.		

Section 2. Composition and Information on Ingredients

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

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	Flammable liquid. Exercise caution when handling this material. 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. May cause cancer. May cause teratogenicity/embryotoxicity. For more information refer to Section 11 of this MSDS.

Section 4. First Aid Measures

Eye Contact	Quickly and gently blot or brush away chemical. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 20 minutes or until the chemical is removed, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. Obtain medical attention immediately.
Skin Contact	Quickly and gently, blot or brush away excess chemical. Wash gently and thoroughly with warm water and non-abrasive soap for 5 minutes or until chemical is removed.
Inhalation	Take proper precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment). Remove source of contamination or move victim to fresh air. If breathing is difficult, oxygen may be beneficial if administered by trained personnel, preferably on a doctor's advice. DO NOT allow victim to move about unnecessarily. Immediately transport victim to an emergency care facility.

Continued on Next Page

Ingestion	NEVER give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 240 to 300 mL (8 to 10 oz) of water to dilute material in stomach. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Repeat administration of water.
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.		
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	IN THE EVENT OF A LARGE SPILL CONSIDER THE FOLLOWING CONTROL MEASURES: Consult current National Emergency Response Guide Book (NAERG) for appropriate spill measures if necessary. Evacuate non-essential personnel. Extinguish all ignition sources. Ventilate area. Stop leak if safe to do so. Avoid contact with spilled material. Do not allow spilled material to enter sewer systems as vapours may accumulate and may cause an explosion/fire hazard. If spilled in a confined space, ensure appropriate confined space entry protocols are followed. Ensure clean-up personnel wear appropriate personal protective equipment. Use appropriate inert absorbent material to absorb spilled product. Do not use paper or other flammable materials to absorb product. Collect used absorbent for later disposal. Avoid breathing vapours or mists of material. Notify appropriate authorities immediately.

Section 7. Handling and Storage

Handling	FLAMMABLE MATERIAL. Handle with care. Avoid contact with any sources of ignition, flames, heat, and sparks. Wear proper personal protective equipment (See Section 8). Ensure all equipment is grounded/bonded. Avoid confined spaces and areas with poor ventilation. 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.
Storage	Store away from heat and sources of ignition. Store away from incompatible and reactive materials (See section 5 and 10). Ensure the storage containers are grounded/bonded. 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	As a minimum, safety glasses with side shields should be worn when handling this material.
Body	If this material may come into contact with the body during handling and use, we recommend wearing appropriate protective clothing to prevent contact with the skin. (Contact your PPE provider for more information).
Respiratory	A NIOSH-approved air-purifying respirator with an organic vapour cartridge or canister with a dust, fume of mist filter (R, or P series) may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.
Hands	If this material may come in contact with the hands during handling and use, we recommend wearing gloves of the following material(s): neoprene, polyvinyl alcohol (PVA), and fluoro-elastomer. Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns.
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.

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	Can react with strong oxidizing agents, uranium hexafluoride, diborane. Incompatible with halogens and halogen compounds.	**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	Acute toxicity information is not available for the product as a whole, therefore, data for some of the ingredients is provided below:

Based on toxicity of similar product.
Acute oral toxicity (LD50): >5000 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. Prolonged or repeated contact may defat and dry skin, and cause dermatitis.
Inhalation Route:	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.
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).
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:	Benzene is tumorigenic by RTECS criteria.
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 contains a component(s) at >= 0.1% that has been shown to cause teratogenicity and/or embryotoxicity in laboratory tests. Therefore, this product is considered to be a teratogen/embryotoxin [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):	EPA/IRIS Class A: human carcinogen.
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	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	FUEL, AVIATION, TURBINE ENGINE, 3, UN1863, PGII (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: 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

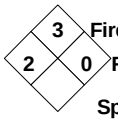
NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN.

DOT (U.S.A) (Pictograms)

HMIS (U.S.A.)

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

NFPA (U.S.A.)



Health **Fire Hazard** **Reactivity** **Specific hazard**

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
CNS - Central Nervous System
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
EPA - Environmental Protection Agency
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
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
RTECS - Registry of Toxic Effects of Chemical Substances
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 - JDW on 2/8/2005.

Internet: www.petro-canada.ca/msds **Fuels & Solvents:** **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**	**Data entry by Product Safety - JDW.**

WESTCOAST DRILLING SUPPLIES LTD.
#6 - 2351 SIMPSON ROAD
RICHMOND, B.C. V6X 2R2
TEL: (604) 278-4954
FAX: (604) 278-4914

Serving the Drilling Industry

EMERGENCY PHONE NO.: (604) 278-4954

MATERIAL SAFETY DATA SHEET

SECTION I: IDENTIFICATION OF PRODUCT

PRODUCT NAME: 550 X POLYMER

CHEMICAL FAMILY: Copolymer of Acrylamide and Sodium Acrylate

PRODUCT USE: Drilling Mud Additive

WHMIS CLASSIFICATION: Not a Controlled Product under WHMIS

WORK PLACE HAZARD: Not Applicable

TRANSPORTATION OF DANGEROUS GOODS (TDGR)

CLASSIFICATION: Not Applicable

PACKAGE GROUP: Not Applicable

PRODUCT IDENTIFICATION NUMBER (PIN): Not Applicable

SECTION II: HAZARDOUS INGREDIENTS

INGREDIENT	PERCENTAGE	CAS NUMBER	LD(50)	LC(50)
No Hazardous Ingredients				

SECTION III: TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY:
[ ] skin, [ ] eye contact, [xxx] inhalation, [ ] ingestion

SKIN CONTACT: Prolonged contact may cause skin irritation or dermatitis in some individuals.

EYE CONTACT: May Cause irritation.

INHALATION: May cause sneezing, slight irritation of nose and throat.

INGESTION: Not available

[illegible] EXPOSURE: Not available

SECTION IV: FIRST AID MEASURES

SKIN CONTACT: Wash exposed area with soap and water. If irritation or abnormalities persist, call a physician.

EYE CONTACT: Immediately flush eyes with water for 15 minutes and call a physician.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

INGESTION: Do not induce vomiting. If conscious, dilute by giving two glasses of water. Call a physician immediately.

SECTION V: PHYSICAL DATA

APPEARANCE AND ODOUR:	White granular solid; faint odour
DENSITY (SPECIFIC GRAVITY):	0.80
BOILING POINT:	Decomposes
MELTING POINT:	Not Applicable
WATER SOLUBILITY:	Soluble
% VOLATILE BY VOLUME:	Not Applicable
EVAPORATION RATE:	Not Applicable
VAPOUR PRESSURE: (MM Hg)	Very Low
VAPOUR DENSITY: (Air = 1)	Not Applicable

SECTION VI: FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: Not Applicable

FLAMMABLE LIMIT: Not Applicable

EXTINGUISHING MEDIA: Dry chemical, foam, CO_2

SPECIAL FIRE FIGHTING PROCEDURES: Use self-contained respirators for fire fighting personnel.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Oxides of carbon and nitrogen and products of incomplete combustion.

SECTION VII: REACTIVITY DATA

STABLE [XXX] INSTABLE: [ ]

INCOMPATIBILITY (CONDITIONS TO AVOID): Strong oxidizing agents and caustic solutions.

HAZARDOUS DECOMPOSITION PRODUCTS: Not Applicable

HAZARDOUS POLYMERIZATION: Will not occur [xxx] May occur [ ]

SECTION VIII: PREVENTATIVE MEASURES

RESPIRATORY PROTECTION: Suggest NIOSH/MESA approved dust mask.

VENTILATION: Ten (10) changes per hour suggested.

PROTECTIVE GLOVES: Suggest plastic or rubber.

EYE PROTECTION: Suggest goggles.

OTHER PROTECTIVE EQUIPMENT: Suggest rubber apron.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Avoid prolonged or frequent contact when handling material. Do not inhale dust or breathe vapour. Keep container closed when not in use. Store in a cool and dry location away from oxidizing and reducing agents.

STEPS TO BE TAKEN IN CASE OF SPILL OR LEAK

Ventilate area. Wear rubber boots, gloves and a self-contained breathing apparatus if ventilation is not adequate. Collect into a waste container. Avoid raising dust. Wash spill site after material pick-up. Water solutions are very slippery. May constitute a hazard following a spill.

WASTE DISPOSAL METHOD

Dispose of waste according to federal, provincial and local regulations.

SECTION IX: PREPARATION

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

Date issued: January 1, 1991
Date Revised:
By: Product Safety Committee

AMENDMENT

HAZARDOUS INGREDIENTS (550 X)

MATERIAL OR COMPONENT	WT%	HAZARD DATA
COPOLYACRYLAMIDE/SODIUM ACRYLATE		NOT CONSIDERED HAZARDOUS

ENVIRONMENTAL

DEGRADABILITY/AQUATIC TOXICITY: N. D.

OCTANOL/WATER PARTITION COEFFICIENT: N. D.

WASTE DISPOSAL METHODS: INCINERATION AND/OR DISPOSAL IN CHEMICAL LANDFILL. DISPOSER MUST COMPLY WITH FEDERAL STATE AND LOCAL DISPOSAL OR DISCHARGE LAWS.

RCRA STATUS OF UNUSED MATERIAL IF DISCARDED: NOT A "HAZARDOUS WASTE"

HAZARDOUS WASTE NUMBER: N. A.

REPORTABLE QUANTITY: EPA 40 CFR (CERCLA 102): N. A.

THRESHOLD PLANNING QUANTITY: EPA 40 CRF 355 (SERA 301-304)" N. A.

TOXIC CHEMICAL RELEASE REPORTING: EPA 40 CFR 372 (SERA 311-313): N. A.

EPA HAZARD CLASSIFICATION CODE: ACUTE - YES CHRONIC - NO
FIRE - NO PRESSURE - NO
REACTIVE - NO

HMIS AND NFPA RATINGS:	HMIS	NFPA
HEALTH	1	1
FLAMMABILITY	0	0
REACTIVITY	1	1
SPECIAL	N.A.	N.A.

WESTCOAST DRILLING SUPPLIES LTD.

#6 - 2351 SIMPSON ROAD
RICHMOND, B.C. V6X 2R2

TEL: (604) 278-4954
FAX: (604) 278-4914

Serving the Drilling Industry

EMERGENCY PHONE NO. (604) 278-4954

MATERIAL SAFETY DATA SHEET

SECTION I: IDENTIFICATION OF PRODUCT

PRODUCT NAME: LINSEED SOAP

CHEMICAL FAMILY: Lubricating grease

WHMIS CLASSIFICATION: Not Regulated

WORK PLACE HAZARD: Not Applicable

TRANSPORTATION OF DANGEROUS GOODS (TDGR)

CLASSIFICATION: Not Available

PACKAGE GROUP: Not Applicable

PRODUCT IDENTIFICATION NUMBER (PIN): Not Applicable (Petroleum Lubricating Grease)

SECTION II: HAZARDOUS INGREDIENTS

INGREDIENT	PERCENTAGE	CAS NUMBER	LD(50)	LC(50)
Linseed Soap	100%	Mixture		

SECTION III: TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY: Information not available

[ ] skin, [ ] eye contact, [xxx] inhalation, [ ] ingestion

SKIN CONTACT: Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis.

EYE CONTACT: Not available

INHALATION: Inhalation of oil mist or vapours from hot grease may cause irritation of the upper respiratory tract. Long term intensive exposure may cause benign lung fibrosis.

INGESTION: Not Available.

CHRONIC OVEREXPOSURE: Not Determined.

IRRITATION INDEX: SKIN: Not Available

SYMPTOMS OF EXPOSURE: Not Available

EXPOSURE INFORMATION: Oil mist (particulate): 5 mg/M³ (TLV/TWA) ACGIH 88/89
10 mg/m³ (TLV/STEL) ACGIH 88/89

SECTION IV: FIRST AID MEASURES

SKIN CONTACT: Remove contaminated clothing. Wash contaminated skin with mild soap and water. Wipe excess from skin.

EYE CONTACT: Flush eyes with water for at least fifteen (15) minutes.

INHALATION: Remove victim from further exposure. Additional first aid treatment is not ordinarily required.

INGESTION: Do not induce vomiting. Obtain medical attention immediately.

OTHER INSTRUCTIONS: None.

SECTION V: PHYSICAL DATA

APPEARANCE AND ODOUR:	Semi-solid brown coloured grease; slight hydrocarbon odour
DENSITY (SPECIFIC GRAVITY):	1.0
BOILING POINT:	100 Degree C
MELTING POINT:	Not Available
WATER SOLUBILITY:	Miscible
% VOLATILE BY VOLUME:	Not Available
EVAPORATION RATE:	Not Available
VAPOUR PRESSURE: (MM Hg)	Not Available
VAPOUR DENSITY: (Air = 1)	Not Available
Ph:	9.5
VISCOSITY:	Not Available

SECTION VI: FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 222°C FLAMMABLE LIMIT: Not Available

AUTO IGNITION TEMP: 343°C

EXTINGUISHING MEDIA: Dry Chemical, Carbon Dioxide CO_2, Foam, Water fog.

SPECIAL FIRE FIGHTING PROCEDURES: No special procedures - Avoid inhalation of smoke. Caution, spilled material is slippery. Use water to cool fire-exposed containers.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None currently known.

SECTION VII: REACTIVITY DATA

STABLE: [yes] INSTABLE: [ ]

INCOMPATIBILITY (CONDITIONS TO AVOID): Not Available

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide; carbon dioxide and dense smoke are produced on combustion. Avoid excessive heat, formation of vapours or mists.

HAZARDOUS POLYMERIZATION: Will not occur [ ] May occur [ ] Not Available

SECTION VIII: PREVENTATIVE MEASURES

RESPIRATORY PROTECTION: Under conditions of high heat use an air purifying respirator (mechanical filter with accompanying organic vapour cartridge)

VENTILATION: Highly recommended for all indoor situations to control fugitive emissions. Concentrations in air should be maintained below the recommended threshold limit value if unprotected personnel are involved.

LOCAL: If oil mist is present or if exposure is exceeded.

MAKE-UP AIR: Should always be supplied to balance air exhausted (either generally or locally).

PROTECTIVE GLOVES: Impervious gloves (viton, nitrile, PVC, neoprene) should be worn at all times when handling this product.

EYE PROTECTION: Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes.

OTHER PROTECTIVE EQUIPMENT: Impervious clothing (apron, coveralls) should be worn in confined workspaces or where the risk of skin exposure is much higher.

PERMISSIBLE CONCENTRATIONS: Not Available

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in a cool, dry, well ventilated area, away from heat and ignition sources, Avoid excessive heat, formation of oil mist, breathing of vapours and mist of hot oil and prolonged or repeated contact with skin. Launder contaminated clothing prior to reuse. Properly dispose of contaminated leather articles, including shoes, that cannot be decontaminated.

STEPS TO BE TAKEN IN CASE OF SPILL OR LEAK

Spilled material is slippery. Isolate hazard area and restrict access. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Contain a land spill by diking. For large spills remove by mechanical means and place in containers. Clean area with appropriate cleaner.
Do not allow product or run off from fire control to enter storm or sanitary sewers, lakes, rivers, streams or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities.

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EMERGENCY PHONE NO. (604) 278-4954

MATERIAL SAFETY DATA SHEET

SECTION I: IDENTIFICATION OF PRODUCT

PRODUCT NAME: BIG BEAR DIAMOND DRILL ROD GREASE

CHEMICAL FAMILY: Hydrocarbon

WHMIS CLASSIFICATION: Not Regulated

WORK PLACE HAZARD: Not Applicable

TRANSPORTATION OF DANGEROUS GOODS (TDGR)

CLASSIFICATION: Not Regulated

PACKAGE GROUP: Not Applicable

PRODUCT IDENTIFICATION NUMBER (PIN): Not Applicable

SECTION II: HAZARDOUS INGREDIENTS

INGREDIENT	PERCENTAGE	CAS NUMBER	LD(50)	LC(50)
Severely hydrotreated naphthenic oils	< 75.00%	64742-52-5	>3 g/kg (Dermal,Rabbit) >5 g/kg (Oral, Rat)	Not Determined
Barium soap	< 35.00%	68201-19-4	Not Determined	

SECTION III: TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY:

[x] skin, [ ] eye contact, [ ] inhalation, [ ] ingestion

SKIN CONTACT: Acute exposure is believed to be minimally irritating.

EYE CONTACT: Acute exposure is believed to be minimally irritating.

INHALATION: Believed to minimally irritating if not in excess of permissable concentrations; see section VIII.

INGESTION: Not Available.

CHRONIC OVEREXPOSURE: Not Determined.

IRRITATION INDEX: SKIN: Believed to be 1.0 - 2.0/8.0 (rabbit); slightly irritating
EYES: Believed to be < 15/110 (rabbit); no appreciable effect

SYMPTOMS OF EXPOSURE: None expected other than possible minor irritation. Considered practically non-toxic.

SECTION IV: FIRST AID MEASURES

SKIN CONTACT: None considered necessary.

EYE CONTACT: As with most foreign materials, should eye contact occur, flush eyes with plenty of water.

INHALATION: None considered necessary.

INGESTION: None considered necessary. Do not induce vomiting.

OTHER INSTRUCTIONS: In some cases of ingestion and/or inhalation, medical attention should be obtained.

SECTION V: PHYSICAL DATA

APPEARANCE AND ODOUR:	Brownish yellow, fibrous grease
DENSITY (SPECIFIC GRAVITY):	> 1.0
BOILING POINT:	700°F
MELTING POINT:	400°F
WATER SOLUBILITY:	Negligible
% VOLATILE BY VOLUME:	Not Determined
EVAPORATION RATE:	Not Determined
VAPOUR PRESSURE: (MM Hg)	Not Determined (low)
VAPOUR DENSITY: (Air = 1)	> 1.0
Ph:	Not Applicable
VISCOSITY:	NLGI No. 3-4 grease

SECTION VI: FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: > 350°F (COC Method) FLAMMABLE LIMIT: Not Determined

EXTINGUISHING MEDIA: According to the National Fire Protection Association Guide, use water spray, Dry Chemical, Foam, Carbon Dioxide CO_2. Water or foam may cause frothing.

SPECIAL FIRE FIGHTING PROCEDURES: Use water to cool fire-exposed containers. If a leak or spill has not ignited, use water spray to disperse the vapours and to provide protection for persons attempting to stop the leak. See Hazardous Decomposition Products, Section VII.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION VII: REACTIVITY DATA

STABLE: [X] INSTABLE: [ ] Info not available

INCOMPATIBILITY (CONDITIONS TO AVOID): Strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: This material decomposes at a high temperature to form carbon monoxide; carbon dioxide, aldehydes and kerones, combustion products of nitrogen and sulphur.

HAZARDOUS POLYMERIZATION: Will not occur [xxx] May occur [ ]

SECTION VIII: PREVENTATIVE MEASURES

RESPIRATORY PROTECTION: None required if exposures are within the permissible concentrations; See below.

VENTILATION: Natural dilution.

PROTECTIVE GLOVES: .Neoprene

EYE PROTECTION: Chemical type goggles or face shield optional.

OTHER PROTECTIVE EQUIPMENT: Standard work clothing and work shoes.

PERMISSIBLE CONCENTRATIONS: AIR: 5 mg/cubic metre of air for mineral oil mist averaged over an 8 hour daily exposure (ACGIH, 1986 - 87)

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Exposed persons should exercise reasonable personal cleanliness; this includes cleansing exposed skin areas several times daily with soap and water and laundering or dry cleaning soiled work clothing at least weekly. Minimum feasible handling temperatures should be maintained. Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.

STEPS TO BE TAKEN IN CASE OF SPILL OR LEAK

Contain spill if possible. Wipe up or absorb on suitable material and shovel up.

WASTE DISPOSAL METHOD

Re-evaluation of the product may be required by the user at the time of disposal, since the product uses, transformations, mixtures and processes may influence waste classification. Disposal should be in accordance with applicable federal, provincial and local regulations.

SECTION IX: PREPARATION

The information contained herein is given in good faith, but no warranty, expressed or implied is made.
Date issued: Sept. 17, 1993 By: Product Safety Committee
Date Revised:

MATERIAL SAFETY DATA SHEET

Product Name:
Jet Fuel A – 1
(3410)

SECTION 1 – PRODUCT IDENTIFICATION AND USE

Product name **Irving Jet Fuel A - 1**
Chemical name None
Common names and synonyms Aviation turbine fuel
Distillate fuel oils, light
Product use Aviation fuel

PIN #, UN # 1863
TDG, DOT class Class 3
Packing group I, II, or III, depending on shipping method
Shipping name Fuel, Aviation, Turbine Engine

WHMIS classification
Combustible liquid Class B Division 3
Toxic material Class D Division 2 Subdivision B

Hazard codes

NFPA	Health	2	**HMIS**	Health	2
	Flammability	2		Flammability	2
	Reactivity	0		Reactivity	0

NFPA & HMIS Ratings: 0=Insignificant/No Hazard. 1=Slight Hazard. 2=Moderate Hazard. 3=High/Serious Hazard. 4=Extreme/Severe Hazard.

Supplier
Irving Oil Limited, Refining Division
Box 1260, Saint John
New Brunswick Canada E2L 4H6

Phone (506) 202-2000
Emergency (Chemtrec) 1-800-424-9300
Refinery (506) 202-3000

SECTION 2 – HAZARDOUS INGREDIENTS

Ingredients	CAS#	Wt (%)	ACGIH-TLVs (2004)	OSHA PELs (2004) (general industry)	NIOSH RELs (2004)	LD_{50} (rat, oral) (g/kg)	LC_{50} (rat, 4 hours)
Jet fuel	8008-20-6	100	200 mg/m^3 TWA (total hydrocarbon vapour)	NAv for this product name or CAS#	100 mg/m^3 TWA	>5	~5g/m^3
May contain:							
Benzene	71-43-2	Trace	0.5 ppm TWA 2.5 ppm STEL	1 ppm TWA 5 ppm STEL	0.1 ppm TWA 1.0 ppm STEL	0.9	13,200 ppm
May also contain:							
Sulphur	7704-34-9	Trace	Not available	Not available	Not available	>0.008	Not available
Which, under certain circumstances, may result in the evolution of:							
Hydrogen sulphide (H_2S)	7783-04-6	Not applicable	10 ppm TWA 15 ppm STEL	20 ppm C	10 ppm C	Not applicable	444 ppm

C means Ceiling.
Jet fuel is a complex mixture of hydrocarbons. Its exact composition depends on the source of the crude oil from which it was produced and the refining methods used. Jet fuel contains hundreds of individual organic chemicals. This section identifies only some of the well-known chemical constituents.

SECTION 3 – PHYSICAL DATA

Form Liquid
Colour Colourless
Odour Kerosene-like, if no sulphur is present
H_2S smells like rotten eggs.
Note: H_2S deadens the sense of smell. Absence of rotten egg odour does not mean absence of H_2S.
Odour threshold 0.55 mg/m^3 for sulphur-free product
<0.15 for H_2S

Specific gravity 0.81 @ 15˚C
Vapour density 4.5 (air = 1)
Vapour pressure 10.5 mm Hg @ 38˚C
Evaporation rate Not available
Boiling point 157 to 261˚C (315 to 501˚F)
Freezing point -47˚C (-53˚F)
pH Not applicable
Coefficient of water/oil distribution 3.3 to >6 (Log P_{oct})

SECTION 4 – FIRE AND EXPLOSION HAZARDS

Flammability ☒ Yes ☐ No **Conditions** Easily ignited by heat, sparks or flames.

Flash point 38 to 72˚C (100 to 162˚F) (cc)
Auto ignition temperature 210°C (410˚F)
Lower flammable limit 0.7%
Upper flammable limit 5%

Explosion data: Sensitivity to: **Mechanical impact** Not expected to be sensitive **Static** Yes

Means of extinction In general, do not extinguish fire unless flow can be stopped. Use carbon dioxide, dry chemical, or foam. Cool containers with flooding quantities of water until well after the fire is out.

Special precautions Vapour is heavier than air. It may travel along the ground and collect in low-lying areas such as tanks, basements sewers. May travel to a source of ignition and flash back. Containers may explode when heated.

Hazardous combustion products Carbon monoxide. Nitrogen oxides. Aromatic hydrocarbons.

SECTION 5 – REACTIVITY INFORMATION

Stability	Stable
Conditions to avoid	Sources of ignition. Static discharges. High temperatures.
Incompatible substances	Oxidizers such as peroxides, nitric acid, and perchlorates.
Hazardous decomposition products	Carbon monoxide, nitrogen oxides. Aromatic hydrocarbons. H_2S and sulphur dioxide (SO_2) may be produced from minor amounts of sulphur in the product.

SECTION 6 – HEALTH HAZARD INFORMATION

Route of Entry ☒ Inhalation ☒ Ingestion ☐ Eye ☒ Skin absorption Jet fuel itself, as well as some components

Hazardous Contact ☒ Eye ☒ Skin contact

Acute exposure Headache and other symptoms of central nervous system (CNS) depression, such as nausea and dizziness, as well as burning sensation in chest following inhalation. Aspiration into the lungs can cause severe pneumonitis (serious lung irritation), chest pain, and/or pulmonary edema (fluid in the lungs). Ingestion may produce nausea, vomiting, and cramping.

Note: H_2S may offgas from the product in confined spaces such as the headspace in tanks, even though the concentration of sulphur in the product is minimal. H_2S is very toxic. At concentrations as low as 1 to 5 ppm, nausea and severe eye irritation may occur. Sense of smell may be impaired at about 20 ppm, with headache and respiratory tract lung irritation. At 250 to 500 ppm, potentially fatal pulmonary edema may occur. Dizziness, sudden (often fatal) collapse, unconsciousness, and death occur at higher concentrations. Pulmonary edema may be delayed as long as 48 hours.

Chronic exposure Dermatitis. Possibly blood and nervous system disorders. Fatigue, and severe nervous and respiratory system symptoms may follow survival of H_2S poisoning.

Carcinogenicity Not classified by EPA, IARC, NTP, or OSHA. ACGIH classifies it as an animal carcinogen with unknown relevance for humans". Exposure to fuel oils during refining is considered "probably carcinogenic to humans". Benzene is a recognized carcinogen.

Mutagenicity Not known to be mutagenic

Irritancy	Skin, eye
Sensitization	Not available
Teratogenicit	Not available
Reproductive toxicity	Not available

Toxicologically synergistic products Other chemicals that cause CNS depression are expected to produce additive or synergistic effects. May increase photosensitizing ability of certain chemicals, such as dinitrochlorobenzene (DNCB).

SECTION 7 – FIRST AID

Inhalation	Move victim to fresh air. Give artificial respiration if breathing has stopped and if a qualified AR administrator is available. Apply CPR if both pulse and breathing have stopped. Obtain medical attention immediately.
Ingestion	Never give anything by mouth if the person is unconscious, rapidly losing consciousness, or convulsing. If the person is conscious, have them drink 8 to 10 ounces of water or milk to dilute the material in the stomach. **Do not** induce vomiting. If vomiting occurs spontaneously, have the person lean forward to avoid aspiration. Obtain medical attention immediately.
Eye	If irritation occurs, flush eye with lukewarm, gently flowing fresh water for at least 10 minutes.
Skin	Quickly and gently blot away excess chemical. Gently remove contaminated clothing and shoes under running water. Wash gently and thoroughly with water and non-abrasive soap. Obtain medical assistance.

SECTION 8 – PRECAUTIONARY MEASURES

Do not attempt rescue of an H_2S knockdown victim without the use of proper respiratory protective equipment.

Personal protective equipment

Gloves	Nitrile, Viton™, polyethylene preferred.
Eye	Chemical safety goggle or face shield, as a good general safety practice.
Respiratory	NIOSH-approved. SCBA or airline respirator with escape cylinder for confined spaces or work with sulphur-containing product. If an air-purifying respirator is appropriate, use organic vapour cartridges. A qualified occupational health and safety professional should advise on respirator selection.
Clothing & footwear	Coveralls to prevent skin contact with product. If clothing or footwear becomes contaminated with product, completely decontaminate it before re-use, or discard it.

Engineering controls	Enclose processes. Avoid generating mists. Use local exhaust ventilation to remove vapour at its site of generation. Handle laboratory samples in a fume hood. Use mechanical ventilation in confined spaces.
Handling procedures & equipment	Keep containers closed. Keep work area free of ignition sources. Use non-sparking equipment, explosion-proof ventilation, and intrinsically safe electrical equipment. Ground handling equipment. Have clean emergency eyewash and shower readily available in the work area.
Leak & spill Procedure	Keep unauthorized persons away. Eliminate all sources of ignition. Ventilate area. Stop leak if it can be done safely. Prevent entry into sewers, waterways, or confined spaces. Absorb or cover with dry earth, sand or other non-combustible material and use clean, non-sparking tools to transfer to container.
Waste disposal	Consult local authorities for advice.
Storage	Cool, dry, well-ventilated area. No ignition sources. Containers should be vented and have flame arresters.
Shipping	Stable during transport. May be transported hot.

SECTION 9 – PREPARATION DATE OF MSDS

Prepared by	Irving Oil Limited, Refining Division	**Phone**	(506) 202-3000
Revision date	November 16, 2006	**To re-order MSDS, phone**	(506) 202-2000

MATERIAL SAFETY DATA SHEET

Product Name:
Regular Gasoline
(3392)

SECTION 1 – PRODUCT IDENTIFICATION AND USE

Product name **Regular Gasoline** *Note: All Irving gasolines are unleaded*
Chemical name Natural gasoline
Common names and synonyms Automotive gasoline
Product use Fuel
WHMIS classification Flammable liquid Class B Division 2
Very toxic Class D Division 2 Subdivision A

PIN #/ UN 1203
TDG, DOT class Class 3
Packing group II
Shipping name Gasoline; Motor spirit; or Petrol

Hazard codes

NFPA	Health	1	**HMIS**	Health	1
	Flammability	3		Flammability	3
	Reactivity	0		Reactivity	0

NFPA & HMIS Ratings: 0=Insignificant/No Hazard. 1=Slight Hazard. 2=Moderate Hazard. 3=High/Serious Hazard. 4=Extreme/Severe Hazard.

Supplier Irving Oil Limited, Refining Division
Box 1260, Saint John
New Brunswick Canada E2L 4H6

Phone (506) 202-2000
Emergency (Chemtrec) 1-800-424-9300
Refinery (506) 202-3000

SECTION 2 – HAZARDOUS INGREDIENTS

Ingredients	CAS#	Concentration (%)	ACGIH TLVs (2008) (ppm)		OSHA PELs (transitional) (ppm)				NIOSH RELs (ppm)		LD_{50} (rat, oral) (g/kg)	LC_{50} (rat, 4 hr)
			TWA	STEL	TWA	STEL	C	P	TWA	STEL		
Gasoline	8006-61-9	100	300	500	Not available				Not available		13.6	300 g/m^3
Contains a variety of aromatic and aliphatic hydrocarbons including:												
Benzene	71-43-2	Not available	0.5	2.5	10	None	25	50	0.1	1.0	0.9	113,200 ppm
n-Hexane	110-54-3	Not available	50	None	500	None	None	None	50	None	25	48,000 ppm
Toluene	108-88-3	Not available	20	None	200	None	300	500	100	150	0.6	49 g/m^3

Gasoline is a complex mixture of hydrocarbons. Its exact composition depends on the source of the crude oil from which it was produced and the refining methods used. Gasoline contains hundreds of individual organic chemicals. This section identifies only some of the well-known chemical constituents.
TWA means Time-Weighted Average C means Ceiling
STEL means Short Term Exposure Limit P means Peak

SECTION 3 – PHYSICAL DATA

Form Liquid
Colour Clear to yellow
Odour Characteristic odour
Odour threshold About 0.1 ppm
pH Not applicable
Coefficient of water/oil distribution Not available. Expected to be >1

Specific gravity Typically 0.72 to 0.76 @ 15˚C
Vapour density Typically 2.5 to 3.7 (air = 1)
Vapour pressure Variable: 400 to 775 mm Hg @ 20˚C
Evaporation rate Rapid. ~4. (Butyl acetate = 1)
Boiling point 29 to 217˚C (85 to 424˚F)
Freezing point Not available

SECTION 4 – FIRE AND EXPLOSION HAZARDS

Flammability ☒ Yes ☐ No **Conditions** Easily ignited by heat, sparks or flames.
Flash point Typically about -43˚C (-45˚F) (cc) **Auto ignition temperature** Typically 257˚C (494˚F)
Lower flammable limit Typically 1.4% **Upper flammable limit** Typically 7.6%
Explosion data: Sensitivity to: **Mechanical impact** Not expected to be sensitive **Static discharge** Vapour: yes
Means of extinction In general, do not extinguish fire unless flow can be stopped. Use carbon dioxide, dry chemical, or foam. Cool containers with flooding quantities of water until well after the fire is out.
Special precautions Vapour is heavier than air. It will spread along the ground & collect in low or confined areas (sewers, basements). Also travels to source of ignition and flashes back. Containers may explode when heated.
Hazardous combustion products Carbon monoxide. Nitrogen oxides. PAHs, phenols, and other aromatic hydrocarbons.

SECTION 5 – REACTIVITY INFORMATION

Stability Stable
Conditions to avoid Sources of ignition. Static discharges. High temperatures.
Incompatible substances Oxidizers such as peroxides, nitric acid, and perchlorates.
Hazardous decomposition products Carbon monoxide, nitrogen oxides, and numerous aromatic hydrocarbons.

SECTION 6 – HEALTH HAZARD INFORMATION

Route of Entry ☒ **Inhalation** ☒ **Ingestion** ☒ **Skin absorption**

Hazardous Contact ☒ **Eye** ☒ **Skin**

Acute exposure Headache, nausea, dizziness and other symptoms of central nervous system (CNS) depression. Aspiration into the lungs can cause severe pneumonitis (serious lung irritation), with coughing, gagging, shortness of breath, chest pain, and/or pulmonary edema (fluid accumulation).

Chronic exposure Peripheral & CNS damage, such as tremors, hallucinations, memory loss, & impaired mental capacity. Damage to kidneys and blood-producing system. Prolonged skin contact may cause dermatitis.

Carcinogenicity Gasoline is classified by IARC as possibly carcinogenic to humans; by ACGIH, as a confirmed animal carcinogen with unknown relevance to humans; and by NIOSH as a potential occupational carcinogen. Gasoline is not included in NTP's 11th Report on Carcinogens. Benzene is a recognized carcinogen.

Teratogenicity Yes (toluene)
Reproductive toxicity Not available
Mutagenicity Yes (benzene)

Irritancy Sensitization Skin, eyes, & respiratory tract. Very serious irritant if trapped against skin. Rare allergic skin reactions

Toxicologically synergistic products Ethanol enhances the action of benzene. Methyl ethyl ketone (MEK) and methyl isobuty ketone (MIBK) enhance the action of n-hexane. Other CNS depressants can be expected to produce additive or synergistic effects.

SECTION 7 – FIRST AID

Inhalation Move victim to fresh air. Give artificial respiration if breathing has stopped and if a qualified AR administrator is available. Apply CPR if both pulse and breathing have stopped. Get medical help immediately.

Ingestion Never give anything by mouth if the person is unconscious, rapidly losing consciousness, or convulsing. If the person is conscious, have them drink 8 to 10 ounces of water or milk to dilute the material in the stomach. **Do not** induce vomiting. If vomiting occurs spontaneously, have the person lean forward to avoid aspiration. Get medical help immediately.

Eye Flush eye with lukewarm, gently flowing fresh water for at least 10 minutes. Get immediate medical help.

Skin Quickly and gently blot away excess product. Remove contaminated clothing and shoes. Wash skin gently and thoroughly with water and non-abrasive soap. Get medical help.

SECTION 8 – PRECAUTIONARY MEASURES

Personal protective equipment

Gloves Tychem™BR/LV, Tychem™ Responder™, Tychem™TK, or Viton™ preferred.

Eye Chemical safety goggles or face shield, as a good general safety practice.

Respiratory NIOSH-approved. SCBA or air line respirator with escape cylinder for confined spaces. A qualified occupational health and safety professional should advise on respirator selection. If an air-purifying respirator is appropriate, use a "P series" filter & organic vapour cartridges.

Clothing & footwear Coveralls to prevent skin contact with product. If clothing or footwear becomes contaminated with product, completely decontaminate it before re-use, or discard it.

Engineering controls Enclose processes. Use local exhaust ventilation to remove vapour at its site of generation. Handle laboratory samples in a fume hood. Use mechanical ventilation in confined spaces.

Handling procedures & equipment Eliminate all sources of ignition. Ensure that ventilation systems are explosion-proof, non-sparking, and grounded. Use intrinsically-safe electrical systems. Ground and bond transfer containers. Keep containers closed. Have safety shower and eyewash in the work area. Never siphon gasoline by mouth.

Leak & spill Procedure Keep unauthorized persons away. Eliminate all sources of ignition. Ventilate area. Stop leak if it can be done safely. Prevent entry into sewers, waterways, or confined spaces. Small spills: Contain with earth, sand, or non-flammable absorbent material. Shovel (non-sparking tools) into clean, dry, labelled containers and cover. Flush area with water. Large spills: Contact emergency services for advice.

Waste disposal Contact appropriate governmental agencies for approved disposal of material.

Storage Cool, dry, well-ventilated area, out of direct sunlight. No ignition sources or incompatible materials. Containers should be grounded, vented and equipped with a flame arrester. Consider leak detection and alarm equipment for storage area.

Shipping Load at normal temperature (up to 38˚C) and pressure. Bond and ground containers for transfer.

SECTION 9 – PREPARATION DATE OF MSDS

Prepared by D. Smith for Irving Oil Refinery
Revision date November 2, 2008

Phone (506) 202-3000
To re-order MSDS, phone (506) 202-2000

SECTION 5 – REACTIVITY INFORMATION

Stability	Stable
Conditions to avoid	Sources of ignition. Static discharges. High temperatures.
Incompatible substances	Oxidizers such as peroxides, nitric acid, and perchlorates.
Hazardous decomposition products	H_2S and SO_2 if product contains sulphur. Carbon monoxide, nitrogen oxides, and numerous aromatic hydrocarbons.

SECTION 6 – HEALTH HAZARD INFORMATION

Route of Entry ☒ **Inhalation** ☒ **Ingestion** ☐ **Eyes** **Hazardous Contact** ☒ **Eye**
☒ **Skin absorption** Diesel fuel itself, as well as benzene & naphthalene ☒ **Skin contact**

Acute exposure

Coughing, headache, and giddiness following inhalation. Aspiration into the lungs can cause severe pneumonitis (serious lung irritation), with coughing, gagging, shortness of breath, chest pain, and/or pulmonary edema (fluid in the lungs). Ingestion may produce nausea, vomiting, and cramping. Kidney effects and systemic edema have been reported after severe exposure.

H_2S is very toxic. At concentrations as low as 1 to 5 ppm, nausea and severe eye irritation may occur. Sense of smell may be impaired at about 20 ppm, with headache and respiratory tract lung irritation. At 250 to 500 ppm, potentially fatal pulmonary edema may occur. Dizziness, sudden (often fatal) collapse, unconsciousness, and death occur at higher concentrations. Note: Pulmonary edema may be delayed as long as 48 hours after exposure.

Chronic exposure Kidney, gastrointestinal, blood, and skin disorders. Headache, nausea, vomiting. Fatigue, and severe nervous and respiratory system symptoms may follow survival of H_2S poisoning.

Carcinogenicity

Benzene and certain PAHs are known to be carcinogenic. Exposure to fuel oils during refining is considered “probably carcinogenic to humans”.

IARC and NTP classify untreated and mildly treated mineral oils as known human carcinogens. ACGIH, EPA, NIOSH, and OSHA have not classified them.

Mutagenicity	Not known to be mutagenic
Sensitization	No
Irritancy	Skin and respiratory tract
Teratogenicit	Not available
Reproductive toxicity	Not available

Toxicologically synergistic products Other CNS depressants can be expected to produce additive or synergistic effects.

SECTION 7 – FIRST AID

Inhalation	Move victim to fresh air Give artificial respiration if breathing has stopped and if a qualified AR administrator is available. Apply CPR if both pulse and breathing have stopped. Obtain medical attention immediately.
Ingestion	Never give anything by mouth if the person is unconscious, rapidly losing consciousness, or convulsing. If the person is conscious, have them drink 8 to 10 ounces of water or milk to dilute the material in the stomach. **Do not** induce vomiting. If vomiting occurs spontaneously, have the person lean forward to avoid aspiration. Obtain medical attention immediately.
Eye	If irritation occurs, flush eye with lukewarm, gently flowing fresh water for at least 10 minutes.
Skin	Quickly and gently blot away excess chemical. Gently remove contaminated clothing and shoes under running water. Wash gently and thoroughly with water and non-abrasive soap. Obtain medical assistance.

SECTION 8 – PRECAUTIONARY MEASURES

Do not attempt rescue of an H_2S knockdown victim without the use of proper respiratory protective equipment.

Personal protective equipment

Gloves	Nitrile, Viton™, Polyvinylchloride, Tychem®BR/LV, or Tychem®TK preferred.
Eye	Chemical safety goggles or face shield, as a good general safety practice.
Respiratory	NIOSH-approved SCBA or air line respirator with escape cylinder for confined spaces or work with sulphur-containing product. A qualified occupational health and safety professional should advise on respirator selection. If an air-purifying respirator is appropriate, use a “P series” filter & organic vapour cartridges.
Clothing & footwear	Coveralls to prevent skin contact with product. If clothing or footwear becomes contaminated with product, completely decontaminate it before re-use, or discard it.

Appendix V

Daily Fuel Inspection Record

Daily Fuel Inspection Record

Date	Main Fuel Cache				Main Generator Shed			Water Pump			Refueling Station			Sleep Tents			Comments
	Bungs and Rims	Corrosion	Spill Kit/Fire extinguisher	Signs	Inst-berm	Hoses/Values Fittings	Spill Kit/Fire extinguisher	Inst-berm	Hoses/Values Fittings	Spill Kit/Fire extinguisher	Inst-berm	Hoses/Values Fittings	Spill Kit/Fire extinguisher	Inst-berm	Hoses/Values Fittings	Spill Kit/Fire extinguisher	