P.O. Box 119
Gjoa Haven, NU X0B 1J0
Tel: (867) 360-6338
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NUNAVUT IMALIRIYIN KATIMAYINGI
NUNAVUT WATER BOARD
OFFICE DES EAUX DU NUNAVUT

WATER LICENCE
APPLICATION FORM

Application for: (check one)

☒ **New** ☐ **Renewal** ☐ **Amendment** ☐ **Assignment** ☐ **Cancellation**

LICENCE NO:
(for NWB use only)

1. NAME AND MAILING ADDRESS OF APPLICANT/LICENSEE

TerraX Minerals Inc
Suite 312, 10 Green Street
Ottawa ON, K2J 3Z6

Phone: 1-613-843-8109
Fax: 1-613-843-8110
E-mail: geovector@bellnet.ca

2. ADDRESS OF CORPORATE OFFICE IN CANADA (if applicable)

Phone:
Fax:
E-mail:

3. LOCATION OF UNDERTAKING (describe and attach a topographical map, indicating the main components of the Undertaking)

See Attached location maps

Latitude: (65°5'0" N) Longitude: (107°9'0" W)
NTS Map Sheet No. 76 G/3 Scale: 1:50,000

4. DESCRIPTION OF UNDERTAKING (attach plans and drawings)

The proposed exploration program is a continuation of TerraX Mineral Inc.'s gold exploration that has been ongoing since 2007. The 2008 program will be carried out from mid-August 2008 until early September 2008. Future work beyond this program will be contingent on this success of the 2008 program.

Work in 2008 will consist of geological mapping and sampling, a minor ground geophysical program over known airborne anomalies to help target drill holes, and an exploration drill program consisting of approximately 800m in 7 drill holes (see attached plan). This drilling will be completed using a Longyear 25A drill supplied by Titan Drilling of Yellowknife, NWT. The drill will be heli-portable and therefore surface disturbance will be minimal. The drill will be transported by Matrix Helicoper Solutions of Yellowknife, NWT. Each drill site will cover approximately 20 square meters and these areas will be returned as near as possible to their original state following completion of the program. A wooden stake with a metal tag will be left to mark each hole location.

The work program will be carried out by shuttling work crews from an established and permitted camp (Silvertip camp owned and operated by North Arrow Resources), located approximately 50 kilometers southwest of the work area. Therefore no camp structures (or camp permitting) will be required.

Fuel caches will be limited to 2-4 drums next to drill locations, with fuel delivered by helicopter from the Silvertip camp. All empty drums and garbage will be back-hauled to the Silvertip camp at the

completion on the work. At the completion of drilling the drill and ancillary equipment will also be demobilzated from the work area. It is anticipated that no equipment, fuel drums or garbage will remain in the work area following completion of the drilling.

5. **TYPE OF PRIMARY UNDERTAKING** (A supplementary questionnaire **must** be submitted with the application for undertakings listed in **"bold"**)

- ☐ **Industrial**
- ☒ **Mining and Milling**(includes exploration/drilling)
- ☐ **Municipal** (includes camps/lodges)
- ☐ Power
- ☐ Agricultural
- ☐ **Conservation**
- ☐ Recreational
- ☐ **Miscellaneous** (describe below):

See Schedule II of *Northwest Territories Waters Regulations* for Description of Undertakings

6. WATER USE

☒ To obtain water
☐ To cross a watercourse
☐ To modify the bed or bank of a watercourse
☐ Flood control
☐ To divert a watercourse
☐ To alter the flow of , or store, water

☐ Other (describe):

7. QUANTITY OF WATER INVOLVED (cubic metres per day including both quantity to be used and quality to be returned to source)

Water use ☒ 100m^3/day or less
☐ Greater than 100m^3/day; if greater, indicate quantities to be used for each purpose (camp, drilling, etc.)

Water uasage for the program will be approximately 30 cubic meters per day for 20 days, or 600 cubic meters for the totla program

Water returned to source
0 m^3/day

8. WASTE (for each type of waste describe: composition, quantity (cubic metres per day), methods of treatment and disposal, etc.)

☐ Sewage
☐ Solid Waste
☐ Hazardous
☐ Bulky Items/Scrap Metal
☐ Waste oil
☐ Greywater
☒ Sludges
☐ Other describe):

9. OTHER PERSONS OR PROPERTIES AFFECTED BY THIS UNDERTAKING (give name, mailing address and location; attach if necessary)

Land Use Permit

DIAND	☐ Yes	☐ No	If no, date expected _____
Regional Inuit Association	☐ Yes	☒ No	If no, date expected July 27, 2008
Commissioner	☐ Yes	☐ No	If no, date expected _____

In total approximately 5 cubic meters of rock cuttings (sludge) will be generated at the 6 drill sites and stored in natural depressions and/or sumps. Following drilling sludge will be mixed with peat moss and buried with natural soil cover to promote regrowth.

10. PREDICTED ENVIRONMENTAL IMPACTS OF UNDERTAKING AND PROPOSED MITIGATION MEASURES (direct, indirect, cumulative impacts, etc.)

Environmental impacts are expected to be negligible

NIRB Screening ☐ Yes ☒ No If no, date expected _____

11. INUIT WATER RIGHTS

Will the project or activity substantially affect the quality, quantity, or flow of water flowing through Inuit Owned Lands and the rights of Inuit under Article 20 of the Nunavut Land Claims Agreement?

NO

If yes, has the applicant entered into an agreement with the Designated Inuit organization to pay compensation for any loss or damage that may be caused by the alteration. If no compensation agreement has been made, how will compensation be determined?

12. CONTRACTORS AND SUB-CONTRACTORS (name, address and functions)

Titan Drilling 326b Old Airport Rd, Yellowknife NT - Drilling company
Matrix Helicopter Solutions Inc., #8 Yellowknife Airport, Yellowknife NT - Helicopter company
GeoVector Management Inc, 10 Green Street, Suite 312, Ottawa, ON - Project managers

13. STUDIES UNDERTAKEN TO DATE (list and attach copies of studies, reports, research, etc.)

Technical Report on the Gold and Diamond Potential of the Needle Lake Property, western Nunavut, Canada, Apex Geosciences Ltd, November 2007

14. THE FOLLOWING DOCUMENTS MUST BE INCLUDED WITH THE APPLICATION FOR THE REGULATORY PROCESS TO BEGIN

Supplementary Questionnaire (where applicable: see section 5) ☒ Yes ☐ No If no, date expected _____

Inuktitut and/or Inuinnaqtun/English Summary of Project ☐ Yes ☒ No If no, date expected July 1, 2008

Application fee of $30.00 (Payee Receiver General for Canada) ☒ Yes ☐ No If no, date expected _____

Water Use fee of $30.00 (unless otherwise indicated in Section 9 of the *NWT Waters Regulations;* Payee Receiver General for Canada)

☒ Yes ☐ No If no, date expected _____

15. PROPOSED TIME SCHEDULE (unless otherwise indicated, the NWB will consider the application for a five (5) year term)

☐ one year or less (or) ☒ Multi Year

Start Date: July 1, 2008 Completion Date: July 1, 2010

Name (Print)	Title (Print)	Signature	Date

For Nunavut Water Board office use only

APPLICATION FEE **Amount: $_____** **Pay ID No.: _____**

WATER USE DEPOSIT **Amount: $_____** **Pay ID No.: _____**

P.O. BOX 119
GJOA HAVEN, NT X0E 1J0 kNK5 wmaEp5 vtmpq
TEL: (867) 360-6338 NUNAVUT WATER BOARD
FAX: (867) 360-6369 NUNAVUT IMALIRIYIN KATIMAYINGI

EXPLORATION/ REMOTE CAMP SUPPLEMENTARY QUESTIONNAIRE

Applicant: TerraX Minerals Inc. **Licence No: _____**
(For NWB Use Only)

ADMINISTRATIVE INFORMATION

1. Environment Manager: _____Tel: _____ Fax: _____E-mail:_____

2. Project Manager: Joe Campbell Tel: (613) 843-8109 Fax: (613) 643-8110
E-mail:geovector@bellnet.ca

3. Does the applicant hold the necessary property rights?

   Yes, through agreements with Kaminak Gold Corporation.

4. Is the applicant an 'operator' for another company (i.e., the holder of the property rights)? If so, please provide letter of authorization. **No.**

5. Duration of the Project
   [ ] Annual
   [X] Multi Year:
   If Multi-Year indicate proposed schedule of on site activities
   Start: July 2008 Completion: July 2010

CAMP CLASSIFICATION

6. Type of Camp
   [ ] Mobile (self-propelled)
   [ ] Temporary
   [ ] Seasonally Occupied:
   [ ] Permanent
   [X] Other: The Project area will not have a camp, as the work will use a camp approximately 50 km southwest of the project and currently permitted by another company (Silvertip camp of North Arrow Resources)

7. What are the design population of the camp and the maximum population expected on site at one time? What will be the fluctuations in personnel? The camp is designed to house up to 25 people which is the maximum people on site.
   None.

8. Provide history of the site if it has been used in the past.

An abandoned camp site was used in 1990 by Homestake Resources.

CAMP LOCATION

9. Please describe proposed camp location in relation to biogeographical and geomorphological features, and water bodies.

N/A

10. How was the location of the camp selected? Was the site previously used? Was assistance from the Regional Inuit Association Land Manager sought? Include maps and/or aerial photographs.

N/A

11. Is the camp or any aspect of the project located on:

[ ] Crown Lands Permit Number (s)/Expiry Date:_____

[ ] Commissioners Lands Permit Number (s)/Expiry Date: _____

[X] Inuit Owned Lands Permit Number (s)/Expiry Date: KTL107C019, July 2008

12. Closest Communities (distance in km):

Kingaok located 250 kilometres to the north.

13. Has the proponent notified and consulted the nearby communities and potentially interested parties about the proposed work?

No, as this program is being carried out from a camp remote from the property, and is of very short duration (3 weeks), it will have negligible impact on environment or economic opportunities.

14. Will the project have impacts on traditional water use areas used by the nearby communities? Will the project have impacts on local fish and wildlife habitats?

No, there will be no effect on traditional water use areas. It is anticipated that the project will have no affect on local fish or wildlife habitats.

PURPOSE OF THE CAMP (This project will have no camp)

15. x Mineral exploration

○ Tourism (hunting, fishing, wildlife observation, adventure/expedition, etc.) (Omit questions # 16 to 21)

○ Other _____ (Omit questions # 16 to 22)

16.
- ○ Preliminary site visit
- x Prospecting
- x Geological mapping
- x Geophysical survey
- x Diamond drilling
- ○ Reverse circulation drilling
- ○ Evaluation Drilling/Bulk Sampling (also complete separate questionnaire)
- ○ Other: _____

17. Type of deposit:
- ○ Lead Zinc
- ○ Diamond
- x Gold
- ○ Uranium
- ○ Other: _____

DRILLING INFORMATION

18. Drilling Activities
- x Land Based drilling

19. Describe what will be done with drill cuttings?

Cuttings will be contained and directed into topographic lows or sumps in order to prevent transfer into any water bodies. Cuttings will be mixed with peat moss and buried with local soil to promote natural re-growth.

20. Describe what will be done with drill water?

Drill water will also be contained in a natural depression or sump whereby particulate matter can settle or be filtered naturally to prevent transport into any water body.

21. List the brand names and constituents of the drill additives to be used? Includes MSDS sheets and provide confirmation that the additives are non-toxic and biodegradable.

MSDS Sheets are attached.

22. Will any core testing be done on site? Describe.
No.

SPILL CONTINGENCY PLANNING

23. Does the proponent have a spill contingency plan in place? Please include for review.

Yes. The plan is attached. This plan has been used on other exploration properties and has been screened and accepted for previous federal and IOL land use permits.

24. How many spill kits will be on site and where will they be located?

Spill kits will be placed at fuel caches, and at the drill.

25. Please describe the types, quantities, and method of storage of fuel and chemicals on site, and provide MSDS sheets.

Types of Fuel:	Diesel	Jet-A	Gasoline	Propane
Quantity:	30	10	0	10

Diesel and Jet-A fuel will be stored in caches of 2-4 45 gallon drums at the drill sites lying flat on the, ground in areas of higher relief and at least 30 metres from the high water mark of any body of water. Propane will be contained in 100lb tanks and will be stored at the drill.

WATER SUPPLY AND TREATMENT

26. Describe the location of water sources.

For the drill, water will be drawn from nearby lakes. At this time precise drill locations are not known, but approximate locations are indicated on the property map.

27. Estimated demand (in L/day * person):

- ○ Domestic Use: 0 litres Water Source: None
- ○ Drilling Units: 30,000 litres per day Water Source: local lakes
- ○ Other: _____ Water Source: _____

28. Describe water intake for camp operations? Is the water intake equipped with a mesh screen to prevent entrapment of fish? Describe:

This project will have no camp. Water intake for the drill will have a mesh screen.

29. Will drinking water quality be monitored? What parameters will be analyzed and at what frequency?

This project will have no camp, and no domestic water usage

.

30. Will drinking water be treated? How?

This project will have no camp, and no domestic water usage

31. Will water be stored on site?

No

WASTE TREATMENT AND DISPOSAL

32. Describe the characteristics, quantities, treatment and disposal methods for:

- ○ Camp Sewage (blackwater)

This project will have no camp

- ○ Camp Greywater

This project will have no camp

- ○ Solid Waste

This project will have no camp

- ○ Bulky Items/Scrap Metal

All materials from drilling to be backhauled to the Silvertip camp and/or flown out to an approved disposal site.

- ○ Waste Oil/Hazardous Waste

Waste oil will also be backhauled to the Silvertip camp for incineration.

- ○ Empty Barrels/Fuel Drums

Empty fuel drums will be backhauled to the Silvertip camp. Damaged drums will be crushed and flown out to an approved disposal site.

- ○ Other:

33. Please describe incineration system if used on site. What types of wastes will be incinerated?

None

34. Where and how will non-combustible waste be disposed of ? If in a municipality in Nunavut, has authorization been granted?

Non-combustible waste will be backhauled to the Silvertip camp and disposed of in an approved disposal site arranged by a contracted expeditor.

35. Describe location (relative to water bodies and camp facilities) dimensions and volume, and freeboard for sumps (if applicable).

This project will have no camp

36. Will leachate monitoring be done? What parameters will be sampled and analyzed, and at what frequency?

No. This project will have no camp.

OPERATION AND MAINTENANCE

37. Have the water supply and waste treatment and disposal methods been used and proven in cold climate? What known O&M problems may occur? What contingency plans are in place?

This project will have no camp

ABANDONMENT AND RESTORATION

38. Provide a detailed description of progressive and final abandonment and restoration activities at the site.

Drill sites are cleaned immediately after a drill move. Each drill site will cover approximately 20 square metres and these area will be returned as near as possible to their original state. A wooden stake with a metal tag will be left marking the location of the drill collar for future reference. All garbage and empty drums will be backhauled to the Silvertip camp. All oils and greases from the drills will be cleaned up with absorbent matting when the drill is dismantled for moving. Water return and rock cuttings from the drill will be directed into a local depression where it will settle. Once excess water has been removed the rock cuttings will be mixed with peat and covered with soil to promote natural regrowth.

BASELINE DATA

39. Has or will any baseline information be collected as part of this project? Provide bibliography.
    - ○ Physical Environment (Landscape and Terrain, Air, Water, etc.)
    - ○ Biological Environment (Vegetation, Wildlife, Birds, Fish and Other Aquatic
    - ○ Organisms, etc.)
    - ○ Socio-Economic Environment (Archaeology, Land and Resources Use,
    - ○ Demographics, Social and Culture Patterns, etc.)
    - ○ Other:

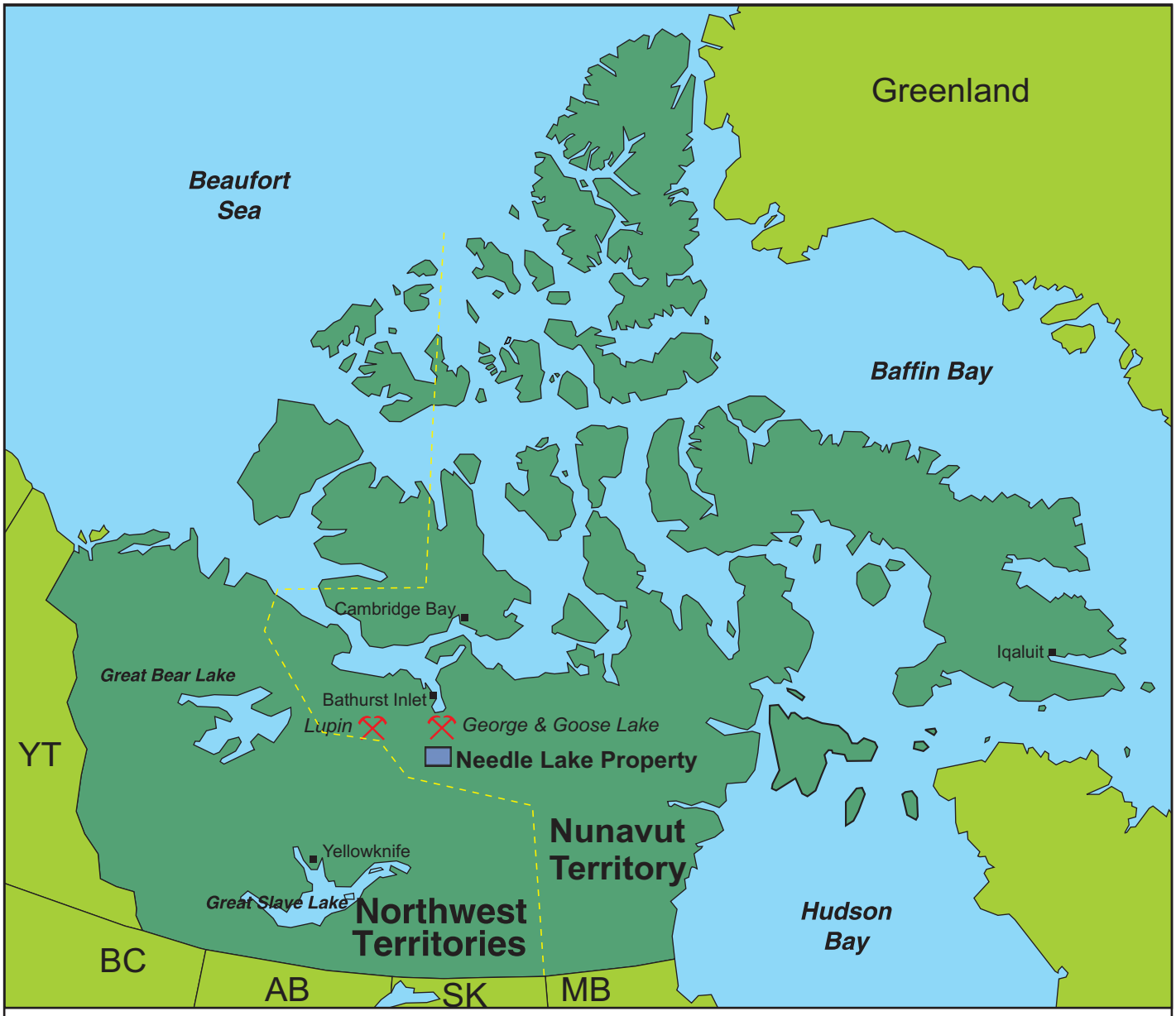
No formal baseline studies have been initiated as the project is still early stage exploration. However, field crews are requested to report and log wildlife sitings, and any archeological sites are to be noted and reported.

REGULATORY INFORMATION

40. Do you have a copy of

X Article 13 - Nunavut Land Claims Agreement
X NWB - Water Licensing in Nunavut - Interim Procedures and Information Guide for Applicants
X NWB - Interim Rules of Practice and Procedure for Public Hearings
X NWTWB - Guidelines for the Discharge of Treated Municipal Wastewater in the NWT
X NWTWB - Guidelines for Contingency Planning
X DFO - Freshwater Intake End of Pipe Fish Screen Guideline
X Fisheries Act - s.35
X RWED - Environment Protection- Spill Contingency Regulations
X Canadian Drinking Water Quality Guidelines
X Public Health Act Camp Sanitation Regulations
X Public Health Act Water Supply Regulations
X Territorial Land Use Act and Regulations

You should consult the above document, guidelines, and legislation for compliance with existing regulatory requirements.



LEGEND

Property Optioned by TerraX

Lupin Gold Deposit or Mine; Name

Yellowknife City or Hamlet; Name

TerraX Resources Corp.

NUNAVUT TERRITORY

LOCATION
NEEDLE LAKE PROPERTY

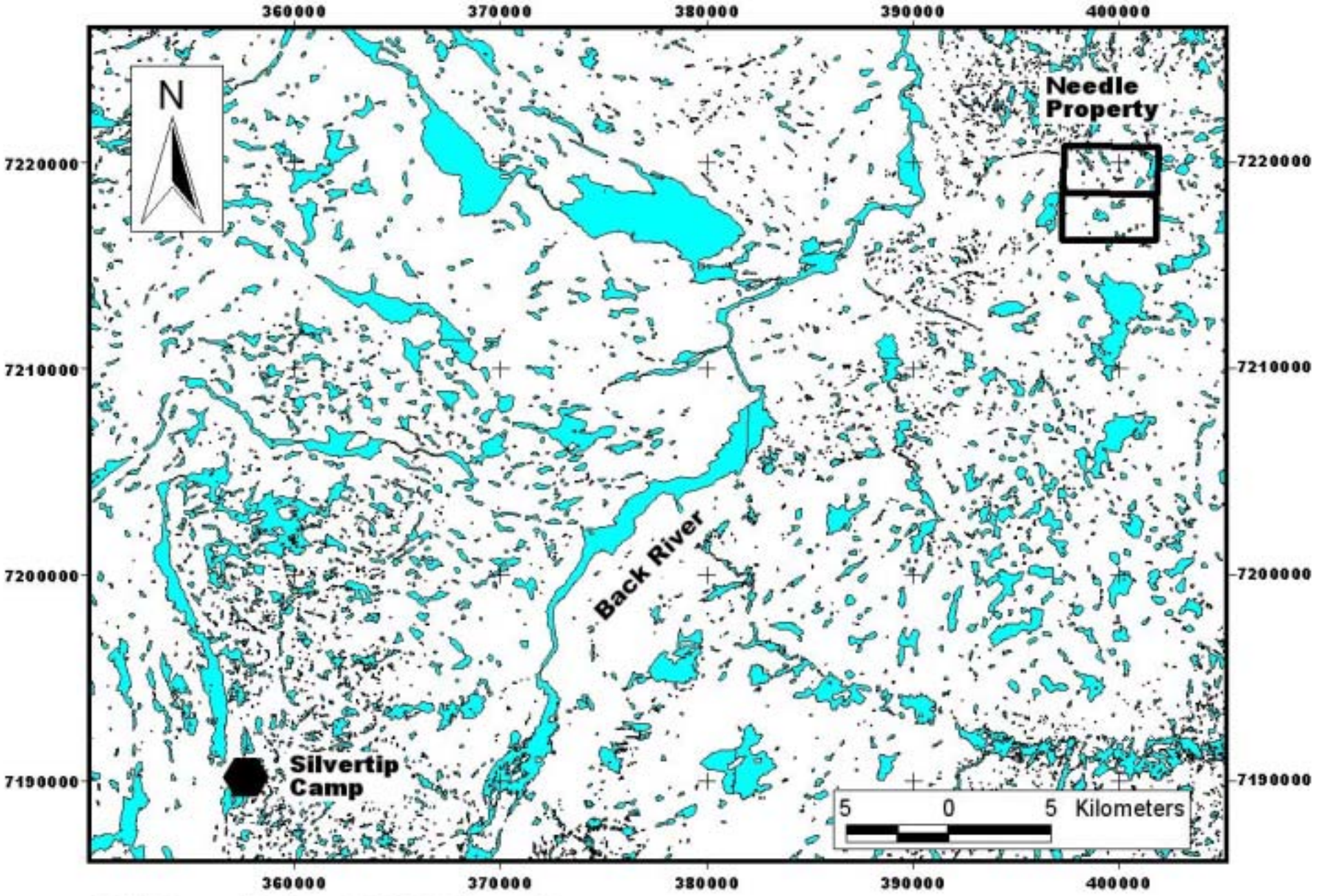
Scale 0 250 500 Kilometres

APEX Geoscience Ltd.

EDMONTON, ALBERTA NOVEMBER 2007

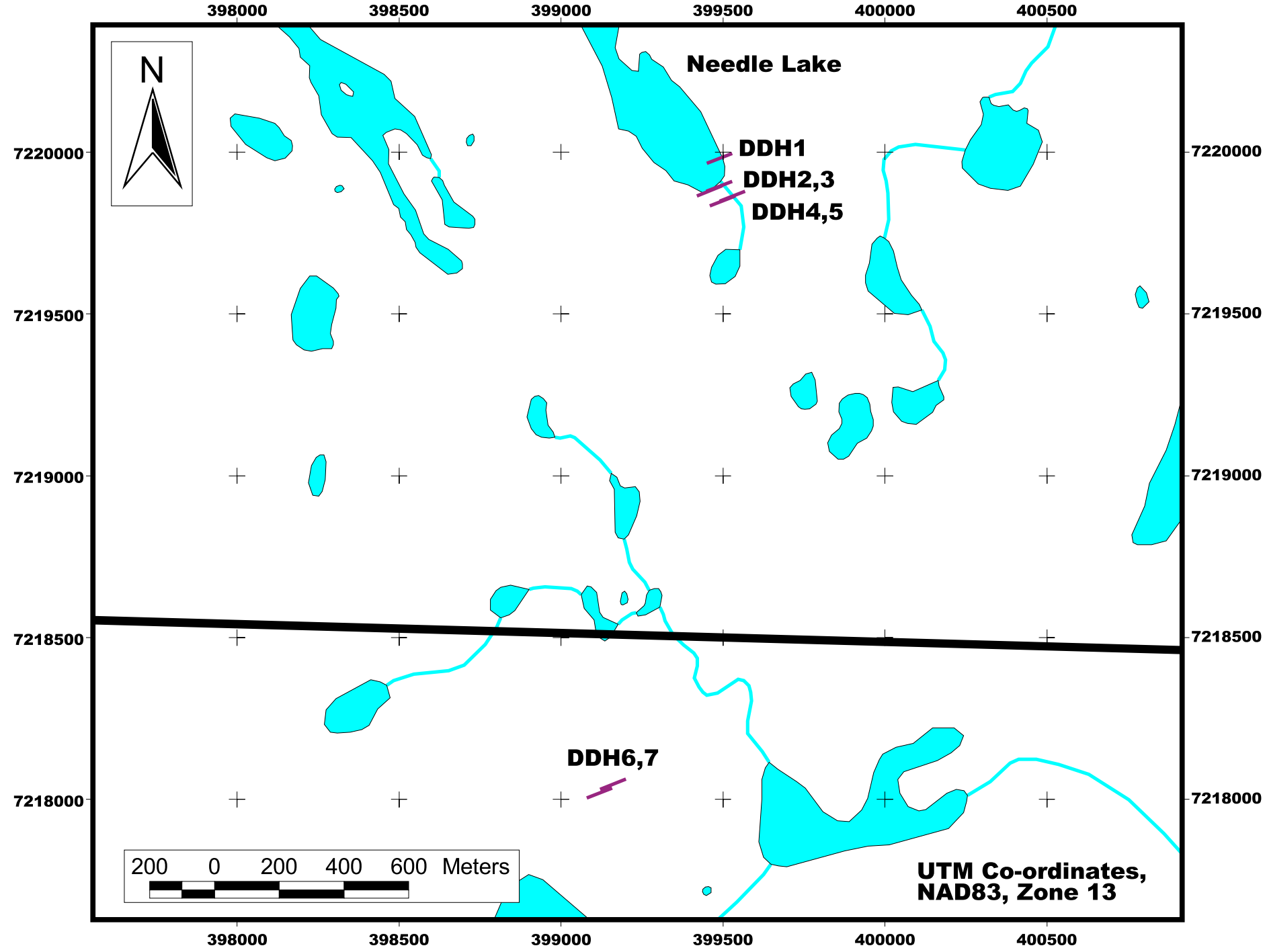
FIGURE 1

Location of Silvertip Camp, Needle Property



UTM Co-ordinates, NAD83, Zone 13

TerraX Minerals Inc 2008 Drill Program, Needle Property



FUEL SPILL CONTINGENCY PLAN

TerraX Minerals Inc.
Needle Lake Property

INTRODUCTION

PURPOSE

This Spill Contingency Plan is designed to promote environmental awareness and safety, as well as facilitate the efficient cleanup of spills as the result of incidents on the TerraX Minerals Inc. Needle Property involving the following substances:

- P-50 Diesel
- Jet B turbo fuel
- Hydraulic Oil
- Lube Oil
- Waste Oil
- Propane
- other materials hazardous to the safety of personnel and the environment

Principal objectives of the Spill Contingency Plan are:

1. To provide readily accessible emergency information to cleanup crews, TerraX project personnel, KIA, and government agencies in the event of a spill.
2. To comply with federal and territorial regulations pertaining to the preparation of contingency plans and notification requirements.
3. To promote the safe and effective recovery of spilled materials.
4. To minimize the environmental impacts of spills to water and/or land.
5. To facilitate the management of wastes according to environmental legislation.

SCOPE

Alerting and notification procedures and cleanup strategies are outlined along with the duties and responsibilities of key spill response personnel. Emergency contacts are listed for TerraX Minerals Inc., its contractors, and local government agencies. Emergency response equipment is
listed that is available immediately (should a spill occur).

More information in support of this Transportation Spill Contingency Plan and ensuing spill
response actions, is provided in the following appendices:

- Appendix A contains summaries of physical/chemical properties and emergency response measures for hydrocarbon substances to be transported to the Meliadine exploration camp (MSDS Sheets).

- Appendix B contains an up-to-date inventory of spill response equipment and kits that will be available on site.
- Appendix C contains NWT Spill Report Forms that are to be used to report spills.

TerraX personnel, and its contractors will be trained for spill response and have spill kits that complement this Spill Contingency Plan. In the event of a spill the contractor is expected to implement a spill response immediately with this plan serving as guidance.

SPILL RESPONSE ACTION PLAN

1. REPORT ALL SPILLS TO:
   Exploration camp manager or Senior project geologist on site

   TerraX Minerals Inc. office (613) 843-8109
   10 Green Street, Suite 312
   Ottawa, ON, K2J 3Z6
   Attn: Joe Campbell

2. REPORT ALL SPILLS TO EXTERNAL STAKEHOLDERS/REGULATORS

   24 Hour NWT Spill Report Line
   PH: (867) 920-8130
   FAX (867) 873-6924

   KITIKMEOT INUIT ASSOCIATION
   PH: (867) 983-2458 or (867) 982-3310

   ENVIRONMENT CANADA – Prairies , Northwest Territories and Nunavut
   PH: (780)-951-8600
   FAX: (780)-495-2615

   NUNAVUT WATER INSPECTOR
   PH: (867) 975-4298

The reporting requirement applies to all spills: on land, on water and on ice. The reporting requirement applies equally to all substances covered by this contingency plan; fuels, hydraulic oil, lubricants, and waste oil. ALL reports by telephone must be followed with a fax of the completed report form (see Appendix C for copies) to the number indicated on the reporting form. Reporting and notification described below must be made by the first observer of the spill or the observer's superior immediately upon the spill being under control, or on failure to gain control of the situation.

3. RECORD THE FACTS (Use Spill Report Form from Appendix C)
   NOTE: when a spill is detected then the spill must be reported directly to NWT 24-hour spill report line without delay.

INITIAL SPILL RESPONSE PRIORITIES

A. SAFETY FIRST

1. RESPOND QUICKLY
2. Identify the spilled material.
3. Ensure safety of yourself and others.
4. Shut off ignition sources - NO SMOKING.
5. Attend to Injured.
6. Assess the severity of the spill.
7. Call for assistance.
8. On-Scene Coordinator mobilizes Emergency Response Team.
9. Keep unnecessary people out of the area.
10. Wear impervious clothing, goggles, gloves.
11. Approach spill from upwind **IF SAFE TO DO** SO.
12. Stop product flow if possible.
13. Contain and recover spill as soon as possible.

B. RESPOND SAFELY

1. Do not contain if vapours might ignite.
2. Allow potentially explosive spills to evaporate.
3. See Appendix A - Product Guides for further information.

C. OBTAIN AND REPORT SPILL DETAILS

NWT Spill Report Forms are in Appendix C of this spill contingency and response plan.

DIESEL - P 50 - SPILL RESPONSE ACTIONS

CONSIDER ACTION ONLY IF SAFETY PERMITS!

- Eliminate Ignition Sources
- Stop Source of Diesel if Safe to do so

ON LAND

- Do not flush into ditches or drainage systems.
- Block entry into waterways and contain with earth, snow or other barrier.
- Remove small spills with absorbent pads.
- On tundra use peat moss and leave in place to degrade, if practical.

ON SNOW & ICE

- Block entry into waterways and contain with snow or other barrier.
- Remove minor spills with absorbent pads and/or snow.
- Use ice augers and pump to recover diesel under ice.
- Slots in ice can be cut over slow moving water to contain oil.
- Burn accumulated diesel from the surface using Tiger Torches if feasible and safe to do so.

ON MUSKEG

- Do not deploy personnel and equipment on marsh or vegetation.
- Remove pooled diesel with pumps and skimmers.
- Flush with low pressure water to herd diesel 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 spill containment boom to concentrate slicks for recovery
- On small spills, use absorbent pads to pick up contained oil.
- On larger spills, use skimmer on contained slicks.
- Do not deploy personnel and equipment onto mudflats or into wetlands

RIVERS & STREAMS

- Prevent entry into water, if possible, by building berm or trench.
- Intercept moving slicks in quiet areas using (sorbent) booms.
- Do not use absorbent booms/pads in fast currents and turbulent water.

STORAGE/TRANSFER/DISPOSAL

- Store closed, labeled containers outside away from flammable items.
- Electrically ground containers and vehicles during transfer.
- Segregate waste types.
- Place contaminated materials into marked containers.
- Consult camp manager on disposal procedures.

HYDRAULIC OIL SPILL RESPONSE ACTIONS

CONSIDER ACTION ONLY IF SAFETY PERMITS

- Eliminate ignition sources
- Stop source of hydraulic oil if safe to do so

ON LAND

- Do not flush into ditches or drainage systems.
- Block entry into waterways and contain with earth, snow or other barrier.
- Remove small spills with absorbent pads.
- On tundra use peat moss and leave to degrade if feasible to do so.

ON SNOW & ICE

- Block entry into waterways and contain with snow or other barrier.
- Remove minor spills with absorbent pads and/or snow.
- Use ice augers and pump when feasible to recover oil under ice.
- Burning hydraulic oil will not likely be feasible.
- Mechanical removal (scraping) can be tried.

ON MUSKEG

- Do not deploy personnel and equipment on marsh or vegetation.
- Remove pooled oil with pumps and skimmers.
- Flush with low pressure water to herd oil to collection point.
- Minimize damage caused by equipment and excavation.
- Burning is not likely possible

ON WATER

- Contain spill as close to release point as possible.
- Use spill containment boom to concentrate slicks for recovery.
- On small spills, use absorbent pads to pick up contained oil.
- On larger spills, obtain and use skimmer on contained slicks
- Do not deploy personnel and equipment on mudflats or wetlands.
- Remove contained oil with absorbent pads and/or skimmer.

RIVERS & STREAMS

- Prevent entry into water, if possible, by building berm or trench.
- Intercept moving slicks in quiet areas using booms.
- Do not use absorbent booms/pads in fast currents and turbulent water.

STORAGE/TRANSFER/DISPOSAL

- Store closed, labeled containers outside away from flammable items.
- Drums are likely to be used for containing collected hydraulic oil.
- Segregate waste types.
- Place contaminated materials into marked containers.
- Consult on camp manager on disposal procedures.

LUBE OIL SPILL RESPONSE ACTIONS

CONSIDER ACTION ONLY IF SAFETY PERMITS

- Eliminate ignition sources
- Stop source of lube oil if safe to do so

ON LAND

- Do not flush into ditches or drainage systems.
- Block entry into waterways and contain with earth, snow or other barrier.
- Remove small spills with absorbent pads.
- On tundra use peat moss and leave to degrade if feasible to do so.

ON SNOW & ICE

- Block entry into waterways and contain with snow or other barrier,
- Remove minor spills with absorbent pads and/or snow.
- Burning is unlikely to be possible.
- Use ice augers and pump when feasible to recover oil under ice.

ON MUSKEG

- Do not deploy personnel and equipment on marsh or vegetation.
- Remove pooled oil with pumps and skimmers.
- Flush with low pressure water to herd oil to collection point.
- Burning is not likely to be possible.
- Minimize damage caused by equipment and excavation.

ON WATER

- Contain spill as close to release point as possible.
- Use spill containment boom to concentrate slicks for recovery.
- On small spills, use absorbent pads to pick up contained oil.
- On larger spills, obtain and use skimmer on contained slicks.
- Do not deploy personnel and equipment on mudflats or wetlands.
- Remove contained oil with absorbent pads and/or skimmer.

RIVERS & STREAMS

- Prevent entry into water, if possible, by building berm or trench.
- Intercept moving slicks in quiet areas using booms,
- Do not use absorbent booms/pads in fast currents and turbulent water.

STORAGE/TRANSFER/DISPOSAL

- Store closed, labeled containers outside away from flammable items.
- Electrically ground containers and vehicles during transfer.
- Segregate waste types.
- Place contaminated materials into marked containers.
- Consult camp manager on disposal procedures.

JET B SPILL RESPONSE ACTIONS
CONSIDER ACTION ONLY IF SAFETY PERMITS
JET B FORMS VAPOURS THAT CAN IGNITE AND EXPLODE
NO SMOKING

- Eliminate ignition sources
- Stop source of Jet B if safe to do so

ON LAND

- Block entry into waterways by diking with earth, snow or other barrier(s).
- Do not contain spill if there is any chance of igniting vapours.
- On tundra use peat moss and leave to degrade if feasible to do so.

ON SNOW & ICE

- Block entry into waterways by diking with snow or other barrier.
- Do not contain spill if there is any chance of igniting vapours.
- In work/depot yards, apply particulate absorbents.

ON MUSKEG

- Remove pooled Jet B with pumps, if safe to do so.
- Do not deploy personnel and equipment on marsh or vegetation.
- Low pressure flushing can be tried to disperse small spills.
- Burn CAREFULLY 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 digging.

ON WATER

- Contain or remove spills ONLY AFTER VAPOURS DISSIPATE.
- Use booms to protect water intakes.
- Skimming can be tried once light ends evaporate.

STORAGE/TRANSFER/DISPOSAL

- Store closed, labeled containers in cool, ventilated areas away from incompatible materials.
- Electrically ground containers and vehicles during transfer.
- Segregate waste types, if necessary.
- Place contaminated materials into marked containers.
- Consult camp manager on transportation and disposal procedures.

PROPANE RESPONSE ACTIONS
GAS STORED IN CYLINDERS THAT EXPLODE WHEN IGNITED!
CONSIDER ACTION ONLY IF SAFETY PERMITS
KEEP ALL VEHICLES AWAY FROM ACCIDENT AREA

Refer to Product Guide in Appendix A for:
Physical/Chemical Properties
Response to Fires

First Aid

- Vapours cannot be contained 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 or CO.
- 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 attempt at recovery should be made.
- Personnel should avoid touching release point on containers since frost quickly forms.
- Stay clear of tank ends.

DUTIES AND RESPONSIBILITIES

The roles and responsibilities of TerraX personnel, contractors, and Government are described on the following pages.

TerraX and CONTRACTOR PERSONNEL

Spill Observer

- Assess the initial severity of the spill and safety concerns.
- Report all spills to camp manager immediately.
- Determine the source of the spill and stop or contain it, if possible.
- Participate in spill response as member of cleanup crew.

On-Scene Coordinator (OSC) (Senior Site Manager)

- Immediately reports the spill to NWT 24-Hour Spill Report Line at (403) 920-8130.
- Records the time of the report, source of information and details on location, size, type of spill as well as any other information available on the spill report form.
- Oversees the cleanup operation until it is satisfactorily completed.
- Decides if additional equipment is required to contain and clean up spills
- Notifies government agencies and TerraX Head Office
- Oversees completion and distribution of Spill Report. Ensures investigation identifies measures to prevent similar spills in future.
- Ensures Response Team is adequately trained in spill response.
- Organizes training courses for spill response teams.

APPENDIX A

MSDS SHEETS

Material Safety Data Sheet

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

Section 1. Chemical Product and Company Identification

Product Name	**DIESEL FUEL**	**Code**	File # W104
		DSL	On the DSL.
Synonym	Diesel 50, Diesel 50 LS, #1 Diesel , #1 Diesel LS, Diesel LC, Seasonal Diesel, Seasonal Diesel LS, Diesel AA, Domestic Marine Diesel, International marine Diesel, Seasonal Diesel Locomotive, Dosmestic Marine diesel LS, disesel -20°C (LS), Mining Diesel Special, Mining Diesel Special LS.	**TSCA**	On TSCA inventory list.
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3	**In case of Emergency**	Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).
Material Uses	Diesel fuels are distillate fuels suitable for use in high and medium speed internal combustion engines of the compression ignition type.		

Section 2. Composition and Information on Ingredients

			Exposure Limits (ACGIH)		
Name	**CAS #**	**% (V/V)**	**TLV-TWA(8 h)**	**STEL**	**CEILING**
Mixture of petroleum distillates. Aromatic content is 50% maximum (benzene: nil). * Notice of Intended Change (1996): 350 mg/m³, A3.	68334-30-5	100	Not established*	Not established	Not established

Manufacturer Recommendation	Petro-Canada recommends an allowable exposure of 350 mg/m³ when handling Diesel fuel. Consult local authorities for acceptable exposure limits.
Other Exposure Limits	Consult local, provincial or territory authorities for acceptable exposure limits.

Section 3. Hazards Identification.

Potential Health Effects	Inhalation of vapours or mist in high concentration may cause headaches, nausea, dizziness, drowsiness, unconsciousness and passing out. May irritate skin, eyes and respiratory tract. For more information, refer to Section 11.

Section 4. First Aid Measures

Eye Contact	Check for and remove any contact lenses. IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. DO NOT use an eye ointment. Seek medical attention if irritation persists.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Get medical attention if redness or irritation occurs.
Inhalation	Evacuate the victim to a safe area as soon as possible. Allow the victim to rest in a well ventilated area. If the victim is not breathing, perform mouth-to-mouth resuscitation. If resuscitation is required, physician assessment mandatory.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Physician assessment mandatory.
Note to Physician	Monitor blood gases to assure adequate ventilation. If vital signs become abnormal or symptoms develop obtain a chest x-ray.

Continued on Next Page

Available in French

Section 5. Fire-fighting Measures

Flammability	Combustible liquid.	**Flammable Limits**	LOWER: 0.7%, UPPER: 6%
Flash Points	CLOSED CUP (tag): 52°C (126°F) for Mining Diesel Special and Mining Diesel special-LS. 40°C (104°F) for others.	**Auto-Ignition Temperature**	225°C (437°F)
Fire Hazards in Presence of Various Substances	Flammable in presence of open flames, sparks, or heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back.	**Explosion Hazards in Presence of Various Substances**	Do not cut, weld, heat, drill or pressurize empty container. Containers may explode in heat of fire. Vapour explosion hazard indoors, outdoors or in sewers.
Products of Combustion	Carbon oxides (CO, CO2), nitrogen oxides (NOx), sulphur oxides (SOx), sulphur compounds (H2S); smoke and irritating fumes as products of incomplete combustion.		
Fire Fighting Media and Instructions	NAERG96, GUIDE 128, flammable/combustible liquid (non-polar/water-immiscible). CAUTION: This product has a low flash point, use of water spray when fighting fire may be inefficient. SMALL FIRE: Use DRY chemicals, CO2, water spray or foam. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet. If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions. DO NOT extinguish a leaking gas flame unless leak can be stopped. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discolouration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. Avoid flushing spilled material into sewers, streams or other bodies of water. Self-contained breathing apparatus (SCBA) will be required if approaching the fire from downwind, or to enter enclosed areas or buildings.		

Section 6. Accidental Release Measures

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

Section 7. Handling and Storage

Handling	Keep away from heat, spark, open flames and other sources of ignition. Use explosion-proof ventilation to prevent vapour accumulation. Empty container may contain flammable/explosive residues or vapours, DO NOT reuse empty containers without commercial cleaning or reconditioning. Ground/bond line and equipment during pumping or transfer to avoid accumulation of static charge. Avoid contact with skin and eyes. DO NOT USE AS CLEANING FLUID OR SIPHON BY MOUTH. Practice good personal hygiene. Wash hands after handling and before eating. Launder work clothes frequently. Discard saturated leather goods.
Storage	Store in tightly closed containers in cool, dry, isolated and well-ventilated area. Ground all equipments containing material.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal outdoor application, special ventilation is not necessary. For indoor or confined spaces, provide explosion-proof local exhaust ventilation, or other engineer controls, to keep airborne concentration below the allowable threshold limit value. Make-up air should always by supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection	
Eyes	Wear safety glasses or chemical splash goggles in case of splashing.
Body	Wear long sleeved clothing to minimize skin contact.

Continued on Next Page

Respiratory	When exposure is likely to exceed recommended exposure limit (see section 2), use NIOSH approved respiratory equipment. Respiratory should be selected based on the form and concentration of contaminant in air (refer to NIOSH Pocket Guide for chemical Hazard for respirator selection). In order to determine the concentration of the contaminant, air sampling is RECOMMENDED AND SHOULD BE PERFORMED BY A HEALTH & SAFETY SPECIALIST (AS PER THE NIOSH Manual of analytical Methods for method of measurement). If air sampling is not practical and concentration is unknown, use positive pressure self-contained breathing apparatus (SCBA). Contact appropriate HEALTH & SAFETY personnel or supplier for assistance.
Hands	For casual contact, PVC gloves are suitable. For direct contact for more than 2 hours, Viton or Nitrile gloves are recommended.
Feet	Safety boots or shoes.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Bright oily liquid.	**Viscosity**	Not applicable.
Colour	Clear to yellow. Low sulphur diesel fuels are colourless to light yellow / brown, and are not dyed. Regular sulphur diesel fuels (>0.05wt.% Sulphur) may be colourless to yellow / brown. This product may be dyed purple or red for taxation purposes.	**Pour Point**	Not applicable.
Odour	Mild petroleum oil like.	**Softening Point**	Not applicable.
Odour Threshold	Not available.	**Dropping Point**	Not applicable.
Boiling Point	150°C (302°F)	**Penetration**	Not applicable.
Density	0.85 kg/L @ 15°C (Water = 1).	**Oil / Water Dist. Coeff.**	Not available.
Vapour Density	4.5 (Air = 1)	**Ionicity (in water)**	Not available.
Vapour Pressure	1.0 kPa @ 20°C (7.5 mmHg @ 68°F).	**Dispersion Properties**	Not available.
Volatility	Semivolatile to volatile	**Solubility**	Insoluble in cold water, soluble in non-polar hydrocarbon solvents.

Section 10. Stability and Reactivity

Corrosivity	Not applicable		
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	Strong acids, peroxides, alkalis, oxidizing agents (chlorine, oxygen)	**Decomposition Products**	Releases of COx, NOx, SOx, H2S, smoke and irritating fumes when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation, and ingestion.
Acute Lethality	Acute oral toxicity (LD50): 12,000 mg/kg/rat.
Chronic or Other Toxic Effects	
Dermal Route:	Repeated exposure would produce drying and cracking or defatting dermatitis. Dermal primary skin irritation score (Draize) = 6.8; moderately to extremely irritating (rabbit),dose: 500 uL/24h.
Inhalation Route:	Central nervous system depression.
Oral Route:	Aspiration of the solvent into the lung may produce a potentially fatal chemical pneumonitis.
Eye Irritation/Inflammation:	Eye irritation index (Draize) = 0; non irritating (rabbit).
Immunotoxicity:	No studies were found.
Skin Sensitization:	It is not a skin sensitizer in guinea pig.
Respiratory Tract Sensitization:	No studies were found.
Mutagenic:	No evidence.
Reproductive Toxicity:	No evidence.
Teratogenicity/Embryotoxicity:	No evidence.
Carcinogenicity (ACGIH):	ACGIH Notice of Intended Changed (1996): proposed A3: animal carcinogen.
Carcinogenicity (IARC):	Group 3: cannot be classified as to carcinogenicity to humans.
Carcinogenicity (NTP):	No studies were found.
Carcinogenicity (IRIS):	No studies were found.
Carcinogenicity (OSHA):	No studies were found.
Other Considerations	Preexisting eye, skin, respiratory, neurological, liver or kidney conditions may be aggravated by exposure to this product.

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Section 12. Ecological Information

Environmental Fate	Biodegradable.	**Persistance/ Bioaccumulation Potential**	High potential to bioconcentrate in aquatic organisms, but it may not be important due to high metabolism.
BOD5 and COD	BOD5 : 5.3 ug/ml (C16), biodegradable.	**Products of Biodegradation**	Not available.
Additional Remarks	If released to soil, diesel fuel will strongly adsorb. It may biodegrade in water and soil or volatilize from water (half-life of 4.4 to 4.8 hrs from a model river) and moist soil surfaces, but adsorption may attenuate the rate of these processes.		

Section 13. Disposal Considerations

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

Section 14. Transport Information

TDG Classification	Shipping name: Fuel Oil; UN 1202; Class 3; Packing Group III. Label required: Flammable liquid.	**Special Provisions for Transport**	No additional remark.

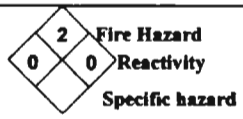
Section 15. Regulatory Information

Other Regulations	This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on CEPA-DSL, and USEPA-TSCA. This product is not known to contain any of the carcinogens required to be listed under OSHA hazard communication standard, 29 CFR 1910.1200 (U.S.). Not listed in CERCLA (40 CFR 302.4). Not listed in EPCRA or SARA Title III, Section 302/304/311/312/313 (40 CFR 355/370/372). Not listed in RCRA (40CFR 261.33). Please note that the chemical identity of some or all of the ingredients that may be listed herein is confidential business information and is being withheld as permitted by 29 CFR 1910.1200 and various State Right to Know Laws.		
DSD/DPD (Europe)	10- Flammable. 18- In use, may form flammable/explosive vapor-air mixture. 36/38- Irritating to eyes and skin.	**HCS (U.S.A.)**	
ADR (Europe) (Pictograms)		**DOT (U.S.A) (Pictograms)**	

HMIS (U.S.A.)

Health Hazard	1
Fire Hazard	2
Reactivity	0
Personal Protection	b

NFPA (U.S.A.)



Rating
0 Insignificant
1 Slight
2 Moderate
3 High
4 Extreme

Section 16. Other Information

References Available upon request.

Glossary

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

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Information Contact	**Petro-Canada** **Product Safety Coordinator** **(403) 296-4410**	**Prepared by McBride on 3/17/97.** **Data entry by May Chau.**

PETRO-CANADA

Material Safety Data Sheet

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

Section 1. Chemical Product and Company Identification

Product Name	**JET B AVIATION TURBINE FUEL**
Supplier	Petro-Canada P.O. Box 2844 Calgary, Alberta T2P 3E3
Synonym	Jet B, Jet B DI, International Jet B, International Jet B DI, Jet Fuel JP-4, Jet Fuel F-40; Turbine Fuel, Aviation, Wide Cut Type (CAN/CGSB-3.22).
Chemical Name	Not applicable.
Chemical Family	Petroleum hydrocarbons.
Chemical Formula	Not applicable.
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3
Material Uses	Used as aviation turbine fuel. May contain a fuel system icing inhibitor.

Code	File # W219
DSL	Listed on DSL.
Print Date: 12/2/97.	

In case of Emergency	Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).

Section 2. Composition/Information on Ingredients

		Exposure Limits (ACGIH)			
Name	**CAS #**	**TLV-TWA(8 h)**	**STEL**	**CEILING**	**% (V/V)**
Complex mixture of aliphatic and aromatic hydrocarbons (C6-C14).	64741-41-9	300 ppm (gasoline)	500 ppm (gasoline)	Not established	>99
Additives: anti-oxidant, anti-static, corrosion and/or icing inhibitors.	Not applicable	Not established	Not established	Not established	<0.2

Section 3. Hazards Identification.

Potential Acute Health Effects	Inhalation of vapours or mist may cause irritation of nose and throat; headache, nausea, vomitting, dizziness, fatique, light-headedness, reduced coordination and unconciousness; central nervous system depressant; kidney and liver damage from long-term exposure. May be narcotic in high concentrations. Skin contact may cause drying, cracking, defatting, or inflammation of skin. Prolonged or repeated contact with skin may cause dermatitis. Eye contact may cause irritation, but no permanent damage. Overexposure due to ingestion is unlikey for adults since taste and smell limit the amount swallowed. Harmful or fatal if swallowed. For more information, refer to Section 11.
Potential Chronic Health Effects	Kidney and liver damage may result from long-term exposure.

Section 4. First Aid Measures

Eye Contact	Check for and remove any contact lenses. IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. DO NOT use an eye ointment. Seek medical attention if irritation persists.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Get medical attention if redness or irritation occurs.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform mouth-to-mouth resuscitation. Administer oxygen if available. Allow the victim to rest in a well ventilated area. Seek medical attention.
Hazardous Inhalation	No additional remark.
Ingestion	Gastric decontamination to prevent absorption is important following a substantial recent ingestion. Is most effective if initiated within 30 minutes. DO NOT induce vomiting without supervision of medical personnel, because of danger of aspirating liquid into lungs. Seek immediate medical attention.
Hazardous Ingestion	Seek medical attention. Overexposure due to ingestion is unlikely for adults since taste and smell limit the amount swallowed. Harmful or fatal if swallowed.

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Section 5. Fire-fighting Measures

The Product is:	Flammable liquid (NFPA).
Auto-Ignition Temperature	240°C (464°F)
Flash Points	Open Cup:-25°C (-13°F), ASTM D92, Cleveland.
Flammable Limits	Lower: 1.3%; Upper: 7.6% (NFPA).
Products of Combustion	Carbon oxides (CO, CO2), nitrogen oxides (NOx), sulphur oxides (SOx), sulphur compounds (H2S), smoke and irritating fumes as products of incomplete combustion.
Fire Hazards in Presence of Various Substances	Easily ignites under almost all normal temperature conditions. Extremely flammable in presence of open flames, sparks, shocks, heat, oxidizing materials. Vapours are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks), and may travel considerable distance to sources of ignition and flash back.
Explosion Hazards in Presence of Various Substances	Excessive heat. Do not cut, weld, heat, or drill empty container. Containers may explode in heat of fire. Runoff to sewer may create fire or explosion hazard.
Fire Fighting Media and Instructions	NAERG96, GUIDE 128, Flammable/combustible liquid (non-polar/water-immiscible). CAUTION: This product has a low flash point, use of water spray when fighting fire may be inefficient. SMALL FIRE: Use DRY chemicals, CO2, water spray or foam. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet. If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions. DO NOT extinguish a leaking gas flame unless leak can be stopped. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discolouration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. Avoid flushing spilled material into sewers, streams or other bodies of water. Self-contained breathing apparatus (SCBA) will be required if approaching the fire from downwind, or to enter enclosed areas or buildings.
Special Remarks on Fire Hazards	Vapor may travel considerable distance to source of ignition and flash back.
Special Remarks on Explosion Hazards	No additional remark.

Section 6. Accidental Release Measures

Small Spill	Check with applicable jurisdictions for specific disposal requirements of material and empty containers. Evacuate personnel. Avoid contact. Use full protective equipment and breathing apparatus. Eliminate ignition sources. Shut off source of spill. Absorb with inert absorbent such as clay, and or diatomaceous earth, commericial sorbents, or recover using electrically grounded explosion-proof pumps. Place absorbent in closed metal containers. DO NOT FLUSH TO SEWER. Large spills may be pumped from upwind locations using vacuum trucks and extended hoses. Large pools may be covered with foam to prevent vapour evolution. Immediate shut down and evacuation if wind shifts. Constant monitoring is required.
Large Spill	No additional remark.

Section 7. Handling and Storage

Handling	Keep away from sources of ignition. In case of insufficient ventilation, wear suitable respiratory equipment. HANDLE AS EXTREMELY FLAMMABLE LIQUID. Electrically ground/bond during the pumping or transfer to avoid static accumulation. DO NOT USE AS CLEANING FLUID OR SIPHON BY MOUTH. Precautions should be taken to minimize skin contact and inhalation. High standards of personal hygiene are necessary. Wash hands after handling and before eating. Launder work clothes frequently. Discard saturated leather goods.
Storage	Combustible materials should be stored away from extreme heat and away from strong oxidizing agents. Store in tightly closed containers in cool, dry, isolated and well-ventilated area. Ground all equipments containing material.

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Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal outdoor application, special ventilation is not necessary. For indoor or confined spaces, provide explosion-proof local exhaust ventilation, or other engineer controls, to keep airborne concentration below the allowable threshold limit value. Make-up air should always by supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection	Chemical splash goggles in case of splashing. Wear long sleeved clothing to minimize skin contact. Be sure to use a MSHA/NIOSH approved respirator or equivalent when ventilation is inadequate. Full-faced self-contained breathing apparatus or air supplied (when concentrations exceed 300 ppm. For direct contact of more than 2 hours -- VITON or NITRILE gloves are recommended.
Personal Protection in Case of a Large Spill	No additional remarks
Exposure Limits	Petro-Canada recommends a working guideline of 1 ppm (3.2 mg/m³) of benzene for 8 hours time weighted average when handling product which may contain benzene; 300 ppm for 8 hours time weighted average and 500 ppm for short term exposure limit when handling Jet B. Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Clear liquid.
Dropping Point	Not available.
Penetration (@ 25°C)	Not available.
Boiling Point	50°C (122°F) to 243°C (470°F).
Melting Point	Not available.
Specific Gravity	0.75 to 0.80 kg/L @ 15°C (59°F).
Vapor Pressure	21 kPa (158 mmHg) @ 37.8°C (100°F).
Vapor Density	3.5 (Air = 1)
Volatility	Volatile 100% (v/v) or 100% (w/w).
Odor Threshold	Not available.
Oil / Water Dist. Coeff.	Not measurable.
Viscosity (@ 40 °C)	Not available.
Solubility	Insoluble in cold water, soluble in non-polar hydrocarbon solvents.

Odor	Petroleum like.
Taste	Not available.
Color	Clear and colorless.

Section 10. Stability and Reactivity

Stability	The product is stable.		
Instability Temperature	Not available.		
Conditions to Avoid	Stable under normal storage and use. Sources of ignition. Heating greatly increases fire and explosion hazards.		
Incompatibility with Various Substances	Extremely reactive or incompatible with oxidizing agents.	**Decomposition products:**	COx, SOx, paritally oxidized hydrocarbons, smoke on combustion.
Corrosivity	Not applicable		
Special Remarks on Reactivity	Avoid: nitric acid, sulfuric acid, chlorine, ozones, peroxides, etc., which cause detonation on contact.		
Special Remarks on Corrosivity	No additional remark.		

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Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation and ingestion.
Toxicity to Animals	Acute oral toxicity (LD50): 14000 mg/kg (Rat).
Chronic Effects on Humans	Kidney and liver damage may result from long-term exposure.
Other Toxic Effects on Humans	Inhalation of vapours or mist may cause irritation of nose and throat; headache, nausea, vomitting, dizziness, fatique, light-headedness, reduced coordination and unconciousness; central nervous system depressant; kidney and liver damage from long-term exposure. May be narcotic in high concentrations. Skin contact may cause drying, cracking, defatting, or inflammation of skin. Prolonged or repeated contact with skin may cause dermatitis. Eye contact may cause irritation, but no permanent damage. Overexposure due to ingestion is unlikey for adults since taste and smell limit the amount swallowed. Harmful or fatal if swallowed. For more information, refer to Section 11.
Special Remarks on Toxicity to Animals	This product contains a small quantity of benzene, which is a suspect human carcinogen.
Special Remarks on Chronic Effects on Humans	No additional remark.
Special Remarks on Other Toxic Effects on Humans	No additional remark.

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	Not available.
Toxicity of the Products of Biodegradation	Not available.
Special Remarks on the Products of Biodegradation	No additional remark.

Section 13. Disposal Considerations

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

Section 14. Transport Information

TDG Classification	Shipping Name: Fuel, aviation, turbine engine; UN 1863; Class: 3; Packing Group: III; Label required: Flammable liquid.
Special Provisions for Transport	No additional remark.

Section 15. Regulatory Information and Pictograms

Other Regulations	This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on CEPA-DSL, and USEPA-TSCA. This product may contain trace benzene, a carcinogen, which is required to be listed under OSHA hazard communication standard, 29 CFR 1910.1200 (U.S.). Not listed in CERCLA (40 CFR 302.4). Listed in EPCRA or SARA Title III, Section 302/304/311/312/313 (40 CFR 355/370/372) for benzene. Not listed in RCRA (40CFR 261.33). Please note that the chemical identity of some or all of the ingredients that may be listed herein is confidential business information and is being withheld as permitted by 29 CFR 1910.1200 and various State Right to Know Laws.	
Other Classifications	**WHMIS (Canada)**	B-2, D-2B
	DSD/DPD (EEC)	5- Heating may cause an explosion. 12- Extremely flammable. 18- In use, may form flammable/explosive vapor-air mixture. 36/37/38- Irritating to eyes, respiratory system and skin. 40- Possible risks of irreversible effects.

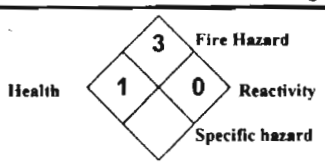
WHMIS (Canada) (Pictograms)

Continued on Next Page

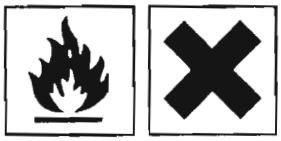
HMIS (U.S.A.)

Health Hazard	1
Fire Hazard	3
Reactivity	0
Personal Protection	h

NFPA (U.S.A.)



DSD/DPD (Europe) (Pictograms)



TDG (Canada) (pictograms)

DOT (U.S.A) (Pictograms)

Protective Clothing (Pictograms)

Section 16. Other Information

References	Available upon request.
Other Special Considerations	Note 1: * Contains trace amounts of conventional gasoline additives such as antioxidant, anti-static additive and icing inhibitor (2-Methoxyethanol). Note 2: ** Petro-Canada recommendation. Note 3: Avoid breathing vapours. Avoid contact with skin and eyes. Avoid aspiration.

Prepared by Admin-M on 6/24/97.	**Data entry by May Chau.**
	Print Date: 12/2/97.

Information Contact Petro-Canada
Product Safety Coordinator
(403) 296-4410

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

Material Safety Data Sheet

WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	A, B-1		

Section 1. Chemical Product and Company Identification

Product Name	**PROPANE**	**Code**	200-000-1, 200-000-2, File # W222
		DSL	On the DSL.
Synonym	Propane HD-5, Propane commercial, Dimethylmethane, Propyl hydride, Liquified Petroleum Gas (LPG), Alkane, C3H8.	**TSCA**	On TSCA inventory list.
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	Propane is used as a fuel gas, refrigerant and as a raw material for organic synthesis. The grade determines the propane content. It is supplied as pressurized liquid in tanks.		

Section 2. Composition and Information on Ingredients

Name	CAS #	% (V/V)	Exposure Limits (ACGIH) TLV-TWA(8 h)	STEL	CEILING
Propane ***	74-98-6	>90	Simple asphyxiant ***	Not applicable	Not applicable
Propylene */**	115-07-1	<5	Simple asphyxiant	Not applicable	Not applicable
Butane	106-97-8	<3	800 ppm	Not applicable	Not applicable
Ethyl mercaptan	75-08-1	<50 ppm	0.5 ppm	Not applicable	Not applicable

* Propane commercial contains more propylene.
** Propylene may not be present.
*** Notice of Intended Change 1996: 2500 ppm (4508 mg/m3)

Manufacturer Recommendation	Petro-Canada recommends a maximum exposure level of 1000 ppm (1800 mg/m³) for 8 hours time weighted average when handling propane based on OSHA PEL for simple asphyxiant.
Other Exposure Limits	Consult local, provincial or territory authorities for acceptable exposure limits.

Section 3. Hazards Identification.

Potential Health Effects

The health effects caused by exposure to propane are much less serious than its fire and explosion risk. Propane is essentially nontoxic in concentrations less than the lower explosive limit, but at very high concentrations it is a simple asphyxiant and displaces oxygen from the breathing atmosphere. Lack of oxygen may cause dizziness, headaches, diminished awareness, faulty judgement, increasing fatique, impaired muscular coordination progressing to convulsions, coma and death. A person working around propane in an enclosed space or in close proximity to a propane source (filling cylinders, purging lines and lighting / adjusting pilot lights, etc) who feels "light-headed", "dizzy", "drunken", or a little intoxicated should realize this effect may be due to a dangerously high level of propane vapours (in the explosive range) and go immediately into fresh air. Direct contact with escaping gas or liquefied gas can result in freezing burns or frost bite to skin and eyes. For more information, refer to Section 11.

Section 4. First Aid Measures

Eye Contact	If the eye tissue is frozen, seek medical attention immediately; if tissue is not frozen, immediately and thoroughly flush the eyes with running water for at least 15 minutes, keeping eyelids open. If irritation, pain, swelling, or crying has occurred, get medical attention.
Skin Contact	If frostbite has occurred, do not rub the affected areas or flush them with water, but thaw frosted parts by soaking in water. In order to prevent further tissue damage, do not attempt to remove frozen clothing from frostbitten areas. If frostbite has not occurred, immediately and thoroughly wash contaminated skin with soap and water.
Inhalation	Evacuate the victim to fresh air at once. If the victim is not breathing, perform mouth-to-mouth resuscitation. Administer oxygen if available. Keep the victim warm and at rest. Seek medical attention as soon as possible.
Ingestion	Since the product is a gas and that it is mostly probable that it will be inhaled more than ingested, please consider first to look at the preventive measures in case of inhalation.
Note to Physician	Monitor for respiratory distress. If cough or difficulty in breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis. Monitor blood gases to assure adequate ventilation. If vital signs become abnormal or symptoms develop obtain a chest x-ray.

Continued on Next Page

Available in French

Section 5. Fire-fighting Measures

Flammability	Class I - flammable gas (NFPA).	**Flammable Limits**	LOWER: 2.1%, UPPER: 9.5%
Flash Points	CLOSED CUP:-104.4°C (-156°F).	**Auto-Ignition Temperature**	450°C (842°F)
Fire Hazards in Presence of Various Substances	Extremely flammable in presence of open flames, sparks, and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. Rapid escape of vapour may generate static charge causing ignition.	**Explosion Hazards in Presence of Various Substances**	Can react vigorously with oxidizing materials. Severe explosion hazard when exposed to chlorine dioxide. Vapour explosion hazard indoors, outdoors or in sewers. Do not cut, weld, heat, drill or pressurize empty container.
Products of Combustion	Burns with a luminous, smoky flame. Carbon oxides (CO, CO2), smoke and irritating fumes as products of incomplete combustion.		
Fire Fighting Media and Instructions	NAERG96, GUIDE 115, Flammable Gas: if tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions. DO NOT extinguish a leaking gas flame unless leak can be stopped. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discolouration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. SMALL FIRE: use DRY chemicals, foam, or CO2. LARGE FIRE: use water spray, fog or foam. For small outdoor fires, portable fire extinguishers may be used, and self contained breathing apparatus (SCBA) may not be required. For all indoor fires and any significant outdoor fires, SCBA is required. Respiratory and eye protection are required for fire fighting personnel.		

Section 6. Accidental Release Measures

Material Release or Spill	NARG96, Guide 115, flammable gas. ELIMINATE ALL IGNITION SOURCES. Ventilate closed spaces before entering. Avoid contact, fully-encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire. Stop leak if without risk. By forced ventilation, maintain concentration of gas below the range of explosive mixture. Remove the leaking container to an open area and allow it to bleeds off into the atmosphere. Use water spray to reduce vapours; isolate area until gas has dispersed. For spill or leak: isolate in all directions at least 50 to 100 meters (160 to 330 feet), then evacuate in a downwind direction for at least 800 meters (0.5 miles). Check with applicable jurisdiction for specific disposal requirements of spilled material and empty containers. Notify the appropriate authorities immediately.

Section 7. Handling and Storage

Handling	Keep away from heat, spark, open flames and other sources of ignition. Empty container may contain flammable/explosive residues or vapours, DO NOT reuse empty containers without commercial cleaning or reconditioning. Ground/bond line and equipment during pumping or transfer to avoid accumulation of static charge. Keep away from incompatibles such as oxidizing agents (peroxides, chlorine). Avoid inhalation of vapours and skin or eyes contact with liquid. Practice good personal hygiene. Wash hands after handling and before eating. Launder work clothes frequently. Discard saturated leather goods. SPECIAL PRECAUTIONS: Sludges and tank scale from propane storage tanks, trucks and rail cars, and filters/screens may contain naturally occurring radioactive material ("NORM") in the form of lead 210. Similarily, equipment used for the transfer of propane such as product pipelines, pumps and compressors, may have detectable levels of radioactive lead 210 on inner surfaces. Workers involved in cleaning, repair or other maintenance on inner surfaces of such equipment should avoid breathing dust generated from such activities. Suitable codes of practice should be developed for these activities, detailing appropriate occupational hygiene and disposal practices.
Storage	Compressed gases should be stored in a separate safety storage cabinet or room. Store in cool, well-ventilated area away from direct sunlight or heat radiation. Use explosion proof electrical equipment.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal outdoor application, special ventilation is not necessary. For indoor or confined spaces, provide explosion-proof local exhaust ventilation, adequate oxygen (at least 18% by volume), and flame-proof electrical switches and lighting system. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to the work-station location.
Personal Protection	
Eyes	Face shield or chemical splash goggles in case of splashing.
Body	Wear appropriate loose clothing with closed neck and long sleeves to prevent the skin from becoming frozen from contact with the liquid or from contact with vessels containing the liquid.
Respiratory	When exposure is likely to exceed recommended exposure limit (see section 2), use NIOSH approved respiratory equipment. Respirator should be selected based on the form and concentration of contaminant in air (refer to NIOSH Pocket Guide for Chemical Hazard for respirator selection). In order to determine the concentration of the contaminant, air sampling is RECOMMENDED AND SHOULD BE PERFORMED BY A HEALTH & SAFETY SPECIALIST (AS PER THE NIOSH Manual of analytical Methods for method of measurement). If air sampling is not practical and concentration is unknown, use positive pressure self-contained breathing apparatus (SCBA). Contact appropriate HEALTH & SAFETY personnel or supplier for assistance.
Hands	Wear insulated gloves to prevent from frostbite.
Feet	Safety boots or shoes.

Continued on Next Page

Section 9. Physical and Chemical Properties

Physical State and Appearance	Gas at room temperature; liquid when stored under pressure.	**Viscosity**	Not applicable.
Colour	Colourless.	**Pour Point**	Not applicable.
Odour	Odourless gas in natural state at any concentration. Propane sold for fuel use has an odourant added which is commonly a mercaptan, which has an odour similar to "rotten eggs" or "skunk".	**Softening Point**	Not applicable.
Odour Threshold	Odour is not an adequate warning to prevent overexposure to propane. Prolonged exposure to mercaptans can cause olfactory desensitization.	**Dropping Point**	Not applicable.
Boiling Point	-42°C (-43.6°F) @ 1 atm.	**Penetration**	Not applicable.
Specific Gravity	0.51 Kg/L @ 15°C (Water = 1).	**Oil / Water Dist. Coeff.**	Log Kow: 2.36; mobile.
Vapour Density	1.56 @ 0°C (32°F), 1.8 @ 20°C (68°F), Air = 1.	**Ionicity (in water)**	Not applicable.
Vapour Pressure	<10763 mmHg @ 100°F (<1435 kPa @ 38°C).	**Dispersion Properties**	Not available.
Volatility	Volatile	**Solubility**	62 ppm in water at 25°C (77°F), slightly soluble in acetone. Soluble in benzene, ether, alcohols, chloroform.

Section 10. Stability and Reactivity

Corrosivity	Non corrosive.		
Stability	The product is stable under normal handling and storage conditions.	**Hazardous Polymerization**	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Highly reactive with oxidizing agents (peroxides, chlorine).	**Decomposition Products**	Releases of COx, smoke and irritating fumes when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Inhalation, skin contact and eye contact.
Acute Lethality	Simple asphyxiant. LC50 (inhalation/human): no effect for 10,000 ppm (1%) break exposure; slight dizziness in a few minutes at 100,000 ppm (10%).
Chronic or Other Toxic Effects	
Dermal Route:	Low dermal penetration. Skin irritation has not been shown even with twice daily application for 12 weeks in humans volunteers.
Inhalation Route:	Subchronic inhalation studies in monkeys shown no evidence of organs toxicity or abnormalities.
Oral Route:	No studies were found.
Eye Irritation/Inflammation:	No evidence.
Immunotoxicity:	No studies were found.
Skin Sensitization:	No studies were found.
Respiratory Tract Sensitization:	No studies were found.
Mutagenic:	Not mutagenic in the Salmonella typhimurium/microsome assay (Ames test).
Reproductive Toxicity:	No studies were found.
Teratogenicity/Embryotoxicity:	No studies were found.
Carcinogenicity (ACGIH):	Simple asphyxiant.
Carcinogenicity (IARC):	No studies were found.
Carcinogenicity (NTP):	No studies were found.
Carcinogenicity (IRIS):	No studies were found.
Carcinogenicity (OSHA):	No studies were found.
Other Considerations	Acts as a simple asphyxiant -- inert gas or vapour. The narcotic or intoxicated effect of a simple asphyxiant may impaired a person's judgement, but it temporary and will rapidly disappear in fresh air. Persons with anemia or other conditions of reduced oxygen-carrying capacity may be more sensitive.

Continued on Next Page

Section 12. Ecological Information

Environmental Fate	Volatilizes and disperses rapidly. Volatilation is expected to be the dominant fate process.	**Persistance/ Bioaccumulation Potential**	Propane is readily biodegraded by soil bacteria (Microbacterium vaccae). The degradation of propane is similar to the degradation of fatty acids
BOD5 and COD	Not available.	**Products of Biodegradation**	Not available.
Additional Remarks	Henry's Law constants for propane has been calculated to be 7.07x10-1 atm-m³/mole @ 25°C. These mean that propane may rapidly volatilize from water and moist soil to the atmosphere. The estimated half-life for evaporation of propane from a model river (1m deep flowing 1m/s with a wind speed of 3 m/s) and a model pond are 1.9 hr and 2.3 days, respectively.		

Section 13. Disposal Considerations

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

Section 14. Transport Information

TDG Classification	Shipping name : Propane or Liquefied Petroleum Gas; UN 1978 or UN 1075, Class 2.1; Label required: Flammable gas.	**Special Provisions for Transport**	102 Add "SPECIAL COMMODITY" to document if in car load, container load by rail. Acceptable modes of transportation: air (cargo only), rail, road and water. Not acceptable for transport by passenger aircraft.

Section 15. Regulatory Information

Other Regulations	All components of this formulation are listed in the Domestic Substances List (DSL-Canadian) and in the Toxic Substances Control Act Inventory (TSCA-U.S.). This product is not known to contain any of the carcinogens required to be listed under OSHA hazard communication standard, 29 CFR 1910.1200 (U.S.). Not listed in EPCRA or SARA Title III, Section 313, Toxic Chemicals (40 CFR 355). Not listed in CERCLA (40 CFR 302.40). Please note that the chemical identity of some or all of the ingredients that may be listed herein is confidential business information and is being withheld as permitted by 29 CFR 1910.1200 and various State Right to Know Laws.
DSD/DPD (Europe)	2- Risk of explosion by shock, friction, fire or other sources of ignition. 13- Extremely flammable liquefied gas. 16- Explosive when mixed with oxidizing substances. 20/21- Harmful by inhalation and in contact with skin. 35- Causes severe burns.
DSD/DPD (Europe) (Pictograms)	 **DOT (U.S.A) (Pictograms)** 

HMIS (U.S.A.)

Health Hazard	1
Fire Hazard	4
Reactivity	0
Personal Protection	d

NFPA (U.S.A.)

Rating
0 Insignificant
1 Slight
2 Moderate
3 High
4 Extreme

Section 16. Other Information

References Available upon request.

Glossary

ACGIH - American Conference of Governmental Industrial Hygienists
ASTM - American Society for Testing and Materials
ADR - Agreement on Dangerous goods by Road (Europe)
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 - Chemical Hazard Information and Packaging Approved Supply List
COD - Chemical Oxygen Demand
CPR - Controlled Products Regulation
DOT - Department of Transportation (U.S.A.)
DSCL - Dangerous Substances Classification and Labeling (Europe)
DSD/DPD - Dangerous Substance or Dangerous Preparations Directives (Europe)
DSL - Domestic Substance List
EEC/EU - European Economic Community/European Union
EINECS - European Inventory of Existing Commercial Chemical Substances
EPCRA - Emergency Planning And Community Right-To-Know Act
FDA - Food and Drug Administration
HCS - Hazardous Communication System
HMIS - Hazardous Material Information System
IARC - International Agency for Research on Cancer
IRIS - Integrated Risk Information System
LD50/LC50 - Lethal Dose/Concentration kill 50%
LDLo/LCLo - Lowest Published Lethal Dose/Concentration
NAERG'96 - North American Emergency Response Guide Book (1996)
NFPA - National Fire Prevention Association
NIOSH - National Institute for Occupational Safety & Health
NPRI - National Pollutant Release Inventory
NTP - National Toxicology Program
OSHA - Occupational Safety & Health Administration
PEL - Permissible Exposure Limit
RCRA - Resource Conservation and Recovery Act
SARA - Superfund Amendments and Reorganization Act
SD - Single Dose
STEL - Short Term Exposure Limit (15 minutes)
TDG - Transportation Dangerous Goods (Canada)
TDLo/TCLo - Lowest Published Toxic Dose/Concentration
TLm - Median Tolerance Limit
TLV-TWA - Threshold Limit Value-Time Weighted Average
TSCA - Toxic Substances Control Act
USEPA - United States Environmental Protection Agency
USP - United States Pharmacopoeia

Continued on Next Page

FIFRA - Federal Insecticide, Fungicide, and Rodenticide Act		WHMIS - Workplace Hazardous Material Information System
Information Contact	**Petro-Canada** **Product Safety Coordinator** **(403) 296-4410**	**Prepared by May on 18/03/97.** **Data entry by May Chau.**

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

APPENDIX B

SPILL RESPONSE EQUIPMENT

BASIC CONTENTS OF FUEL SPILL RESPONSE KITS
(commercially available spill kits)

Spill Kits on site consist of the following:

- 1 – 205 litre, 16 gauge open top drum with bolting ring and gasket
- 1 package of 10 disposable 5 mil polyethylene bags
- 1 shovel
- 4 – 5’ x 10” booms
- 10 lb bag of particulate
- 1 bail 17’ x 19’ absorbent sheets (100 sheets per bail)
- 2 PVC oil resistant gloves
- 2 respirators
- 2 pairs of splash protective goggles

Spill response kits will be placed at active drill sites and at helicopter re-fuelling points (fuel caches), and at water pumps that are distant from active drill sites

Any spill kit materials that are used for spill clean-ups will be replaced as soon as practical so that all kits are complete at all times

In addition to Spill Response Kits the drilling contractor and the helicopter contractor will be required to have adequate containment built into all equipment using fuels, oils and lubes, and to provide absorbent pads and sheets under all fuel tanks, oil pans and hydraulic equipment.

APPENDIX C

NWT SPILL REPORT FORM

Northwest Territories

N.W.T. SPILL REPORT (Oil, Gas, Hazardous Chemicals or other Materials)

ᓄᓇᕗᑦ ᑯᐱᓕᓂ ᐅᓂᒃᑳᖅᑎᑦᓯᓂᖅ ᐃᓕᓴᕐᓂᖅ, ᒪᓂ, ᐊᑦᑕᓇᖅᑐᑦ

24-hour Report Line
24-ᓂᑦ ᐃᒃᑲᕐᓂᑦ ᐅᓂᒃᑲᖅᑎᐅᔪᓇᖅᑐᑦ ᐅᑦᑭᒃᓂᐅᑎᑦ
Phone/ᐅᑭᒃᓴᓂᑦ (403) 920-8130
Fax/ᓱᒃᑐᑲᑯᑦ (403) 873-6924

A Report date and time
ᐅᑦᓯᖅ ᓱᐳᖅᓴᓂᓗ ᖃᓪᓗᓈᑦᑎᑦᓯᓗᒍ ᐅᓂᒃᑳᑎᑎᓂᐅᑦ

B Date and time of spill (if known)
ᐅᑦᓯᖅ ᐊᑎᑦᓯᒍ ᖃᓪᓗᓈᑦᑎᑦᓯᓗᒍ ᓴᓇᓗ (ᖃᐅᔨᒪᔭᐅᔪᑦ)

C ☐ Original report ᓱᑲᓪᓕᖅᑕ ᐅᓂᒃᑳᑎᑎᓂᐅᔪᖅ
☐ Update no. _____ ᐅᓂᒃᑳᑎᑎᓂᐅᔪᖅ ᓇᓕᒃ __

Spill number
ᐊᑎᑦᓯᑦ ᓇᓕᒃᑕ

D Location and map coordinates (if known) and direction (if moving)
ᓇᓂ ᐊᑎᑦᓯᑦ ᑭᒪᓗ ᓄᓇᖅᓯᐊᑦ ᓇᓕᐅᑎᓂᑦ (ᖃᖅᐅᔨᒪᔭᐅᔪᑦ) ᑭᒪᓗ ᓇᒥᔅᓴᐅᑦᓯᓂᐅᓪᓚᖅᓯᑦ (ᐃᓕᑦᑐᔪᑦ)

E Party responsible for spill
ᑭᓇᑦ ᐊᑎᑦᑎᑎᑦᑦ

F Product(s) spilled and estimated quantities (provide metric volumes/weights if possible)
ᑭᓯᑦ ᑭᓯᓪᓗᓂᑦ ᐊᐃᑦᑦ ᖃᓄᐃᑎᓗ ᐊᒋᐅᓂᖅᑦ (ᐊᑐᒋᐅᓪᓚ ᐅᑭᖓᑦᓂᓯᑎᓪᓗᓂᑦ ᐊᔪᓐᓇᑎᑦᑦ)

G Cause of spill
ᑭᓯ ᐊᐱᑦᔪᑕᐅᑦ

H Is spill terminated?
ᐊᐃᔪᖅ ᓄᖅᖃᑎᑕᐅᔪᓐ?
☐ yes/ Δ ☐ no/ ᐊᖏᓐ

I If spill is continuing, give estimated rate
ᓯᓂ ᐊᐃᑦᑦ ᖃᓄᑎᒥ ᓯᖃᓂᒋᓂᖅᓯᐊᑦ

J Is further spillage possible?
ᐊᐃᖃᓐᓂᑐᐃᓇᓂᐊᖅᖃᖅᑐᑦ?
☐ yes/ Δ ☐ no/ ᐊᖏᓐ

K Extent of contaminated area (in square metres if possible)
ᖃᓄᖅ ᐊᔪᑎᑎᓪᓚ ᐊᐃᓐᐳᐃᔪᖅ (ᐅᑐᐃᓐᓯᒪᓕᓗᒍ ᐊᔪᓐᓇᑎᑦᑦ)

L Factors affecting spill or recovery (weather conditions, terrain, snow cover, etc.)
ᑭᓯᑦ ᐱᑦᔪᑕᐅᓪᓚ ᐊᐃᔪᒍᑦ ᐅᑦᑕᓇ ᐊᐅᒃᑕᑕᐅᓇᓱᑎᑦᓯᓗᒍ ᐳᓪ ᖃᓄᐃᓕᖅᓴᓂᖅᓄᑦ, ᓄᓇ ᖃᓄᐃᓕᖅᓴᓂᖅᓄᑦ ᐊᑐᖅᑐᒃᓯᒪᓕᖅᓴᓂᖅ, ᐊᔪᓐᓇᑎᑦᓯᓗᒍ)

M Containment (natural depression, dykes, etc.)
ᐅᖃᓗᐊᓗᖃᖅᑎᑦᓯᐅᑦ ᑭᓪᓕᐊᔪᑦ ᐃᓱᒪᓕᓂᖃᖅᓯᒪᔪᖅ (ᓄᓇᒥ ᐃᓱᒪᓕᐃᑦ, ᐊᓱᑭᓄᖅᑐᓗ)

N Action, if any, taken or proposed to contain, recover, clean up or dispose of product(s) and contaminated materials
ᖃᓄᐃᓕᖅᑎᑦ, ᖃᓄᐃᓕᖅᑎᑦᓯᐅᑦᓯᓂᑦ ᐅᑦᑕᓇ ᖃᓄᐃᓕᖅᑎᑦᓯᐅᓂᒃᑯᑦ ᐊᑕᐅᓯᒋᑎᑎᑕᐅᓇᓱᒋᑦ, ᓄᖅᖃᖅᑎᑕᐅᓇᓱᒋᑦ ᐅᑦᑕᓇ ᐃᒋᑕᐅᓂᐊᖅᓯᑦ ᐊᐱᑦ (ᐊᐱᑦᔪᑕᐅᓂᖅᑦ) ᑭᒪᓗ ᐊᐃᑦᐃᐱᑦ.

O Do you require assistance?
ᐃᖅᓯᖅᑕᐅᔭᓇᐊᖅᖃᖅᑎᑦ?
☐ no ᐊᖏᓐ ☐ yes, describe: Δ - ᓇᔪᓇᐃᖅᑐᔪᒍ

P Possible hazards to persons, property, or environment; eg. fire, drinking water, fish or wildlife
ᑭᑦᑕᓇᑐᐃᓐᓇᓱᖅᖃᖅᑎᑦᑦ ᐃᓄᖅᓄᑦ, ᐱᓕᐊᑎᑎᑦᑕᐅᓇᓱᑦ ᐅᑦᑕᓇ ᐊᒋᑎᒍᑦ ᓯᓗ - ᐃᑭᖅᑐᓄ, ᐃᒥᑦᒍᑦ ᓄᓇᕗᑦ ᐊᑎᑦᑎᑎᑦᑦ, ᐃᖃᓗᓕᓴᐅᑦ ᐅᑦᑕᓇ ᓄᑦᔪᑎᓄᑦ

Q Comments and/or recommendations ᐅᖃᐅᓯᖃᐃᑦ ᑭᒪᓗ ᐅᑦᑕᓇᑦᓂᑦ ᖃᓄᐃᓕᒋᐊᕐᓂᐅᑦ

FOR SPILL LINE USE ONLY
ᑲᑐᑕᐅᔨᖃᖅᑎᑦ ᐊᐃᔪᓂᑦ ᐅᖃᓕᑭᐅᑦᑐᑲᓂᑐᖅ

Lead Agency
ᐃᓕᖃᐃᓕᑦᑐᓕᓪᓕᖅᑕᑦ ᐊᐃᔪᒥᑦ ᖃᒪᓕᕆᖃᖅᑐᑦ-

Spill significance
ᐊᐃᔪᑦ ᖃᓄᐃᓕᖅᑎᑦᓯᓗ-

Lead Agency contact and time
ᐃᓕᖃᐃᓕᑦᑐᓕᓪᓕᖅᑕᑦ ᐊᐃᔪᒥᑦ ᖃᒪᓕᕆᖃᖅᑐᑦ
ᖃᐅᔨᒪᔭᕐᑕᐅᓇᓱᒋᑦ ᑭᒪᓗ ᖃᓄᐃᓕᖅᑐᑎᑦᑦᓗᒍ

Is this file now closed? ☐ yes/Δ ☐ no/ᐊᖏᓐ
ᑕᑯᓐᓇ ᐅᓂᒃᖃᓕᒫᔪᖅ ᒪᑐᐅᑦᑐᒃ?

Reported by ᐅᓂᒃᖃᑦᑐᖅ	Position, Employer, Location ᖃᓄᐃᑦᑐᒥᑦ ᐃᓕᖃᐃᓕᑦᑐᓕᓪᓕᖅᑕᑦ, ᐃᓕᖃᐃᓕᑦᑐᖅᑎᑦᓗ, ᓇᒥ	Telephone ᐅᑦᖃᓕᑭᐅᑦ
Reported to ᑭᓇᓕᓂᑦ ᐅᓂᒃᑲᑎᑕᐅᔪᖅ	Position, Employer, Location ᖃᓄᐃᑦᑐᒥᑦ ᐃᓕᖃᐃᓕᑦᑐᓕᓪᓕᖅᑕᑦ, ᐃᓕᖃᐃᓕᑦᑐᖅᑎᑦᓗ, ᓇᒥ	Telephone ᐅᑦᖃᓕᑭᐅᑦ

NWT 1752/1295