APPENDIX 6

SPILL CONTINGENCY PLAN

KIKERK/KNIFE LAKE PROJECT

1.0 BASIC STEPS - SPILL PROCEDURE

De Beers Canada Exploration Inc. (DBCE) believes that, in the case of a spill or 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.

According to the DBCE Environmental Management System – Operating Procedure #036, the basic steps of a response plan are as follows:

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

2. Find and identify the spill substance and its source, and, if possible, stop the process or shut off the source.

3. Inform the immediate supervisor or his/her designate at once, so that he/she may take appropriate action. (Appropriate action includes the notification of a government official, if required.)

4. Contain the spill or environmental hazard, as per its nature, and as per the advice of the Spill Line and Environmental Advisers, as required.

5. Implement any necessary cleanup or remedial action.

1.1. BASIC STEPS - CHAIN OF COMMAND

1. Immediately notify the Project Geologist, Peter Holmes **(867) 776-7350** (office) or **(867) 920-7004** (home), or Assistant Geologist (office # above, or at field camp) of any spill. He/she then notifies the Response Co-ordinator (if a different individual).

2. Response Co-ordinator or his/her designate then contacts the **24-Hour Spill Line**, if warranted, as follows:

   Phone: **(867) 920-8130**

   FAX: (867) 873-6924

A "Spill Report Form" (*Figure 1)* is filled out as completely as possible before or after contacting the 24-Hour Spill Line.

Other members of the Northern team are notified, such as the Lands Adviser (Shirley Standafer-Pfister) and Regional Manager (Todd McKinlay), both based in Yellowknife – **(867) 766-7350** (phone), **(867) 766-7351** (FAX). (Lands Adviser cell is **(867) 444-1239**; Regional Manager cell is **(867) 873-1594**).

If the spill is minor (such as dripping of fuel during transfer, which can be absorbed by padding, absorbent crystals, etc.), then the Lands Adviser in Yellowknife is notified by phone **(867) 766-7350**, FAX **(867) 766-7351**, cell **(867) 444-1239** or e-mail: (**shirley.standaferpfister@ca.debeersgroup.com**).

OTHER CONTACTS–SPILL RESPONSE/ ASSISTANCE

Mobile Emergency Spill Response Unit Canadian Northern Oil (Shell Canada Bulk Plant, Yellowknife)		
	Matthew Wasserman	(867) 873-3337 (during business hours)
	Peter Lane	(867) 669-1459 (24-hour cell-phone number)
G&G Expediting	Glen MacCara (cell)	(867) 873-1866
De Beers Expeditor	Bryon Jones (cell)	(867) 444-1173
Environment Canada		
	David Tilden, Yellowknife	(867) 669-4728
	Nunavut Office, Iqaluit (Nunavut FAX line)	(867) 975-4639 (867) 975-4645
Lands Administration, Indian and Northern Affairs Canada		
	Lands Administrator, Nunavut District	(867) 975-4275
		(867) 975-4286 (FAX)

Water Resources, Indian and Northern Affairs (867) 975-4550
(Iqaluit)
(FAX) (867) 975-4560

RCMP, Yellowknife detachment
Emergencies only:
(867) 669-1111

RCMP, Kugluktuk detachment
Emergencies only:
(867) 982-4111

Yellowknife Fire Department	(867) 873-4506 (867) 873-9056 (FAX)
Kugluktuk Fire Department	(867) 982-4222

Workers' Compensation Board –Occupational Health and Safety (Iqaluit Office)

(867) 404-4407

Workers' Compensation Board-Exploration Site Accident Reports

(867) 873-4412

(867) 873-0123 (cell)

2. TAKING ACTION

2.1. BEFORE THE FACT: PREVENTIVE MEASURES

The following actions illustrate the proactive approach of DBCE to environmental care. In addition, they minimise the potential for spills during fuel handling, transfer or storage:

1. Fuel transfer hoses with camlock mechanisms are to be used.
2. Carefully monitor fuel content in the receiving vessel during transfer.
3. Clean up drips and minor spills immediately.
4. Regularly inspect drums, tanks and hoses for leaks or potential to leak. (For example, fabric-sheathed hose, such as fire hose or petrol-transfer hoses may develop pinholes or surficial cracks from normal weathering out of doors.
5. Drip pans are to be used at all sites where fuel is transferred and under stationary machinery (e.g., gen-sets).

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

2.2 AFTER THE FACT: MITIGATIVE MEASURES

1. First steps to take when a spill occurs:

   a) Ensure your own safety and that of others around you, beginning with those nearest to the scene.

   b) Control danger to human life, if necessary.

   c) Identify the source of the spill.

   d) Notify the Project Geologist, as soon as is practical; he in turn notifies the Response Co-ordinator (if a different individual).

   e) Assess whether or not the spill readily can be stopped.

   f) Contain or stop the spill at the source, if possible, by following these actions:

      i. If filling is in progress, STOP AT ONCE.

      ii. Close or shut off valves.

      iii. Place plastic sheeting at the foot of the tank or barrel to prevent seepage into the ground or runoff of fuel.

      iv. Use a patch kit to seal leaks, if practical to do so.

2. Secondary steps to take:

   a) Determine status of the spill event.

   b) If not reported under *1. d)*, report incident and steps taken to the Project Geologist, who in turn informs the Response Co-ordinator (if a different individual).

   c) If necessary, pump fuel from a damaged and/or leaking tank or drum into a refuge container.

   d) Notify the 24-hour Spill Report Line, and receive further instructions from the appropriate contact agencies listed in *1.2* (e.g., disposal of contaminated soil or ice/snow in sealed containers for removal from site, etc.)

   e) Complete and FAX a copy of the Spill Report Form (present in each DBCE camp and at the Yellowknife office).

f) Notify permitting authorities and the Lands Adviser.

g) If possible, resume cleanup and containment.

2.3 FUEL SPILLS ON LAND

"Land" may be defined as soil, gravel, sand, rock and vegetation. Advice on spill containment and cleanup may be obtained from the 24-Hour Spill Line and/or from the two DBCE environmental advisers.

2.3.1 Procedure for spills on rock

For hydrocarbon spills on rock outcrops, boulder fields, etc.:

1. Response Co-ordinator or his designate obtains plastic tarp(s) and absorbent sheeting on-site.

2. A berm of peat, native soil or snow is constructed downslope of the seepage or spill.

3. The tarp is placed in such a way that the fuel can pool for collection and removal (e.g., at the foot of the berm.) If there is a large volume of spilled product, pump the liquid into spare empty drums for sealing and disposal later off-site.

4. Absorbent sheeting is placed on the rock to soak up spilled oil, petrol, etc.

5. Saturated sheeting is disposed of in an empty drum, which is then labelled and sealed. Alternatively, the pads may be wrung out into the empty drum(s); the drums marked and then secured for eventual disposal off-site. The pads may be reused.

6. The disposal container is then transported off-site.

7. Depending on the nature and volume of the spill, the 24-Hour Spill Line may be contacted after Step 4 or after Step 5.

2.3.2 Procedure for spills on land

1. Response Co-ordinator or his designate obtains plastic tarp(s), absorbent sheeting, Spagh-zorb

or other ultra-dry absorbent and any other necessary spill containment equipment, pump, hoses, etc.

2. A berm of peat, native soil or snow is constructed downslope of the seepage or spill.

3. The tarp is placed in such a way that the fuel can pool for collection and removal (e.g., at the foot of the berm). If there is a large volume of spilled product, pump the liquid

into spare empty drums, and dispose of product by transporting to a solid waste disposal facility.

4. Petroleum-product sheening on vegetation may be controlled by applying a thin dusting of Spagh-Zorb or other ultra-dry absorbent to the groundcover.

5. Contact the 24-Hour Spill Line. Receive instruction from the appropriate contact agencies listed in *1.2* regarding collection of the contaminated soil or vegetation, its removal and site cleanup/ restoration.

6. Depending on the nature and volume of the spill, Response Co-ordinator or his designate implements the spill action plan.

2.4 FUEL SPILLS ON WATER

2.4.1 Procedure for spills on water

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

1. If the spill is small, deploy hydrophobic (water repellent) absorbent pads on water. Hydrophobic pads readily absorb hydrocarbons. Alternatively, an ultra-dry absorbent designed for use on water-based spills may be deployed.

2. If the spill is larger, ready several empty drums to act as refuge containers for the spill.

3. Deploy *containment* booms on the water surface to "fence in" the spill area gradually and to prevent it from spreading. Keep in mind that environmental factors such as high winds and wave action can adversely affect attempts at spill cleanup.

4. *Absorbent* booms then can be deployed to encircle and then absorb any hydrocarbon spillage that may have escaped the containment boom.

5. Once a boom has been secured, a skimmer may be brought on-scene to aid in capture of the hydrocarbon; once captured, the product should be pumped to the empty fuel drums and held for disposal.

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

7. If the spill is sufficiently large, and cannot be contained by rapid action of personnel present, contact the Mobile Environmental Response Unit for assistance. (Weather permitting, this unit can be flown to an emergency spill site within several hours.)

2.5 FUEL SPILLS ON SNOW AND ICE

2.5.1 Procedure for spills on snow and ice

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

Drilling from ice: Best practice

Driving the casing invariably is a messy (visually untidy) but benign operation. Although drilling from ice is accomplished by means of a closed-circuit system, wet sediments brought to surface may drip onto the ice surrounding the drill. Dribblings of fuel and oil from the drill, heater, compressor(s), etc., occasionally may collect on ice during a shift, even when drip pans are placed under equipment, but easily are absorbed by snow, and, if required, by ultra-dry commercial absorbent. Drillsites are marked with flags and pickets prior to drilling, and this enables easy visual location of drillsites after move-off. Scraping and/or steaming removes all such material, and removed material is then bagged and transported by snowmachine or other vehicle to a containment area (sump or depression) on shore. After drillsite cleanup, no débris will remain on the ice.

No material or equipment not required for immediate use is to be stored by the company or its contractors on the surface ice of lakes or other waterbeds. Material or equipment so placed (e.g., survey stakes, fuel, timbers, pipe racks, drill sheds, and the like) is to be placed on ice of sufficient thickness (*see attached Table 1)* and removed promptly once temporary use has ceased.

2.5.1.1 SPILLS ON SNOW

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

2. Shovel or scrape contaminated snow and deposit in empty refuge drums. If the spill is more extensive, build peat-bale berms, or compacted-snow berms with plastic over top, around the affected area.

3. Either during or immediately after the incident, notify the 24-Hour Spill Line. Receive instructions on the preferred disposal method (e.g., storage in sealed drums, transport off-site for disposal) from the appropriate contact agencies listed in *1.2*.

2.5.1.2 SPILLS ON ICE

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

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

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

3. Contact the 24-Hour Spill Line. Receive disposal instructions (e.g., sealing in drums, transport off-site, etc.) from the appropriate contact agencies listed in *1.2*.

4. Where fuel or oil has escaped to the receiving waters, also contact the 24-hour emergency line of the Mobile Environmental Response Unit.

2.6 PROCEDURE FOR CHEMICAL SPILLS

1. Assess the hazard of the spilled material. Members of the camp 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.

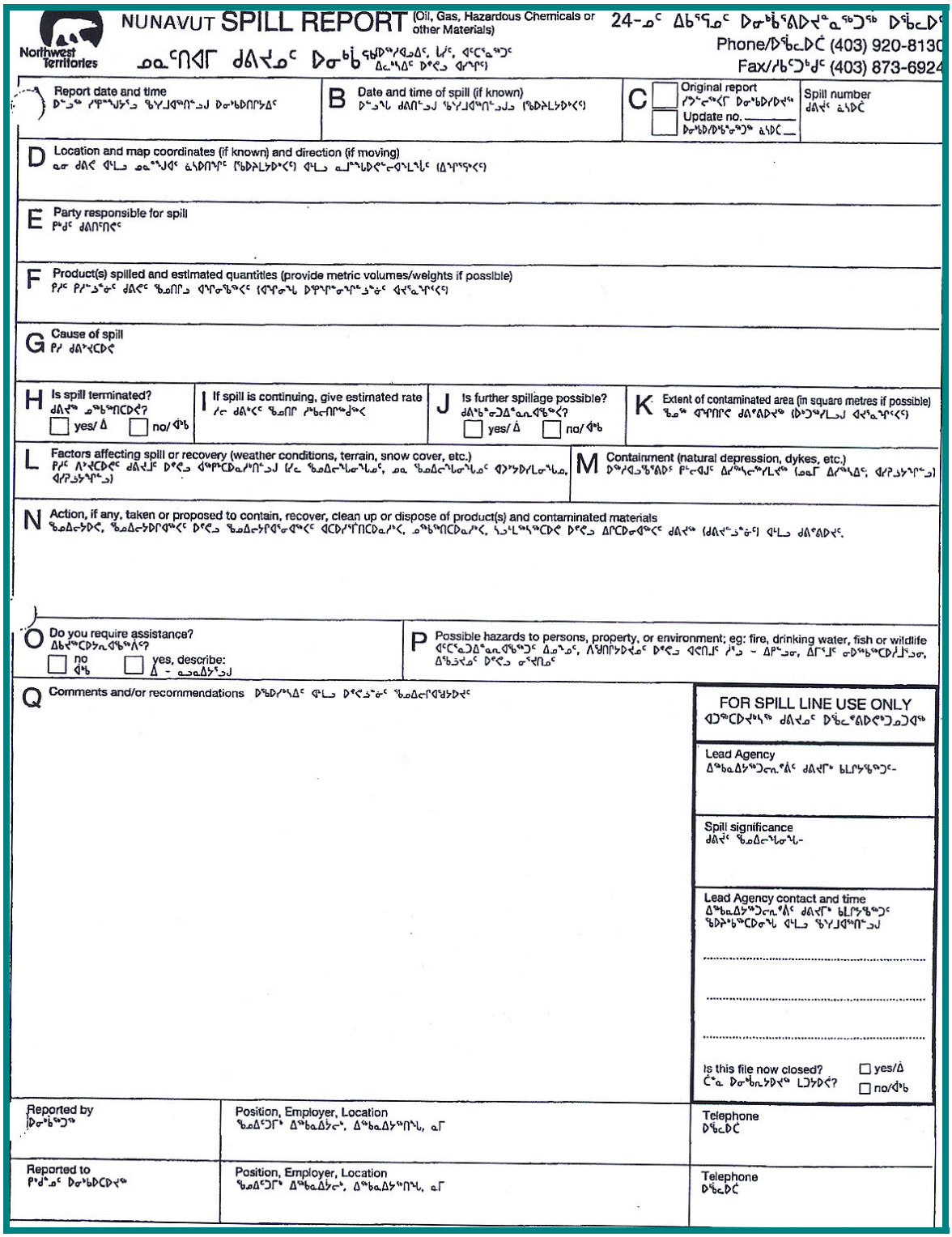
4. Place plastic sheeting over solid chemicals, such as dusts or powders, to prevent their disbursement by wind, or investigation by birds or other mammals.

5. Neutralise 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. Receive instructions on disposal methods and designated locations from the appropriate contact agencies listed in *1.2*.

NUNAVUT SPILL REPORT FORM

Figure 1



NUNAVUT SPILL REPORT (Oil, Gas, Hazardous Chemicals or other Materials)

Northwest Territories

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24-ᓂᑦ ᐃᑲᖏᓂᑦ ᐅᓂᒃᑲᖏᐃᐅᔪᓐᓇᖅᑐᖅ ᐅᖏᓕᐅ

Phone/ᐅᖏᓕᐅᑦ (403) 920-8130

Fax/ᓱᑲᑐᒃᑯᑦ (403) 873-6924

Report date and time ᐅᓪᓗᖅ ᓯᕗᓪᓚᕆᓪᓕᓴ ᖃᓄᐃᓕᖅᑎᑦᓴᐃᓗ ᐅᓂᒃᑲᐅᑎᕐᓂᐅᓴᑦ	B Date and time of spill (if known) ᐅᓪᓗᓐᓇ ᑯᐃᑎᓴᐃ ᖃᓄᐃᓕᖅᑎᑦᓴᐃᓗ (ᖃᐅᔨᓴᒪᕆᐅᔪᑦ)	C ☐ Original report ᓱᓕᓪᓕᖅᑕᑦ ᐅᓂᒃᑲᐅᓱᐅᔪᖅ ☐ Update no. ___ ᐅᓂᒃᑲᐅᓱᐅᖃᓕᓂᖅ ᓇᓗᑦᑕ___	Spill number ᑯᐃᔪᑦ ᓇᓗᑦᑕ

D Location and map coordinates (if known) and direction (if moving)
ᓇᓂ ᑯᐃᔪᑦ ᐊᓯᓗ ᓇᓇᓕᔪᑦ ᓇᓗᐅᑎᓕᑦ (ᖃᐅᔨᓴᒪᕆᐅᔪᑦ) ᐊᓯᓗ ᓇᒥᓇᑲᐅᑦᓭᐅᓴᒪᓕᑦ (ᐃᓕᓴᕐᔪᑦ)

E Party responsible for spill
ᑭᓄᑦ ᑯᐃᑎᑎᑦᑕᑦ

F Product(s) spilled and estimated quantities (provide metric volumes/weights if possible)
ᑭᓱᑦ ᑭᓱᓪᓚᓂᑦ ᑯᐃᒃᑦ ᖃᓄᐃᓕᖅᑐᑦ (ᐊᖏᓂᓄᖅ ᐅᖓᓯᓂᑦᓴᓂᑦ ᐊᓱᓇᓕᖅᑐᑦ)

G Cause of spill
ᑭᓱ ᑯᐃᓴᐅᑕᐅᑦ

H Is spill terminated?
ᑯᐃᔪᖅ ᓄᖅᑲᖓᑎᑕᐅᑭᑐ?
☐ yes/ Δ ☐ no/ ᐊᖅ

I If spill is continuing, give estimated rate
ᓱᓕ ᑯᐃᓴᑦ ᖃᓄᐃᓕᖅᑎᑦᓴᐃᓗ

J Is further spillage possible?
ᑯᐃᓴᖅᓂᑐᐃᓪᓕᓇᖅᑐᖅᓴᐅᓴᑦ?
☐ yes/ Δ ☐ no/ ᐊᖅ

K Extent of contaminated area (in square metres if possible)
ᖃᓄᖅ ᐊᖏᑎᑎᓕᑦ ᑯᐃᐊᐃᑕᐅᖅ (ᑭᐅᑐᖏᓕᓴᐃᓗ ᐊᓱᓇᓕᖅᑐᑦ)

L Factors affecting spill or recovery (weather conditions, terrain, snow cover, etc.)
ᑭᓱᑦ ᐱᓱᐊᑕᐅᑦ ᑯᐃᓕᔪᑦ ᐅᑭᓪ ᐊᖏᑭᑕᐅᓇᓕᖅᑎᓪᓚᐃᓗ (ᓱᓕ ᖃᓄᐃᓕᓂᓚᓂᖃᓄᑦ, ᓄᓇ ᖃᓄᐃᓕᓂᓚᓂᖃᓄᑦ ᐊᑐᓴᐅᓱᒪᓂᖃᓄᓄ, ᐊᓱᑭᓗᓴᓕᖅᑎᓪᓚᐃᓗ)

M Containment (natural depression, dykes, etc.)
ᐅᖏᓱᐊᓂᖅᑐᐃᐅᑦ ᑭᓚᐊᓕᑦ ᐃᓱᖏᓂᖏᓱᒪᔪᖏᖅ (ᓄᓇᒥ ᐃᓱᖏᓂᐃᓕᑦ, ᐊᓱᑭᓗᓴᓕᖅᑎᓪᓚᐃᓗ)

N Action, if any, taken or proposed to contain, recover, clean up or dispose of product(s) and contaminated materials
ᖃᓄᐃᓕᓴᐅᑕᐅᑦ, ᖃᓄᐃᓕᓴᐅᑎᑦᓴᓂᑦ ᐅᑭᓪ ᖃᓄᐃᓕᓴᑭᓐᓂᑦᓴᓂᑦ ᐊᑕᐅᓱᑎᑎᑕᐅᓇᓱᓂᑦ, ᓄᖅᑲᖓᑎᑕᐅᓇᓱᓂᑦ, ᓴᓪᒪᖏᓂᑕᐅᑦ ᐅᑭᓪ ᐃᑎᑕᐅᓂᐅᖏᓂᑦ ᑯᐃᔪᖅ (ᑯᐃᔪᓪᓚᐅᑦ) ᐊᓚᓪ ᑯᐃᓴᐃᓕᑦ.

O Do you require assistance?
ᐃᖃᓗᖏᑕᐅᓴᓇᓂᖏᓐᓂᐅᑦ?
☐ no ᐊᖅ ☐ yes, describe: Δ - ᓇᓪᓇᐃᓴᑦᓴᐃ

P Possible hazards to persons, property, or environment; eg: fire, drinking water, fish or wildlife
ᐊᑦᑕᓪᓚᐃᓐᓇᓇᓇᖏᓐᓂᑦ ᐃᓗᓐᓄᓂᑦ, ᐱᖓᑎᑎᓂᐅᔪᓂᑦ ᐅᑭᓪ ᐊᑦᑎᒪᒥ ᓱᓄ - ᐃᑭᓪᓗᓂ, ᐃᒥᓪᔪᑦ ᓂᐅᖏᓂᑕᐅᓱᒧᑦᓴᓂ, ᐃᖃᓗᓴᐅᑦ ᐅᑭᓪ ᓂᓯᑎᓂᑦ

Q Comments and/or recommendations ᐅᖃᐅᓱᓂᐃᑦ ᑭᒪᓗ ᐅᑭᓴᓪᓂᑦ ᖃᓄᐃᓕᓴᑎᑕᐅᓴᐅᔪᑦ

FOR SPILL LINE USE ONLY
ᐊᑐᖏᑕᐅᓱᓂᖅ ᑯᐃᔪᓂᑦ ᐅᖃᓕᑭᐅᑭᖏᑐᓄᐃᓕᐊᖅ

Lead Agency
ᐃᖅᑲᓄᐃᓴᖅᑐᓂᓚᑭᑦ ᑯᐃᔪᒥᖅ ᑲᒪᒋᔭᖅᑐᑦ-

Spill significance
ᑯᐃᔪᑦ ᖃᓄᐃᓕᓂᓚᓂᖅ-

Lead Agency contact and time
ᐃᖅᑲᓄᐃᓴᖅᑐᓂᓚᑭᑦ ᑯᐃᔪᒥᖅ ᑲᒪᒋᔭᖅᑐᑦ
ᖃᐅᔨᓂᖅᑐᑕᐅᓂᖅ ᑭᒪᓗ ᖃᓄᐃᓕᖅᑎᑦᓴᐃᓗ

Is this file now closed? ☐ yes/Δ
ᑖᓐᓇ ᐅᓂᒃᓄᓴᐅᔪᖅ ᒪᑐᐅᑦ? ☐ no/ᐊᖅ

Reported by ᐅᓂᒃᑲᖏᓐᓂᖅ	Position, Employer, Location ᖃᓄᐃᑦᑐᒥ ᐃᖅᑲᓄᐃᓴᖅᑐᓂᓕ, ᓇᒥ	Telephone ᐅᖏᓕᐅᑦ
Reported to ᑭᓯᓂᑦ ᐅᓂᒃᑲᑕᐅᔪᖅ	Position, Employer, Location ᖃᓄᐃᑦᑐᒥ ᐃᖅᑲᓄᐃᓴᖅᑐᓂᓕ, ᓇᒥ	Telephone ᐅᖏᓕᐅᑦ

TABLE 1

GUIDE TO REQUIRED ICE THICKNESS

ICE STRENGTH FOR TRAVEL

(expressed in inches and centimetres)

(weights and ice thickness measures rounded to nearest whole)

242,500lb. (121t) = 50 inches (127cm)

154,000lb. (77t) = 40 inches (102cm)

100,000lb. (50t) = 32 inches (81cm)

55,000lb. (28t) = 25 inches (64cm)

22,000lb. (11t) = 15 inches (38cm)

17,600lb. (9t) = 14 inches (36cm)

7,700lb. (4t) = 10 inches (25cm)

ICE STRENGTH FOR STATIONARY LOADS

(expressed in inches and centimetres)

(weights and ice thickness measures rounded to nearest whole)

242,500lb. (121t) = 90 inches (229cm)

154,000lb. (77t) = 70 inches (178cm)

100,000lb. (50t) = 60 inches (152cm)

55,000lb. (28t) = 43 inches (109cm)

22,000lb. (11t) = 30 inches (76cm)

17,600lb. (9t) = 24 inches (61cm)

7,700lb. (4t) = 18 inches (46cm)

TABLE 2

REQUIRED ICE THICKNESS FOR TYPICAL AIRCRAFT WEIGHS

Transport Canada Industrial Standard

Table 2 below presents a numerical summary of the Transport Canada (1974) required fresh water ice thickness versus aircraft load from the AK-68-14-001 standard.

TABLE 2

AK-68-14-001 Transport Canada Standard

Weight – lb/kg	Weight - kN	Required Fresh-Water Ice Thickness (m/in)
10 000/4 545	44.5	0.33/13
30 000/13 640	133.5	0.58/23
67 000/30 400	300.0	0.90/35.5
135 000/61 360	600.0	1.27/50
800 000/364 000	3 570.0	3.20/126

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

TABLE 3

CONTENTS OF SPILL KITS –

KIKERK/KNIFE LAKE CAMP AND DRILLSITE

Camp Area – Spill-Kit Drum

(To be provided when camp is operational).

Drillsite – Spill-Kit Drum (moved from site to site by Contractor)

(To be provided when camp is operational).

RESPONSE INVENTORY – KIKERK/KNIFE LAKE CAMP

(To be provided when camp is operational).

- Fire extinguishers (valid and recharged) in each structure: Kitchen, Dry, Office, Core Shack, Generator Shed, Latrine, Sleep Tents

- Water pump

- Hand shovels

- Extra waterline (flexible poly)

- Assorted 10L plastic pails

- Ice auger (gas-powered) c/w extensions

- 127L plastic garbage bags (boxes of 20 each) – Dry, kitchen, gen-shed

- Extra tarps (for remediating any fuel-contaminated soil, fill or gravel)

- Extra bundles of absorbents

- Extra bag of hydrocarbon-retentive socks