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HAMLET OF ARVIAT

FUEL SPILL CONTINGENCY PLAN FOR THE ARVIAT DIAMOND DRILLER'S TRAINING PROGRAM NUNAVUT, CANADA

**HAMLET OF ARVIAT
PO BOX 150
ARVIAT, NU
X0C 0E0**

August 2011

PREAMBLE:

This Fuel Spill Contingency Plan applies to diamond drilling activities to be carried out within municipal boundaries of Arviat, NU for the purposes of training.

Copies and updates of this Plan may be obtained by writing to:

John Main
Economic Development Officer
Hamlet of Arviat
PO BOX 150
Arviat, Nunavut
X0C 0E0
867-857-2941
arviatcedo@qiniq.com

1.0 INTRODUCTION

The purpose of the Hamlet of Arviat's Fuel Spill Contingency Plan is to provide a plan of action for any spill event during the Arviat Diamond Driller's Training (ADDT) program in the Arviat area, Nunavut. This Plan provides the protocols for responding to spills (or potential spills) that minimizes health and safety hazards, environmental damage and clean up costs as well as defining responsibilities of response personnel. This plan is intended to be in effect for the duration of the training program which will be during the period of October 1, 2011 to December 31, 2016.

The area of training is within municipal boundaries of the Hamlet of Arviat. Approximately 500m from the garbage dump, 2km from the Hamlet Office.

Training will involve mobile drilling in all seasons. Drill and equipment is to be transported on skids when possible, and in the snow free months via truck and trailer.

Once the drill training program commences, all fuel and hazardous materials will be stored near the area of the drilling activities.

Fuel will be stored in a double-walled 'sloop tank' with a capacity of approximately 5,000 litres. It will be filled as required by fuel delivery truck.

2.0 RESPONSE ORGANIZATION

Project Supervisor - will be the person in charge of the daily work activities and will be the person responsible for reporting any spill to the 24-Hour Spill Report Line and initiating the clean up. The Project Supervisor will request additional aid from external sources if deemed necessary. The Project Supervisor will be responsible for checking fuel drum conditions and evidence of leakage daily, keeping spill kits and absorbent mats in good repair and accessible.

Project Supervisor – John Main, Economic Development Officer

John Main

Economic Development Officer

Hamlet of Arviat

PO BOX 150

Arviat, Nunavut

X0C 0E0

867-857-2941

arviatcedo@qiniq.com

24 Hour Emergency Contact for Hamlet of Arviat
Ed Murphy, Senior Administrative Officer
867 857 2841 (day) ; 867-857-6731 (mobile)

3.0 INITIAL ACTION

1. Stay alert and consider safety first. Identify the source of leak or spill and the type of product.
2. Assess the hazards to persons in the vicinity of the spill.
3. Isolate or remove any potential ignition source.
4. Control danger to human life if possible.
5. Assess whether the spill can be readily stopped or brought under control.
6. If safe (and possible) try to stop the flow.
7. Initiate or resume clean up.
8. Report the spill to the Project Supervisor and to the Yellowknife 24-hour Spill Report Line at (867) 920-8130.

4.0 REPORTING PROCEDURE

Communication in the way of a cell phone will be available so that in the event of a spill at the drill rig, it can be immediately reported to the Project Supervisor.

All spill kits located at all sources of fuel will have contact information for the Yellowknife Spill Report Line prominently displayed.

A listing of the 24 Hour Spill Report Line as well as other government contacts and company officials will be kept in a small notebook that will be stored with the ADDT program cell phone (See Reporting Procedure and Contacts provided below).

SPILL REPORTING PROCEDURE

1. Fill, out "SPILL REPORT" form as completely as possible before making the report.
2. Report IMMEDIATELY using the 24-hour Spill Report Line

**24-HOUR SPILL REPORT LINE (867) 920-8130
AND TO
INAC MANAGER OF FIELD OPERATIONS (NUNAVUT) (867) 975-4295**

NOTE: Telephone calls can be made collect by informing the Operator that you wish to report a spill. RCMP communications may be used if other means are not available.

Additional Information or Assistance:

Environment Canada, Iqaluit

Phone: (867) 975-4644

Fax: (867) 975-4594

GN-Department of Environment

Director of Environmental Protection

Phone: (867) 975-7700

Fax: (867) 975-7739

Department of Fisheries & Oceans

Rankin Inlet

Phone: (867) 645-2871

Fax: (867) 645-2880

Department of Fisheries & Oceans Nunavut Regional Office

Phone: (867) 979-8000

Fax: (867) 979-8039

Kivalliq Inuit Association

Lands and Resources Officer Phone: (867) 645-5733

Fax: (867) – 645 - 3855

Nunavut Water Board

TEL : (867) 360-6338

FAX : (867) 360-6369

Aboriginal Affairs and Northern Development Canada

Phone (867-975-4566);

Nunavut Tunngavik Inc.

Cambridge Bay, NU

Phone: (867) 983-5600

Fax: (867) 983-5624 6

On Site Project Supervisor
John Main
Economic Development Officer
Hamlet of Arviat
PO BOX 150
Arviat, Nunavut
X0C 0E0
867-857-2941
arviatcedo@qiniq.com

RCMP Arviat (867) – 857 1111

A detailed report on each occurrence must also be filed with the DIAND Manager of Field Operations no later than 30 days after initially reporting the event.

5.0 ACTION PLAN

In the event of a fuel spill the person noting the spill will immediately contact the project supervisor. The project supervisor will then determine the extent of the spill and implement the appropriate spill response.

The following responses are recommended for fuel spills in differing environments. Depending on the location and size of the program some of the equipment mentioned in the responses listed below will obviously not be located on site but could be transported to the spill if deemed necessary. All spills of oil, fuel or other deleterious material, regardless of size, will be reported to the 24 hour Spill Line (867-920-8130).

Spills on Land (gravel, rock, soil and vegetation)

- Trench or ditch to intercept or contain flow of fuel or petroleum products on land where feasible (loose sand, gravel and surface layers of organic materials are amenable to trenching/ditching-trenching in rocky substrates is typically impractical and impossible.)
- Construct a soil berm downslope of the spill. Use of synthetic, impervious sheeting can also be used to act as a barrier.
- Where available, recover spills through manual or mechanical means including shovels, heavy equipment and pumps.
- Absorb petroleum residue with synthetic sorbent pad materials.
- Recover spilled and contaminated material, including soil and vegetation.
- Transport contaminated material to approved disposal or recovery site. Equipment used will depend on the magnitude and location of the spill.

- Land based disposal is only authorized with the approval of government authorities.

Spills on Snow

- Trench or ditch to intercept or contain flow of fuel or petroleum products on snow, where feasible (ice, snow, loose sand, gravel and surface layers of organic materials as amenable to trench/ditching; trenching in solid, frozen ground or rocky substrates is typically impractical and impossible).
- Compact snow around the outside perimeter of the spill area.
- Construct a dike or dam out of snow, either manually with shovels or with heavy equipment such as graders and dozers where available.
- If feasible, use synthetic liners to provide an impervious barrier at the spill site.
- Locate the low point of the spill area and clear channels in the snow, directed away from waterways, to allow non-absorbed material to flow into the low point.
- Once collected in the low area, options include shoveling spilled material into containers, picking up with mobile heavy equipment, pumping liquid into tanker trucks or using vacuum truck to pick up material.
- Where safe, disposal can be done through in-situ combustion with approval from government and safety consultants.
- Transport contaminated material to approved disposal site. Equipment used will depend on the magnitude and location of the spill.

Spills on Ice

- Contain material spill using methods described above for snow, if feasible and/or mechanical recovery with heavy equipment.
- Prevent fuel/petroleum products from penetrating ice and entering watercourses.
- Remove contaminated material, including snow/ice as soon as possible.
- Containment of fuel/petroleum products under ice surface is difficult given the ice thickness and winter conditions. However, if the materials get under ice, determine area where the fuel/petroleum product is located.
- Drill holes through ice using ice auger to locate fuel/petroleum product.
- Once detected, cut slots in the ice using chain saws and remove ice blocks. Fuel/petroleum products collected in ice slots or holes can be picked up via suction hoses connected to portable pump, vacuum truck or standby tanker. Care should be taken to prevent the end of the suction hose clogging up by snow, ice or debris.
- Fuel/petroleum products that have collected in ice slots may be disposed of by in-situ burning if sufficient holes are drilled in ice. Once all the holes are drilled, the oil which collects in the holes may be ignited. Consult with fire/safety consultants and government authorities to obtain approval.

Spills on Water

- Contain spills on open water immediately to restrict the size and extent of the spill.

- Fuel/petroleum products which float on water may be contained through the use of booms, absorbent materials, skimming and the erection of culvers.
- Deploy containment booms to minimize spill area, although effectiveness of booms may be limited by wind, waves and other factors.
- Use sorbent booms to slowly encircle and absorb spilled material. These absorbent are hydrophobic (absorb and repel water).
- Once booms are secured, use skimmers to draw in hydrocarbons and minimal amounts of water. Skimmed material can be pumped through hoses to empty fuel tanks/drums.
- Culverts permit water flow while capturing and collecting fuel along the surface with absorbent materials.
- Chemical methods including dispersants, emulsion - treating agents and shoreline cleaning will be considered.

NOTE:

In-situ combustion is a disposal method available for fuels and petroleum products. In-situ burning can be initiated by using a large size portable propane torch (tiger torch) to ignite the fuel/petroleum products. Highly flammable products such as gasoline or alcohol, or combustible material such as wood, may be used to promote ignition of the spilled product. The objective is to raise the temperature for sustained combustion of the spilled product.

Precautions need to be taken to ensure safety of personnel. Also, spilled product should be confined to control burning. These include area where the spilled material has pooled naturally or been contained via dikes, trenches, depressions or ice slots. Prior to any attempts at in-situ burning, consultation with experts and approval by government authorities are required. Chemical response methods are also available and may include the use of dispersants, Emulsions-treating agents, visco-elastic agents, herding agents, solidifiers, and shoreline cleaning agents.

- Biological response methods include nutrient enrichment and natural microbe seeding.
- Site remediation will be completed as per the advice of government authorities.

6.0 ENVIRONMENTAL MAPPING

Spill response equipment will be located at the diamond drill, which will be operated at one of two sites – see attached location map.

7.0 RESOURCE INVENTORY

Resources available at the drill:

Trenching/digging equipment in the form of picks and shovels.
Absorbent material (pads)
Pumps
Impervious sheeting (tarps)
Plastic bags, buckets, empty drums for collection of contaminated material.

Resources available from other sources:

Larger pumps, if necessary: Arviat, NU
Bobcat/excavator, if necessary: Arviat, NU
Contact: HAMLET OF ARVIAT
Phone: (867) 857 2841

8.0 TRAINING/EXERCISE

All personnel will be briefed and given a copy of the Fuel Spill Contingency Plan before field operations begin. A mock spill response exercise will be conducted as part of the start-up for the training program to ensure response criteria, communication and reporting requirements are met and fully understood.

9.0 SPILL KITS

The spill kit at the diamond drill will 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' sorbent sheets (100 sheets per bail)
- 2 PVC oil resistant gloves
- 2 respirators
- 2 pairs of splash protective goggles
- 2 splash protective rain suits

10.0 Material Data Sheets (MSDS)

MSDS sheets are attached for Diesel fuel, unleaded gasoline, motor oil, and transmission fluid.

11.0 Fuel Inventory

Fuel Inventory stored at the ADDT program drilling area (starting October, 2011)

Maximum 5,000 litre diesel fuel (stored in double walled sloop tank)

1 x drum unleaded gasoline

6 x 1 litre containers of motor oil

2 x 4 litre containers of transmission fluid

2 x 20 litre containers of hydraulic oil

During operations, fuel will be stored in a double-walled 'sloop tank' on skids, with a capacity of approximately 5,000 litres. It will be filled as required by fuel delivery truck. Fuel will be dispensed to the drill tank and other facilities by hose and transported by jerry cans to water pumps. The sloop tank will be removed to a secure location after each course. Lubricants would be stored in their original containers, and delivered to site as and when required to meet immediate needs.

Based on the current drilling program it is estimated not more than 15,000 litres of diesel fuel will be used for each training course. It is not possible at this time to estimate the quantities of motor oil, transmission fluid or hydraulic oil that will be used. These amounts will only be available upon completion of the drilling program.

12.0 Drilling Additives Inventory

No drilling additives will be needed for this program as the drill holes will be shallow and for training purposes only.