



***EVRIIM***

## **Spill Contingency Plan**

*Astro Project*

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## 1. Purpose and Scope

This spill contingency plan has been developed with the purpose of minimizing potential hazards to the environment, people and communities. This plan outlines the proper protocols to follow to minimize health and safety hazards, environmental effects and clean-up costs. It also serves as a guide to the duties of responders.

This Spill Contingency Plan will be in effect at the Astro project where fuel is stored in drums and/or pressurized cylinders (propane). All employees and contractors are required to familiarize themselves with it regardless of which project they are working on.

The Astro project is located east of the Northwest Territories / Yukon border from 63.3°N to 63.5°N. The project is approximately 10 kilometers to the north of the Mile 222 airstrip. A camp will be set up at Mile 222.

## 2. Introduction

This Spill Contingency Plan has been developed in order to formalize the actions taken in the event of a spill of hydrocarbon product or hazardous material. The responsibilities of key personnel are defined, along with procedures for spill response that will minimize hazards to health and safety, damage to the environment and clean-up costs. This plan has been prepared in order to provide easy access to the required information needed for spill response.

Equipment and machinery used includes helicopters, various fixed-wing aircraft on floats or wheels and drills (both core and reverse circulation). Small powered equipment such as electric generators and water pumps will also be used. There are also cook stoves, heating stoves and water heaters. Fuel types used by these items include Jet-B, gasoline, diesel and propane. Other materials used will include lubricants, engine coolant (antifreeze), drill additives and hydraulic fluid.

All non-pressurized liquid hydrocarbons are stored in 205 litre steel drums (lain down with bungs at 3 and 9 o'clock positions) or 22 litre plastic jerry cans. Pressurized hydrocarbons (propane) are stored in upright, 10-kilogram (20 pounds) and 45 kg (100 pound) cylinders. Fuel containers are moved either manually or by helicopter. Ramps and vehicle tires are also used to assist in moving fuel containers depending on ground conditions. Lubricants and hydraulic fluid are stored in sealed containers. All fuels and other hazardous materials are checked for indications of leakage or spillage. All fuels and lubricants will be stored in impermeable fuel berms at camp and at staging.

Leaks or spills are most likely to occur during fuel transfer or as a result of poor seals, mishandling of containers, accidental puncture of fuel lines and wildlife interactions. All fuel lines and connections are checked for leakage. Absorbent padding is secured beneath connections to absorb and minimize leaks.

### **3. Initial Response**

If a leak or spill of hydrocarbons or other hazardous materials is suspected:

1. Insure personal safety by maintaining a safe distance.
2. Alert other personnel to insure their personal safety.
3. Never approach a spill without proper training.
4. Alert appropriate personnel (Camp Manager, Project Geologist or Pilot) and follow instructions.
5. If trained and conditions allow the spill should be stopped and contained.
6. Record the pertinent information on spill status.
7. Report the spill immediately to the 24-Hour NWT Spill Report Line (867) 920-8130.
8. Resume or continue action to contain, stop or clean-up the flow of spilled material.

### **4. Personnel and Responsibilities**

1. Pilot and Engineer – Report any spills or leaks related to aircraft operations directly to the Camp Manager or Crew Chief.
2. Camp Manager – When spills or leaks are detected, ensure the safety of personnel and the environment. Assess the situation. Communicate to other personnel (as necessary), call in emergency personnel (if required) and report spill to relevant authorities and Evrim management (VP Technical Services).

### **5. Action Plan**

The most likely locations for spills or leaks to occur are:

1. Fuel storage areas.
2. Aircraft refueling stations.
3. Equipment using fuel.

Spills are most likely to occur during fuel transfer activities. Preventative measures include daily checks and documentation of fuel storage areas. Regular inspection and maintenance of fuel transfer equipment and

proper containment at refueling stations. Personnel training in spill response. Review and critique of any spill response events. Whenever possible an electric fuel pump with automatic shut off switch will be used as priority to a manual pump. The drum will be kept upright during dispensing and the fuel hose will be stored and secured above the drum to prevent siphoning.

### 5.1 Initial Response

Person identifying a leak or spill shall:

1. Assess personal safety and identify material spilled.
2. Determine immediate hazards.
3. Determine if the spill can be controlled or stopped.
4. Stop the flow from the source of the leak (if possible).
5. Communicate to all on-site personnel
6. Refer to MSDS sheets.
7. Secure the site.
8. Remove potential ignition sources (if safe to do so).
9. Document the situation:
  - a) Identifier's name
  - b) Date, time and location
  - c) Material type and spill quantity
  - d) Cause of spill (if possible)
  - e) Weather conditions
  - f) Immediate hazards (human or environmental)
  - g) Safety issues to be dealt with prior to action (safety, personal protective equipment (PPE), ignition sources)
10. Contact Camp Manager identify location and request assistance.
11. Camp Manager contacts NWT Spill Report Line and completes Spill Report Form.
12. All responders will act to contain or stop the spill and clean up any contaminants.

## 6. Reporting Procedure

All spills of petroleum products or other hazardous materials must be reported to the NWT Spill Report Line (867)-920-8130 to ensure that investigation is conducted by the appropriate government and regulatory

authority. Immediately reportable spill quantities are shown in Section 17. Additionally, all spills will be reported internally to the appropriate Evrim company representatives (VP Technical Services). All spills however minor will be accounted for and tracked in a spill tracking document.

## 7. Contact Telephone Numbers

For additional information or assistance call:

Aurora Geosciences Ltd. 24 hour- Expediter	Ph:	(867) 445-2460
	Fx:	(416) 603-8565
Evrin Resources Corp.	Ph:	(604)248-8648
	Fx:	(604)248-8663
Stewart Harris (VP Technical Services)	Ph:	(604) 248-8662
	Cl:	(604) 719-9434
ENR Sahtu Regional Office (Norman Wells)	Ph:	(867)-587-3500
	Fx:	(867)-587-3516
ENR Sahtu Regional Office (Tulita)	Ph:	(867)-588-3441
Sahtu Land and Water Board	Ph:	(867) 598-2413
	Fx:	(867) 598-2325
Environment Canada (Yellowknife)	Ph:	(867) 669-4710
	Fx:	(867) 873-8185
Department of Fisheries and Oceans	Ph:	1-800-889-8852
RCMP Norman Wells	Ph:	(867)-587-1111
RCMP Tulita	Ph:	(867)-588-1111
Monica Loomis Health Centre - Norman Wells	Ph:	(867)-587-3675

## 8. Aircraft Spills

If spills or leaks occur during aircraft refueling, slinging, transporting or handling of fuel, it is the responsibility of the contractor to follow these guidelines or more stringent internal guidelines. If not accomplished to the satisfaction of the regulatory authorities then it is the responsibility of the Company to carry out the procedures listed above.

## 9. Actions to Minimize Spills

1. Conduct daily inspections of fuel caches and transfer points.
2. Use drip pans and/or absorbent materials at transfer points and under stationary equipment.
3. Train personnel in proper fuel handling, fuel transfer and spill response procedures.
4. Helicopter crew should regularly inspect fuel-slinging gear.

## 10. Containment and Clean Up Guidelines

In addition to the Initial Response Actions, the following steps should be completed.

1. Identify the source.
2. If possible and safe, contain the spill at the source.
3. Stop any filling operations if the receiving container is leaking.
4. Check valves and seals. Replace valves if leaking.
5. Transfer fuels out of leaking containers.
6. Placing impermeable material and absorbent material below the leak to minimize seepage.

### 10.1 Spills on Land

Land spills can be contained and cleaned up by:

- a) Assemble the appropriate personal protective equipment (PPE) and safety equipment before response.
- b) Creating a soil berm down slope of leaking material. Potentially, dig a trench to contain the spill.
- c) Place impermeable material at the foot of and over top of the berm to allow pooling of leaked material.
- d) Using appropriate absorbent material to soak up the fuel. Larger quantities of fuel may be pumped into empty drums.
- e) Using a light covering of absorbent material to remove films of petroleum products.
- f) Contaminated snow or ice should be moved into drums or on impermeable material.
- g) Material must be transported to an approved disposal/recovery site.
- h) Where safe and with regulatory approval, in situ combustion may be used as a disposal method.
- i) Disposal on land is only to occur with the explicit approval of the appropriate authorities.

### 10.2 Spills on Water

Spills on water can be contained and cleaned up by:

- a) Assemble the appropriate PPE and safety equipment before response.
- b) Use of specialized absorbent pads for containing spills on water.
- c) Liquids lighter than water may be contained with booms or absorbent material then removed with a skimmer.
- d) Containment booms will minimize area affected by spill.
- e) Absorbent booms should be used to encircle and absorb spilled material.

- f) Contact the appropriate government agency prior to the use of chemical treatments.
- g) Document the incident.
- h) Contact the Camp Manager who will call the NWT Spill Report Line.
- i) Complete remediation as advised by regulatory authorities.

### 10.3 Spills on Snow

- a) Assemble the appropriate PPE and safety equipment before response.
- b) Construct a trench or ditch to channel and control the flow of spilled product.
- c) Compact any snow lying along the outside perimeter of the control ditch.
- d) Construct a snow dyke or dam.
- e) Use impermeable lining material to create an impervious barrier.
- f) Locate the topographic lowest point of the spill area and create snow channels to direct unabsorbed material away from watercourses.
- g) Collect the spilled material for disposal.
- h) Where safe and with regulatory approval, *in situ* combustion may be used as a disposal method.
- i) Residues left from controlled combustion of spilled material must be packaged and properly disposed.

### 10.4 Chemical Spills

- a) Assess the hazard of the spilled material using MSDS.
- b) Emergency responders susceptible to certain situations should be replaced.
- c) Assemble the appropriate PPE and safety equipment before response.
- d) Apply absorbent pads to soak up any liquids.
- e) Place impermeable sheeting over dry chemicals to prevent wind dispersion and wildlife interaction.
- f) Neutralize acids or caustics then package clean up materials in an empty fuel drum for disposal.
- g) Contact the 24-Hour Spill Report Line (867) 920-8130 for additional instructions on disposal methods and locations.

## 11. Loss of External Load (Helicopter)

Loss of external loads of fuel, oil or chemicals often results in the catastrophic failure of the container. Prompt containment and cleanup is vital.

1. Notify camp immediately and give GPS co-ordinates along with type and amount of loss.
2. Camp will notify 24-Hour Spill Report Line (867) 920-8130.
3. Administer the appropriate procedure for spills on Land or Water.

## **12. Disposal**

1. Contaminated soil or vegetation will be placed on impermeable liners and later transported to Whitehorse.
2. Contaminated absorbent pads should be placed in a container for later transport to Whitehorse.

## **13. Training**

All personnel will be inducted as to the location of spill kits, their contents and use, potential and nature of spill hazards, and locally available spill control materials. In addition, all employees and contractors will be inducted with documented procedures and given a copy upon arrival at the site. Plan details will be posted in the camp.

Training will be conducted:

1. Upon hiring and once per season thereafter.
2. Reviewed and updated after an incident.
3. Upon renewal of equipment.
4. An emergency drill will be conducted and fully documented once per season.

### **13.1 Camp Resources (Full-time)**

1. Spill kits
2. Hand tools; shovels, picks, mattocks, fire axes (Pulaski)
3. Absorbent pads
4. Water
5. PPE
6. First Aid
7. Satellite Telephone

## 13.2 Camp Resources (Periodic)

1. Helicopter
2. Fixed Wing aircraft

### 14. Spill Kit Items

- Tyvek splash suit(s)
- Chemical resistant gloves (min. = 2 pair)
- 10 large garbage bags with ties
- Oil only booms (5" x 10') (min. = 1)
- Oil only mats (16" x 20") (min. = 25)
- Sorbent socks (min. = 2)
- Sorbent pads (min. = 5)
- 2 Large Tarps
- 1 roll duct or 'Tuck' tape
- 1 utility knife
- Notebook and pencil
- Copy of these guidelines
- Aluminum scoop shovels (min. = 2)

All items are to be stored in a plastic tub or barrel that is clearly marked and suitably labeled.

### 15. Hazardous Material Information

Material Safety Data Sheets (MSDS) for all fuels and chemicals (Appendix A) are kept at campsite for reference, should they be required. The location of the MSDS sheets will be included in camp orientations given to all employees upon arrival on site.

No bulk storage is being used at this time and the numbers will vary as drums are used and replaced. Waste oil will be removed to Whitehorse for disposal at an approved disposal site. Empty Drums will be flown out on available backhauls.

All fuel transferring will be done using a small electric pump with automatic fuel shut-off nozzles designed for transferring fuel from 205 litre barrels.

The following is a list of potentially hazardous materials used for field operations. See labels on containers and/or MSDS for details, spill response and safety advice.

Chemical	Container	Hazard
Diesel Fuel,	205L steel drum, typically black	Fire, explosion, environment
Jet A/B Fuel	205L steel drum, typically blue/yellow	Fire, explosion, environment
Unleaded Gasoline	205L steel drum, typically red + jerry cans	Fire, explosion, environment
Liquified Propane	45 kg pressurized cylinder	Fire, explosion
Coolant/ Anti Freeze	5L plastic containers	Environment
Drill Additives	20L Pails	Environment

## 16. Hazardous Materials, Potential Discharge Events/ Volumes and Direction

Material	Used in	Discharge Event	Discharge Volume (Worst Case)	Direction of Discharge
Diesel	Stoves, Drills	<ol style="list-style-type: none"> <li>1. Minor leak from fuel drum</li> <li>2. Large puncture, fast leaking drum</li> <li>3. All drums punctured at once (highly unlikely)</li> <li>4. Leaking connection from drum to stove</li> <li>5. Leaking stove or overfilling</li> <li>6. Leak from hose during refueling</li> </ol>	<205L Max. 5945L/ 29 drums	Fuel cache or camp structures. Potential ground infiltration to drainage network if leak occurs outside of berm
Jet Fuel	Helicopter, Fixed Wing	<ol style="list-style-type: none"> <li>1. Fuel transfer overfill</li> <li>2. Drum or hose leak during fuel transfer</li> <li>3. Minor leak from fuel drum</li> <li>4. Large puncture, fast leaking drum</li> <li>5. All drums punctured at once (highly unlikely)</li> </ol>	<205L Max 5945L/ 29 drums	Fuel Cache or refuel area. Potential ground infiltration to drainage network if leak occurs outside of berm.
Gasoline	Generators, Water Pumps	<ol style="list-style-type: none"> <li>1. Fuel transfer overfill</li> <li>2. Drum or hose leak during fuel transfer</li> <li>3. Minor leak from fuel drum</li> <li>4. Large puncture, fast leaking drum</li> <li>5. All drums punctured at once (highly unlikely)</li> </ol>	<205L Max. 510L/ 2 drums	Fuel Cache or refuel area. Potential ground infiltration to drainage network if leak occurs outside of berm.
Propane	Kitchen Stove, Water Heater	<ol style="list-style-type: none"> <li>1. Leak during connect or disconnect</li> <li>2. Minor cylinder leak</li> <li>3. Large puncture, fast leaking cylinder</li> <li>4. All cylinder punctured (highly unlikely)</li> </ol>	<45 kg Max 540 Kg/ 12 cylinders	Heavier than air. Settlement to low areas in camp with potential for ground infiltration to drainage network

## 17. Immediately Reportable Spill Quantities

As laid out by the department of Environment and Natural Resources, NWT.

See: <http://www.enr.gov.nt.ca/en/services/spills/reporting-spills>

\* TDG refers to the Transportation of Dangerous Goods Program as developed by Transport Canada.

Substance	Reportable Quantity	TDG* Class
Explosives	Any amount	1
Compressed gas (toxic/corrosive)		2.3/2.4
Infectious substances		6.2
Sewage and Wastewater (unless otherwise authorized)		6.2
Radioactive materials		7
Unknown substance		None
Compressed gas (Flammable)	Any amount of gas from containers with a capacity greater than 100L	2.1
Compressed gas (Non-corrosive, non-flammable)		2.2
Flammable liquid	≥100 L	3.1/3.2/3.3
Flammable solid	≥ 25 kg	4.1
Substances liable to spontaneous combustion		4.2
Water reactant substances		4.3
Oxidizing substances	≥ 50 L or 50 kg	5.1
Organic peroxides	≥1 L or 1 kg	5.2
Environmentally hazardous substances intended for disposal		9
Toxic substances	≥ 5 L or 5 kg	6.1
Corrosive substances	≥ 5 L or 5 kg	8
Miscellaneous products, substances or organisms		9
PCB mixtures of 5 or more ppm	≥ 0.5 L or 0.5 kg	9.0
Other contaminants--for example, crude oil, drilling fluid, produced water, waste or spent chemicals, used or waste oil, vehicle fluids, wastewater.	≥ 100 L or 100 kg	None
Sour natural gas (i.e., contains H <sub>2</sub> S)	Uncontrolled release or sustained flow of 10 minutes or more	None
Sweet natural gas		
Flammable liquid	≥ 20 L	3.1/3.2/3.3
Vehicle fluid	When released on a frozen water body that is being used as a working surface	None
<b>Reported releases or potential releases of any size that:</b> Are near or in an open water body; Are near or in a designated sensitive environment or habitat; Pose an imminent threat to human health or safety; or Pose an imminent threat to a listed species at risk or its critical habitat	Any amount	None

## **Appendix A: Material Safety Data Sheets**

*(Included in version of the Spill Contingency Plan to be posted in camp – these documents are not included here for the purpose of brevity.)*

## **Appendix B: NT-NU Spill Report Form**



## Instructions for Completing the NT-NU Spill Report Form

This form can be filled out electronically and faxed to the spill line at 867-873-6924. Commencing on January 2, 2007, the form can also be e-mailed as an attachment to [spills@gov.nt.ca](mailto:spills@gov.nt.ca). Until further notice, please verify receipt of e-mail transmissions with a follow-up telephone call. Spills can still be phoned in by calling collect at 867-920-8130.

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