Defence Construction Canada
Construction de Défense Canada

Spill Contingency Plan
Canadian Forces Station Eureka, Nunavut

In support of the
Nunavut Water Board Licence
No. 3BC-ERK1015

November 2010
Version 2.0

Prepared for:
1 Canadian Air Division,
Department of National Defence

Revised by:
Environmental Services
Defence Construction Canada

Revision Control Page

Revision No.	Revised By	Date	Issue/Revision Description
1.2	FSC Architects & Engineers	November 2009	Final
2.0	Defence Construction Canada	November 2010	Updated Final Report to address deficiencies identified in the NWB Licence.

Acronyms

1 CAD	1 Canadian Air Division
8 Wing	8 Wing Trenton
AES	Atmospheric Environment Services
CARF	Consignment Authorization and Receipt Form
CFS	Canadian Forces Station
DND	Department of National Defence
EME	Electrical and Mechanical Engineering
HazMat	Hazardous Materials
HazWaste	Hazardous Waste
HAWS	High Arctic Weather Station
INAC	Indian and Northern Affairs Canada
KIA	Kitikmeot Inuit Association
MSDS	Material Safety Data Sheet
NT-NU	Northwest Territories- Nunavut
NWB	Nunavut Water Board
O&M	Operation and Maintenance Plan
POL	Petroleum Oil and Lubricants
W Env O	Wing Environmental Officer

Table of Contents

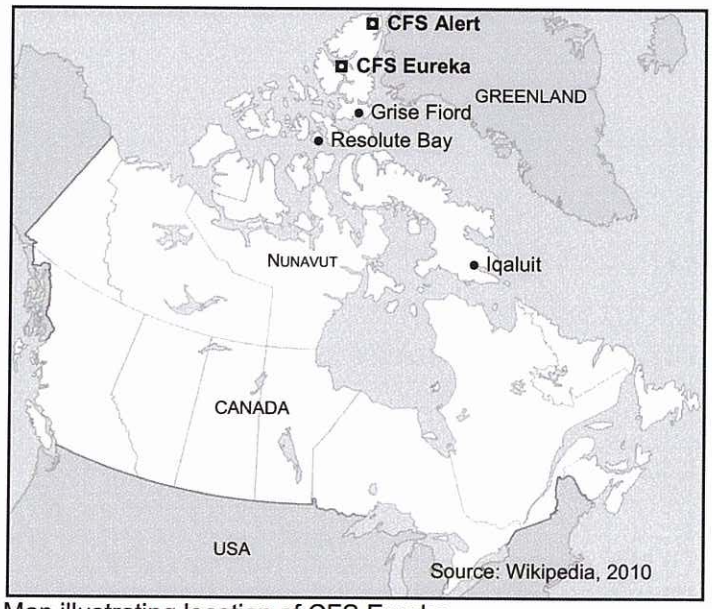
1 Introduction

This Spill Contingency Plan for Canadian Forces Station (CFS) Eureka has been created to address the requirements of the Nunavut Water Board (NWB) under Licence number 3BC-ERK1015, issued to the Department of National Defence (DND) on June 18, 2010.

Eureka is located near Slidre Fiord on the west coast of Ellesmere Island within the Qikiqtani Region of Nunavut (Latitude 79°59'20"N/ Longitude 85°56'30"W). The adjacent map illustrates the location of Eureka in relation to CFS Alert.

Eureka was first established on Ellesmere Island in 1947 as the High Arctic Weather Station (HAWS) for the Atmospheric Environment Services (AES) of Environment Canada. In 1982 the Department of National Defence (DND) installed a series of relay towers between Eureka and CFS Alert to improve the communications.

Eureka was established as the military quarters for personnel maintaining the communications equipment supporting CFS Alert and is the military quarters for training missions to the North.



Map illustrating location of CFS Eureka.

1.1 LICENCEE INFORMATION

Col. R.C. Baker
Director A4 Construction Engineering
1 Canadian Air Division Headquarters
Department of National Defence
PO Box 17000 Stn Forces
Winnipeg, Manitoba, R3J 3Y5

1.2 INFORMATION OF 24 HOUR CONTACT

Alert Commanding Officer or Wing Commander 8 Wing

1.3 GENERAL DESCRIPTION OF PROPERTY

The primary facilities at Eureka are located at the Main Camp, located approximately 2 km from the HAWS, and adjacent to the airstrip. DND infrastructure includes the Accommodations Building, a vehicle maintenance garage, aircraft refuelling apron, fuel storage tanks and bladders, the sewage lagoon and three landfills (refer to Figure 1, Appendix A).

Potable water for the station is obtained from Environment Canada's water system, which acquires its water from Station Creek. The water collected for the Environment Canada site is pumped from Station Creek over a period of approximately one month during the spring melt, allowing continuous flow of water within the creek. The water is collected within a reservoir where it is retained for use for the remainder of the year. Water use for Eureka is withdrawn from the reservoir and trucked to a cistern located at the military quarters building. The water is then passed through a reverse osmosis filtration system and is chlorinated prior to use for drinking or food preparation.

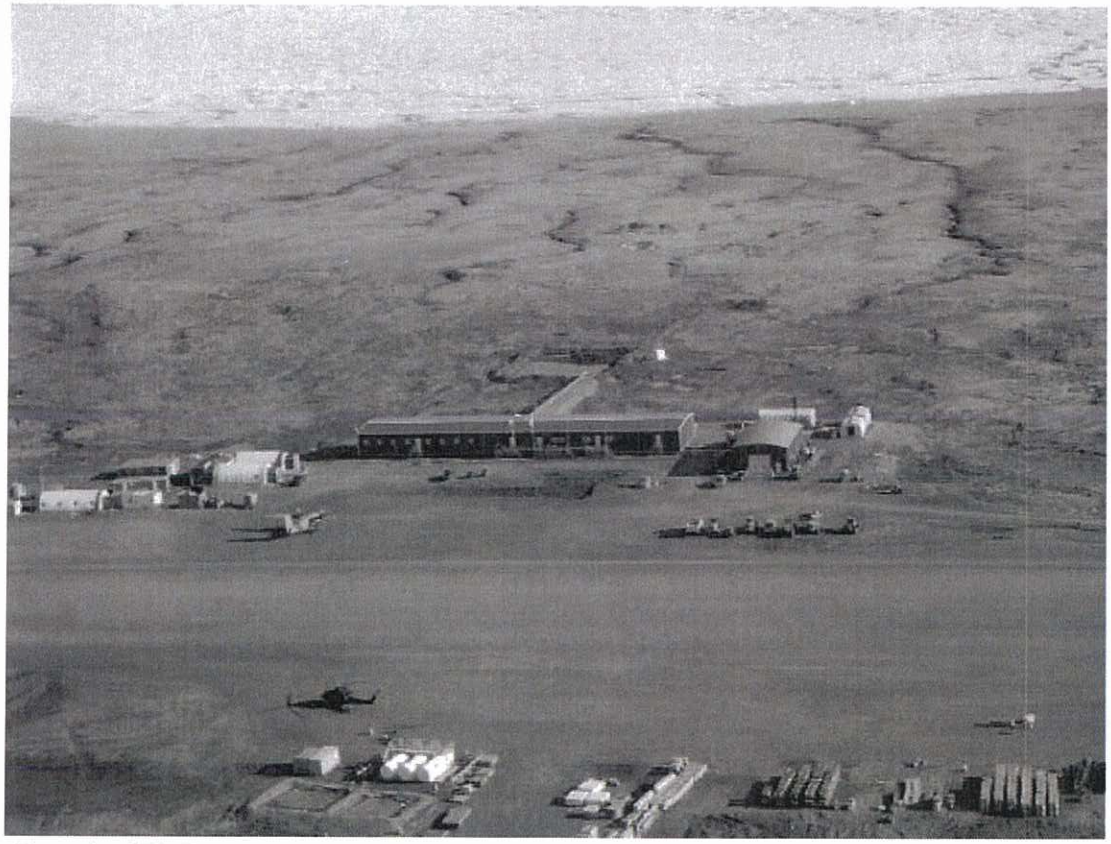


Photo 1. CFS Eureka, Nunavut.

Table 1. CFS Eureka water and sewer system.

Building	Water	Bleeder	Sewer	Status
CFS Euerka	Cistern	No	Yes	Operational

2 Project Facility Description

2.1 DOMESTIC GREYWATER SEWAGE

A new grey water and sewage outfall pipe extends approximately 75 m south, starting from the new accommodations building where it is connected to the bioreactor, and discharging into an unlined lagoon that collects the waste water. The land in the area of the accommodations building is flat. The local topography shows a moderate slope proximate to the lagoon, then a slight slope toward the fjord located approximately 0.5 to 1 km south.

2.2 SOLID WASTE

All combustible garbage is incinerated before disposal. The ash and remaining non-combustible refuse is transported to the East Airstrip Landfill for disposal. The landfill currently in use was partly remediated in 1995, when a granular/soil mixture was placed over portions of the landfill. Further assessments of the landfill were conducted in 1998, 1999, and 2006 indicating that little migration of any metals or hydrocarbons from the landfill has occurred. The landfill area was subsequently completely covered in 2008.

2.3 FUEL STORAGE

Eureka has four 30,000L JP8 tanks located on the north side of the Petroleum Oil and Lubricants (POL) shed across the airfield from the accommodation building. The four aboveground storage tanks are horizontal in configuration and are double-walled. Fuel is brought in to Eureka by Canadian Forces Transport Aircraft and then transferred to the bulk fuel station.

2.4 CHEMICALS AND HOUSEHOLD DETERGENTS

The only chemicals used on the station are typical household cleaners and detergents; as a result wastewater from Eureka is non-hazardous in nature.

2.5 MATERIAL SAFETY DATA SHEETS

MSDSs for all hazardous materials are maintained at the HazMat lockers. As required, the MSDSs are available for consultation and are reviewed on an annual basis to ensure that they are updated prior to their three year expiration date. A copy of the MSDS for JP8 Fuel is enclosed in Appendix B.

3 Type and Amount of Contaminants Stored at Site

3.1 DOMESTIC SEWAGE

Domestic sewage is not stored on site. The sewage flows under gravity to the discharge point. There are no lift stations where sewage may accumulate. The only sewage generated at Eureka by DND is from the accommodation building during the summer months due to the fact that the camp is only seasonally active.

3.2 SOLID WASTE

All combustible garbage is incinerated before disposal at the landfill.

3.3 FUEL

Eureka has four 30,000L storage tanks containing JP8 fuel located on the north side of the POL shed.

3.4 CHEMICALS AND HOUSEHOLD DETERGENTS

All products are purchased in Canada, and where required, registered in accordance with the applicable legislation.

3.5 RADIOACTIVE MATERIALS

No known radiation sources are stored onsite, unless as part of telecommunication systems. They are all removed to the support base for storage or disposal if/when required.

4 Spill Prevention Measures

4.1 DOMESTIC SEWAGE

Domestic sewer lines at Eureka are only used in the summer season as the station is only seasonally active. The system is checked each year on the initial start-up to ensure there are no leaks in the system.

4.2 SOLID WASTE

All combustible garbage is incinerated in proper facilities.

4.3 FUEL STORAGE

The four 30,000 JP8 tanks are double-walled to ensure no leaking occurs from the tanks. When the tanks are in use they are inspected regularly to ensure that all couplings are tight and there are no leaks.

When transferring fuels, only trained personnel operate and supervise the transferring process (i.e., aircraft to tanks). Sumps and fuel storage tanks are located at a distance greater than 31 m from any water body high watermark and are inspected regularly. Maintenance and servicing of equipment is to be conducted only in designated areas. Secondary containments such as drip pans are to be used to managed vehicle fluids and contain potential spills.

4.4 CHEMICALS AND HOUSEHOLD DETERGENTS

All chemical and household detergents are stored within a proper fire-proof and spill-proof storage unit. Care is taken when using or transferring these materials. Only containers in good condition and free of defects/damage shall be used.

4.5 HAZARDOUS WASTE

Hazardous waste is shipped from Eureka to 8 Wing Trenton (i.e., Supply-HazWaste Facility) in DND transport aircraft and is tracked using DND's Manifest Tracking System. Hazardous waste is shipped only once the Consignment Authorization and Receipt Form (CARF) is completed identifying if the cargo is a dangerous good. CARFs (i.e., manifests) are kept on file at the 8 Wing Trenton Supply–HazWaste Facility. This facility receives and properly disposes of hazardous waste through contractors. Refer to Appendix C for the CARF template; form reference number DND 690(5-94), 7530-21-903-1515.

5 Spills

5.1 IN THE CASE OF A SPILL

5.1.1 Initial Response

The initial response and containment of a spill is the responsibility of the unit/persons experiencing the incident. All spills of fuel or hazardous materials, regardless of size, must be immediately reported to the Senior Officer at Eureka. Eureka must notify the Environmental Officer (at (613) 392-2811 x3930) or Environmental Assistant (at (613) 392-2811 x3997) at 8 Wing Trenton of the spill as soon as possible. The Senior Officer at Eureka, at the time of the incident, is the proper authority for directing and ensuring that the clean-up and handling of any hazardous materials is carried out in a safe and responsible manner. The Senior Officer will assign one of his personnel to oversee the handling of the incident and its associated clean-up. In addition, units are to appoint a Spill Response Coordinator whose role will be to:

1) Contain the spill.
2) Immediately contact the Senior Officer.
3) Secure area until the Senior Officer or his representative arrives.
4) Assist in containing and cleaning-up of the spilled materials.
5) Insure that the Senior Officer's representative has all of the information required to complete a Hazardous Material Incident Report Form upon resolution of the incident.

The Hazardous Materials Incident Report must be completed and submitted to the 8 Wing Trenton WEnvO within 24 hours of occurrence.

5.1.2 Methods of Containment

The main objective of containment shall be to limit the area affected by the spill and to prevent its spread to adjoining waterways or surface drainage systems.

1. **Containment dikes or berms** – constructed of impermeable or absorbing materials will be the main method of containing spills on land.

2. **Trenches or storage pits** – used for temporary storage of spilled liquids and as intercepting channels for large spills. This can be used when the spill zone has a significant slope.

3. **Small spills** – to be cleaned with absorbent material in granular or blanket form to immobilize and absorb the spilled fluid.

4. **Spills in winter** – frozen ground is much less permeable to fluids, and therefore spilled material will flow differently in winter than in summer. These spills will be contained when possible with berms of snow. When the entire spill is absorbed with snow, the snow will be deposited within a containment area. Cold temperatures will inhibit the flow of most liquids, but de-icing fluids and most jet fuels will resist freezing. Spill on or in ice-covered streams and ponds require special techniques depending on whether the spilled material sinks, floats or dissolves.

5. **Spills on water** – spills that reach the watercourses will spread quickly, so speed of action is essential for containment. Only floating substances are amendable to containment, those that sink or dissolve are not likely to be controlled once they reach a watercourse. A containment boom is the method of containment if the spilled material floats.

5.1.3 Initial Incident Reporting

All spills are immediately reported to the Senior Officer.

Major fuel spills are to be reported by message using a Significant Incident Report. All HazMat spills that require a Significant Incident Report shall have an Air Command Hazardous Material Incident Report completed and forwarded to Command within 14 days. Refer to http://admfincs.mil.ca/admfincs/subjects/daod/2008/3_e.asp for more information on SIRs. Refer to Appendix D for the Incident Report forms.

5.1.4 Decontamination Action

1. Ensure the spill has been stopped and contained;
2. Remove all contaminates to designated area;
3. If the spill happens in the winter mark the extent of the contamination to provide a guide for the inspector in the summer months;
4. During summer season a site inspector will take soil samples as necessary and submit the appropriate analysis to determine course of remediation action, if any.

5.1.5 Site Inspection

A site inspection will be completed by qualified site inspector during the summer months following a spill. The inspector will take soil samples and submit them for appropriate analysis, where necessary. The site inspector, in conjunction with the WEnvO, will develop a remediation plan, where necessary on how best to remediate any contamination.

5.1.6 Reporting Action

In the event of a spill:

1. The Spill Contingency Plan will be employed by all station personnel.
2. The Senior Officer at Eureka or representative will complete the Eureka Spill Report for all spills regardless of size, and submit the Spill Report to 8 Wing Trenton Environmental Management within 24 hours by fax/e-mail.
3. 8 Wing Trenton Environmental Management is responsible for reporting to required legislative authorities to prevent any potential financial or disciplinary penalties. Eureka does not report to outside departments/agencies, as such, 8 Wing will:
    - Report the spill immediately to the Northwest Territories- Nunavut (NT-NU) 24-Hour Spill Line (867-920-8130), that exceeds the guidelines in Table 2 (below).
    - Report the spill immediately to Indian and Northern Affairs Canada (INAC) Field Operations Manager (867-975-4295).
    - Complete and submit the Northwest Territories-Nunavut (NT-NU) Spill Response Form to the Inspector within 30 days after initially reporting the event (refer to Appendix D for spill report form).
    - Complete the 1 Canadian Air Division (1 CAD) Hazardous Materials Incident Report Form for SpillNet (refer to Appendix D for spill report form).
4. The Site Manager will ensure the Spill Report is signed by the Commanding Officer (CO) or delegated authority.
5. Spills must be reported to ensure that the appropriate site clean-up is initiated. Should any remediation for a spill be undertaken onsite a qualified site inspector shall fill out a daily process report.

Table 2. 8 Wing will report all spills to the NT-NU Spill Line that exceed the below guidelines.

Classification	Hazard	Reportable Quantity
1	Explosives	All
2.1	Compressed Gas (flammable)	100 L
2.2	Compressed Gas	100 L
2.3	Compressed Gas (toxic)	All
2.4	Compressed Gas (corrosive)	All
3	Flammable Liquids	50 L
4	Flammable Solids	1 kg
5.1 PG I & II	Oxidizer	1 kg or 1 L
PG III	Oxidizer	50 kg or 50 L
5.2	Organic Peroxide	1 kg or 1 L
6.1 PG I	Acute Toxic	1 kg or 1 L
PG II & III	Acute Toxic	5 kg or 5 L
6.2	Infectious	All
7	Radioactive	Any discharge or radiation level exceeding 10 mSv/h at the package surface and 200 uSv/h at 1 m from the package surface
8	Corrosive	5 kg or 5 L
9.1	Miscellaneous (except PCB mixtures)	50 kg
9.1	PCB Mixtures	500 g
9.2	Aquatic Toxic	1 kg or 1 L
9.3	Wastes (chronic toxic)	5 kg or 5 L

5.2 SPILL RESPONSE TRAINING

Due to the remote location, designated employees deployed to Eureka will be trained in the following in order to be able to contain and assist in the clean-up of a spill:

1. Spill awareness & prevention
2. Methods of detection
3. Types of spills & seasonal conditions
4. Report procedures & Initial responses
5. Spill response kit
6. Clean-up & site remediation
7. Occupational health & safety, protective equipment & selection
8. Safe operation of Machinery & tools
9. Construction of a containment berm using soil or snow & plastic liner

5.3 SPILL KITS

There are three spill kits located at Eureka for use in case of a spill (refer to Appendix A). The spill kits are located in the following locations:

- POL shed near the runway
- Mechanical room of the main building
- Electrical Mechanical Engineering (EME) garage

Spill kits are to be kept and maintained at the specified locations at all times, and should contain (at a minimum):

- 360 L polyethylene over pack drum
- Oil sorbent booms
- Oil sorbent sheets
- Drain cover
- Caution tape
- Plugging compound
- Nitril gloves
- Safety goggles
- Tyvek coveralls
- Disposal bags
- Shovels
- Water proof package containing the Emergency Response Plan and report form

Additional supplies for the Spill Kits are stored in the warehouse.

5.4 EXTERNAL EMERGENCY CONTACTS

NT-NU 24-Hour Spill Report Line (867) 920-8130

INAC Field Operations Manager (867) 975-4295

Government Nunavut Department of Environment, Iqaluit (867) 979-7800

Environment Canada (867) 975-4644

Kitikmeot Inuit Association (KIA) (867) 983-2458

For more information see the 1Cdn Air Div Uniform Spill Protocol @ http://winnipeg.mil.ca/a4env/subjects/spills/Uniform%20Spill%20Reporting%20Protocol_Revised_Jan_07.pdf

Appendix A: Figure

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Title:
CFS Eureka Site Overview

Project:
Spill Contingency Plan, CFS Eureka

Client:
Department of National Defence

Date:
November 2010

Figure:
Figure 1

LEGEND

ERK-1	Sewage Treatment Facility
ERK-2	Landfarm Facility
ERK-3	Landfill
ERK-4	Battery Dump
ERK-5	Barrel Dump
■	Spill Kits

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W E
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Appendix B: MSDS Sheet (JP8 Fuel)

Material Safety Data Sheet

SECTION 1 PRODUCT IDENTIFICATION

JP-8

Product Use: Fuel
Product Number(s): CPS243791
Synonyms: AVTUR

SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Kerosene	8008-20-6	> 99 %weight
Diethylene glycol monomethyl ether	111-77-3	< 1 %weight

SECTION 3 HAZARDS IDENTIFICATION

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EMERGENCY OVERVIEW

Clear to light yellow liquid with petroleum odor.

- COMBUSTIBLE LIQUID AND VAPOR
- HARMFUL OR FATAL IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE
- MAY CAUSE RESPIRATORY TRACT IRRITATION IF INHALED
- CAUSES SKIN IRRITATION
- TOXIC TO AQUATIC ORGANISMS

****

IMMEDIATE HEALTH EFFECTS

Eye: Not expected to cause prolonged or significant eye irritation.
Skin: Contact with the skin causes irritation. Symptoms may include pain, itching, discoloration, swelling, and blistering. Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin.
Ingestion: Because of its low viscosity, this material can directly enter the lungs, if swallowed, or if subsequently vomited. Once in the lungs it is very difficult to remove and can cause severe injury or death. May be irritating to mouth, throat, and stomach. Symptoms may include nausea, vomiting, and diarrhea.
Inhalation: Breathing this material at concentrations above the recommended exposure limits may cause central nervous system effects. Central nervous system effects may include headache, dizziness, nausea, vomiting, weakness, loss of coordination, blurred vision, drowsiness, confusion, or disorientation. At extreme exposures, central nervous system effects may include respiratory depression, tremors or convulsions, loss of consciousness, coma or death. Mists of this material may cause respiratory irritation. Symptoms of respiratory irritation may include coughing and difficulty breathing.

SECTION 4 FIRST AID MEASURES

Eye: No specific first aid measures are required because this material is not expected to cause eye irritation. As a precaution, remove contact lenses, if worn, and flush eyes with water.
Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.
Ingestion: If swallowed, do not induce vomiting. Give the person a glass of water or milk to drink and get immediate medical attention. Never give anything by mouth to an unconscious person.
Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue.
Note to Physicians: Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis.

SECTION 5 FIRE FIGHTING MEASURES

See Section 7 for proper handling and storage.

FIRE CLASSIFICATION:
OSHA Classification (29 CFR 1910.1200): Combustible liquid.

NFPA RATINGS: Health: 0 Flammability: 2 Reactivity: 0

FLAMMABLE PROPERTIES:
Flashpoint: (Tagliabue Closed Cup) 100 °F (38 C) (Min)
Auto ignition: 410°F (210°C)
Flammability (Explosive) Limits (% by volume in air): Lower: 0.7 Upper: 5

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

PROTECTION OF FIRE FIGHTERS:
Fire Fighting Instructions: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.
Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator.
Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.
Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

Precautionary Measures: Liquid evaporates and forms vapor (fumes) which can catch fire and burn with

explosive force. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 85F. Do not get in eyes, on skin, or on clothing. Do not breathe vapor or fumes. Do not breathe mist. Do not taste or swallow. Wash thoroughly after handling.

Do not use as a portable heater or appliance fuel. Toxic fumes may accumulate and cause death.

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.
Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating an accumulation of electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'.
General Storage Information: DO NOT USE OR STORE near heat, sparks or open flames. USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.
Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:
Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:
Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below the recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT
Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.
Skin Protection: Wear protective clothing to prevent skin contact. Selection of protective clothing may include gloves, apron, boots, and complete facial protection depending on operations conducted. Suggested materials for protective gloves include: 4H (PE/EVAL), Nitrile Rubber, Polyvinyl Alcohol (PVA) (Note: Avoid contact with water. PVA deteriorates in water.), Viton
Respiratory Protection: Determine if airborne concentrations are below the recommended exposure limits. If not, wear a NIOSH approved respirator that provides adequate protection from measured concentrations of this material, such as: Air-Purifying Respirator for Organic Vapors
Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Limit	TWA	STEL	Ceiling	Notation
Kerosene	CHEVRON	350 mg/m3	1000 mg/m3		

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Clear to light yellow liquid with petroleum odor.
pH: NA
Vapor Pressure: 1 kPa (0.14 psi) @ 100 °F
Vapor Density (Air = 1): 5.7
Boiling Point: 160 - 300 °C (320 - 572 F)
Solubility: Low PPM range in water.
Freezing Point: -47 °C (-53 F) (Max)
Density: 0.755 - 0.84 g/ml @ 15 °C
Viscosity: 8 cSt @ -20 °C (Max)

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Incompatibility With Other Materials: May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Hazardous Decomposition Products: None known (None expected)
Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

IMMEDIATE HEALTH EFFECTS
Eye Irritation: The eye irritation hazard is based on evaluation of data for similar materials or product components.
Skin Irritation: The skin irritation hazard is based on evaluation of data for similar materials or product components.
Skin Sensitization: The skin sensitization hazard is based on evaluation of data for similar materials or product components.
Acute Dermal Toxicity: The acute dermal toxicity hazard is based on evaluation of data for similar materials or product components.
Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for similar materials or product components.
Acute Inhalation Toxicity: The acute inhalation toxicity hazard is based on evaluation of data for similar materials or product components.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY
This material is expected to be toxic to aquatic organisms.

ENVIRONMENTAL FATE
Ready Biodegradability:

This material is not expected to be readily biodegradable.

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Name: FUEL, AVIATION, TURBINE ENGINE
DOT Hazard Class: 3 (Flammable Liquid)
DOT Identification Number: UN1863
DOT Packing Group: III

SECTION 15 REGULATORY INFORMATION

SARA 311/312 CATEGORIES:

1.	Immediate (Acute) Health Effects:	YES
2.	Delayed (Chronic) Health Effects:	NO
3.	Fire Hazard:	YES
4.	Sudden Release of Pressure Hazard:	NO
5.	Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

4A=IARC Group 1	12=TSCA Section 8(a) PAIR	21=TSCA Section 5(a)
4B=IARC Group 2A	13=TSCA Section 8(d)	25=CAA Section 112 HAPs
4C=IARC Group 2B	15=SARA Section 313	26=CWA Section 311
05=NTP Carcinogen	16=CA Proposition 65	28=CWA Section 307
06=OSHA Carcinogen	17=MA RTK	30=RCRA Waste P-List
09=TSCA 12(b)	18=NJ RTK	31=RCRA Waste U-List
10=TSCA Section 4	19=DOT Marine Pollutant	32=RCRA Appendix VIII
11=TSCA Section 8(a) CAIR	20=PA RTK	

The following components of this material are found on the regulatory lists indicated.

Kerosene	17, 18, 20
Diethylene glycol monomethyl ether	17, 20, 25

CHEMICAL INVENTORIES:
UNITED STATES: All of the components of this material are on the Toxic Substances Control Act (TSCA) Chemical Inventory.
CANADA: All the components of this material are on the Canadian Domestic Substances List (DSL).
WHMIS CLASSIFICATION:
Class B, Division 3: Combustible Liquids
Class D, Division 2, Subdivision B: Toxic Material -
Skin or Eye Irritation

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 0 Flammability: 2 Reactivity: 0

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT: REVISION STATEMENT: This document has been prepared using a new MSDS format and all 16 sections have been revised. Please read the entire document.

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV	-	Threshold Limit Value	TWA	-	Time Weighted Average
STEL	-	Short-term Exposure Limit	PEL	-	Permissible Exposure Limit
			CAS	-	Chemical Abstract Service Number
NDA	-	No Data Available	NA	-	Not Applicable
<=	-	Less Than or Equal To	>=	-	Greater Than or Equal To

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Appendix C: Manifest Tracking System Form-CARF

National Défense
Defence nationale

CONSIGNMENT AUTHORIZATION AND RECEIPT FORM (CARF)
FORMULE D'AUTORISATION ET REÇU D'EXPÉDITION (FARE)

1. TCN - NCT

SECTION 1: CONSIGNOR / DELIVERY - L'EXPÉDITEUR / LIVRAISON

2. PACKED BY - EMBALLÉ PAR — SIGNATURE — DATE

3. MPC - CPM

4. RDD - DLD — (JULIAN - JULIEN)

5. CARF CONTINUATION SHEETS ATTACHED / FEUILLES DE FARE PROLONGATION ATTACHÉES — TOTAL NUMBER - NOMBRE TOTAL

6A. UIC / SAC / PRI /SN - CIU / SAC / CIDP /NM

6B. SHIP/POSTAL - LIVRAISON/POSTE (S/P) ☐

6C. FROM / CONSIGNOR - DE / L'EXPÉDITEUR

7A. UIC / SAC / PRI / SN - CIU /SAC / CIDP / NM

7B. SHIP/POSTAL - LIVRAISON/POSTE (S/P) ☐

7C. TO / CONSIGNEE - À / DESTINATAIRE

8. DTA - ATD

9. ASSOCIATED TA NAME - NOM D'AT ASSOCIÉ

10.
☐ CFSS ISSUE / DISTRIBUTION DU SAFC
☒ NEW PROCUREMENT / NOUVEAU MATÉRIEL
☐ REPAIR & OVERHAUL / RÉPARATION E RÉVISION
☐ MISC. / DIVERS

☐ CUSTOMS ACTION / DOUANES
☐ CGR - MCR ☐ IEM - EIM ☐ SL - PS
☐ SPECIAL HANDLING / MANIPULATION SPÈCIAL
☐ OUTSIZE / DIM. SUPÈR
☐ UAB - BNA

17. SPECIAL INSTRUCTIONS - INSTRUCTIONS SPÉCIALES

18. DANGEROUS GOODS / MARCHANDISES DANGEREUSES
☐ AMMUNITION / MUNITION ☐ OTHERS / AUTRES ☐ NO / NON

11. PIECES / ARTICLES (PID) (IDA)	12. TYPE / GENRE (CODE)	13. DESCRIPTION	14A. WEIGHT IN LB / POIDS EN LB (IMPERIAL / IMPÉRIAL)	14B. CUBE IN F3 / PIED CUBIQUE (IMPERIAL / IMPÉRIAL)	14C. WEIGHT IN KG / POIDS EN KG (METRIC / MÉTRIQUE)	14D. CUBE IN M3 / MÈTRE CUBIQUE (METRIC / MÉTRIQUE)	15. DOCUMENT COUNT / NOMBRE DE DOCUMENTS
TOTAL			TOTAL	TOTAL	TOTAL	TOTAL	TOTAL

SECTION 2: ORIGIN TRANSPORTATION AGENT - AGENT DE TRANSPORT AU LIEU D'ORIGINE

CODING BLOCK - BLOC DE CODAGE

FUNDS RES / RÉS DE FONDS	FUNDS RESERVATION LINE / Ligne réservation de fonds	WBS ELEMENT - ELEMENT WBS	FUNDS CENTRE / CENTRE DE FONDS	COST CENTRE / CENTRE DE COÛT	FUND / FONDS	GENERAL LEDGER / GRAND LIVRE GÉNÉRAL	INTERNAL ORDER / ORDRE INTERNE

21. ACCEPTED FOR SHIPMENT - ACCEPTÉ POUR EXPÉDITION — DATE

23. WSBL NO. - Nº FEUILLE DE FECS

SECTION 3: DESTINATION TRANSPORTATION AGENT - AGENT DE TRANSPORT A DESTINATION

24. DATE REC'D - DATE REÇU

25. CARRIER / CARRIER SERVICE - TRANSPORTEUR / SERVICE DU TRANSPORTEUR

26. DESCRIPTION OF LOSS / DAMAGE / DESCRIPTION DE LA PERTE / DOMMAGE

27. INCOMING OFF CONTRACT - RÉCEPTION DU CONTRAT
CONTRACTOR / CONTRACTEUR ▶
NAME - NOM ▶
ADDRESS / ADRESSE ▶

28. FOB POINT - FRANCO POINT

29. ISN # (DEPOT ONLY) / ISN # (DÉPÔT SEULEMENT)

SECTION 4: DELIVERY / CONSIGNEE - LIVRAISON / DESTINATAIRE

30. DELIVERY SERVICE - LIVRAISON — SIGNATURE — DATE

31. CONSIGNEE - DESTINATAIRE — SIGNATURE — DATE

32. COMMENTS - COMMENTAIRES

DND 690 (5-94)
7530-21-903-1515

CODING BLOCK FOR 12 - BLOC DE CODAGE 12

TYPE / GENRE	BALE / BALLE	BUNDLE / BALLOT	CARTON / CAISSE	CASE / BOITE	CONTAINER / RECIPIENT	CRATE-CAISSE / CLAIRE-VOIE	ENVELOPE / ENVELOPPE	PALLET / PALETTE	TRI-WALL / CAISSE CARTON TRIPLE	OTHER / AUTRE
CODE	BAL	BUN	CTN	CSE	CTR	CRT	ENV	PAL	TRW	OTH

Appendix D: Spill Report Forms

1 CAD - Hazardous Materials Incident Report Spreadsheet

Ref: 1 CAD HQ Uniform Spill Reporting Protocol 1262-1 (A4 Env 3) 6 July 98

1. Spill reported by:	**Name & Initials:**	**Phone #:**	**Unit:**
2. Spill Occurrence - Date:		**Time:**	
3. Source of Spill:		**Location of Spill -**	
4. a. Hazardous Material Spilled:		**b. Quantity Spilled (Litres):**	
c. Quantity Recovered (Litres):			
5. **Aircraft Fuel Jettisons** **a. Tail # and Call Sign:**			
b. Type of fuel		c. Quantity jettisoned (lbs):	
d. Altitude of jettisoning (m):		e. Ground temperature during jettisoning (°C):	
f. Duration of fuel jettison (min):		g. Aircraft velocity during jettisoning (Kt/hr):	
h. average wind speed between ground level and jettisoning altitude (kt/hr):		i. Wind orientation (relative to aircraft) during jettisoning (parallel/not parallel):	
6. Cause of Spill (be brief):			
7. Effect(s) of Spill (be brief):			
8. Distance (in metres) from point of release to nearest:			
a. Water Well:		**c. Catch Basin or Drain:**	
b. Property Boundary:		**d. Surface water course (ie creek, Bay, etc):**	
9. Details of action, taken or proposed, to mitigate effects of spill:			
10. Off -Base agencies that responded to spill:			

NOTE: FORWARD THIS REPORT TO WENVO (FAX 3368) WITHIN 24 HOURS OF SPILL

For use by Wing Environmental Staff only

11. Off-Base agencies informed of spill - Env Can/MOEE (time/date):
MOE: 1 (800) 268-6060 When required: Env Can N.W.T. Phone: (867) 920-8130 Fax: (867) 873-6924
Env Can Ont: (416) 518-3221 Env Can Qc Phone: (514) 283-2333

12. **ACTION**	**FAX**	**HALOCARBON**	**POL/OTHER**
NDHQ/CFFM	182-846-1753	X	
NDHQ/DGAEPM	182-840-5236	X	
1 CAD HQ/AOC	182-257-2576	X	X
1 CAD HQ//A4 AE//A4 Env//	182-257-2566	X	X
INFO			
NDHQ//DGE//	182-842-9422	X	X
WCOMD	3944	X	X
W LOG O	3448	X	X
WCEO	2788	X	X
UNIT/SQN CO		X	X

FROM: 8 Wg Env Office Phone (613) 965-3930
FAX (613) 965-3368

Sent by: (Name)
(Time/Date)

Instructions for Completing the NT-NU Spill Report Form

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

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

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR	REPORT TIME	☐ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER ____-_____
B	OCCURRENCE DATE: MONTH – DAY – YEAR	OCCURRENCE TIME		
C	LAND USE PERMIT NUMBER (IF APPLICABLE)	WATER LICENCE NUMBER (IF APPLICABLE)		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION	REGION ☐ NWT ☐ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE DEGREES MINUTES SECONDS	LONGITUDE DEGREES MINUTES SECONDS		
F	RESPONSIBLE PARTY OR VESSEL NAME	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION		
G	ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION		
H	PRODUCT SPILLED	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
I	SPILL SOURCE	SPILL CAUSE	AREA OF CONTAMINATION IN SQUARE METRES	
J	FACTORS AFFECTING SPILL OR RECOVERY	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT	
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS			

L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC	SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN	FILE STATUS ☐ OPEN ☐ CLOSED

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