



Spill Contingency Plan

Canadian Forces Station Alert, Nunavut

Version 1.2

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Project # 2008-1040

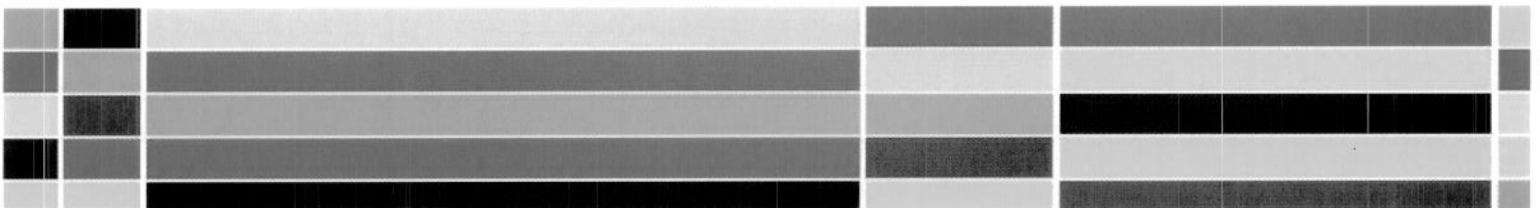
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LISTEN. DESIGN. MANAGE.



FSC File: 2005-2150

16, November, 2009

Phyllis Beaulieu
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0

Attn: Phyllis Beaulieu

Re: Spill Contingency Plan for Canadian Forces Station Alert, Nunavut

Dear Phyllis,

Please find enclosed the Spill Contingency Plan for Canadian Forces Station Alert, NU. This spill Contingency Plan is intended to be a stand alone document and meets all requirements for a Spill Contingency plan as set out in the Government of Nunavut, *Consolidation of Spill contingency Planning and Reporting Regulations R-068-93*.

If you have any questions regarding this plan please don't hesitate to contact us

Sincerely,

FSC ARCHITECTS & ENGINEERS



Ron Kent, P. Eng
Environmental Engineering



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CFS Alert is situated on the north-eastern tip of Ellesmere Island; approximately 817 kilometres from the geographic North Pole at coordinates (Lat/Long) 82°28' N, 62°30' W. (UTM)
Easting 552375.7996584666,
Northing 6874583.726844844
(Map sheet number 120E05)

A map of Alert, Nunavut, showing the coastline and surrounding areas. The map includes labels for Williams Island, Cape Belknap, Alert, Alert Bay, Dumbbell Bay, Mushroom Point, Cape Sheridan, and the Sheridan River. A legend indicates that a triangle symbol represents graves and a circle symbol represents a cairn/monument. A scale bar shows 0 to 4000 metres. Mount Pelly is also labeled.

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Alert Commanding Officer

Canadian Forces Station Alert is a remotely operated base with 16 serviced buildings (with water and sewer), and a staff of 74 personnel (see following table). The base is totally isolated from the outside world. Air transport is the only way to and from the base. Every year, the Canadian Air Force makes about 225 Hercules flights to Alert to bring in approximately two million litres of fuel and 300 tonnes of cargo.

The fuel storage facilities at CFS Alert have been updated over time. During the early 1990's, there were ten 54,550 L tanks located at the airfield which were replaced by two 457,900 L Diesel Fuel Arctic (DFA) tanks. In 1994/95 the Upper Tank Farm was replaced by the current system, eight 457,900 L tanks which feed a 30,500 L day tank. This system uses gravity to feed the station. Since the station has been reduced in personnel, fuel consumption has been considerably reduced to approx 2,500,000 L per year, most of which is used for power generation.

CFS Alert flies in all their fuel using a CC130 Hercules aircraft. This Bulk Fuel Delivery System consists of several aluminium tanks that are locked into the CC-130 aircraft cargo compartment, and hold between 16,000 L to 18,000 L per load. When the aircraft lands, the fuel is transferred to four 242,500 L above ground storage tanks from which the fuel is pumped to the upper tank farm tanks. Any refuelling of aircraft is conducted using fuel from these smaller tanks located adjacent to the airstrip.



Fuel from the aircraft wings are transferred by the aircraft pumps into the storage tanks which is assisted by the station fuel transfer pumps. Fuel from the Bulk Fuel Delivery System (BFDS) tank, which is mounted in the cargo compartment of the CC130, is transferred from the aircraft through a 4-inch receiving/transfer coupler manifold at the back of the aircraft. The station pumps transfer the fuel from the tanks up and into the station tanks.

In addition to the above noted JP-8 fuel storage tanks, there is one 30,000 L ultra low sulphur diesel tank which is used to supply the fuel for the vehicles and heavy equipment used at CFS-Alert.

Potable water for the station is pumped four kilometres from Dumbbell Lake in an above ground insulated high-density polyethylene water line with a smaller recirculating water line. The three water intake points in Dumbbell Lake are positioned well below the thick ice that forms on the lake. The water is chlorinated and stored in 2 – 227,000 L storage tanks in the water building, and the water is distributed above ground throughout the station with an independent piped recirculating system. The station is also served with an insulated high-density polyethylene gravity sewer which discharges into a natural lagoon open to the ocean.



Picture showing fuel storage mid-left



Table 1.1 – Buildings in Compound on Water/Sewer

Building	Water	Bleeder	Sewer	Status
Water Treatment Plant	Yes	No	Yes	Operational
Standby Power Plant	Yes	Yes - 1	Yes	Operational
Main Power Plant	Yes	No	Yes	Operational
Main Supply & Warehouse	Yes	Yes - 1	Yes	Operational
Main Workshop & Firehall	Yes	No	Yes	Operational
Maintenance Transport	Yes	No	Yes	Operational
Transport Storage	No	No	No	Operational
Main Ops	Yes	Yes - 1	Yes	Operational
Chimo Quarters	Yes	Yes – 2	Yes	Operational
Ladner Quarters	Yes	Yes – 2	Yes	Operational
Whitehorse Quarters	Yes	Yes – 1	Yes	Operational
Churchill Hall	Yes	No	Yes	Operational
Cold Storage	No	No	No	Operational
Incinerator	Yes	Yes – 1	Yes	Lavatory, toilet, sinks removed; bleeding to keep water/sewer operational
Gymnasium	Yes	Yes – 1	Yes	Operational
Curling Rink	Yes	No	No	Closed – now storage



2 Project Facility Description

2.1 DOMESTIC GREYWATER SEWAGE

The sewage collection and discharge system is, designed and operated conservatively to prevent freeze ups of all the service lines. The sewage on the station flows by gravity, there are no lift stations where sewage may accumulate. The sewage arrives in five separate streams, joining finally in the outfall line. Waste food is garburated and disposed in the sewer. There are several different piping arrangements for the sewage collection system. The support buildings have a single sewage line that connects all three before crossing the compound at the southeast end to discharge to the sewage outfall line. The main complex has a separate sewage pipe that collects sewage from the complex then discharges it to the sewage outfall pipe.

2.2 SOLID WASTE

All combustible garbage is compacted, bailed and incinerated before disposal at the dumpsite

2.3 FUEL STORAGE

CFS Alert has eight 457,900 L JP-8 tanks which feed a 30,500 L day tank. This system uses gravity to feed the station. Fuel is brought in 18,000 L aluminum containers to Alert by a CC130 Hercules aircraft, and then transferred to the four 242,500 L above ground storage tanks located at the bulk fuel station.

2.4 CHEMICALS AND HOUSEHOLD DETERGENTS

Wastewater from CFS Alert is typically domestic in nature. Household cleaners and detergents are used for sanitation.

2.5 MATERIAL SAFETY DATA SHEETS (MSDS)

See Appendix C



3 Type and Amount of Contaminants Stored at Site

3.1 DOMESTIC SEWAGE

Domestic sewage is not stored on site rather it flows by gravity to the discharge point. There are no lift stations where sewage may accumulate. The sewage arrives in five separate streams, joining finally in the outfall line, which leads to the discharge point.

3.2 SOLID WASTE

All combustible garbage is compacted, bailed and incinerated before disposal at the dumpsite.

3.3 WASTE LUBRICANTS

All waste lubricants are used to fuel the waste oil furnace in the garage.

3.4 FUEL

CFS Alert has eight 457,900 L JP-8 tanks which feed a 30,500 L day tank. This system uses gravity to feed the station. Fuel is brought in 18,000 L aluminum containers to Alert by a CC130 Hercules aircraft, and then transferred to the four 242,500 L above ground storage tanks located at the bulk fuel station.

3.5 CHEMICALS AND HOUSEHOLD DETERGENTS

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

3.6 RADIOACTIVE MATERIALS

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



4 Spill Prevention Measures

4.1 DOMESTIC SEWAGE

The sewage system is designed to be in continuous motion to prevent blockage and breakage due to freeze-up. Sewage lines run through heated spaces in the buildings before entering the outfall line.

4.2 SOLID WASTE

All combustible garbage is to be compacted, bailed and incinerated in proper facilities to ensure safe disposal.

4.3 FUEL STORAGE

The eight 457,900 L the four 242,500 L above ground storage tanks are housed within containment berms so if any fuel is spilled within the berm it will be contained. When transferring fuels only trained personnel operated and supervise the transferring process.

4.4 CHEMICALS AND HOUSEHOLD DETERGENTS

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



5 Spills

5.1 IN THE CASE OF A SPILL

The initial response and containment of a spill is the responsibility of the unit/persons experiencing the incident. The Wing Emergency Response Team is the proper authority for the handling of a Hazmat incident and its associated clean up. Concerned units are to appoint a Spill Response Coordinator whose role will be to:

1. Immediately contact the Emergency Response Team
2. Secure area until the ERT, the Wing Chief or MPs arrive
3. Complete a Hazardous Material Incident Report Form upon resolution of the incident.

5.1.1 Initial Response

Initial Emergency Response in Alert is the responsibility of the Emergency Response Team.

Consisting of the Station Warrant Officer (SWO) / OSCER & Fire Personnel.

All spills of hazardous materials, regardless of size and including deliberate discharges (such as releases of fuel from aircraft in emergency or operational situations) must be reported. The Hazardous Materials Incident Report must be completed and submitted, within two working days, to the WHYMC who will forward to W Env O and W Log O.

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. **Dams** – a system that is useful for small streams is to dam the stream with earth material.
3. **Containment booms** – a barrier to contain or deflect the spill, and floatation or support to maintain the position in the water. To keep the boom effective within a current, position the boom in a diversionary manner deflecting the spill to a recovery location. For fast-moving streams, the boom must be angled quite sharply to prevent losses under the boom.
4. **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.
5. **Spills on pavement** – tend to spread very quickly and flow towards drainage systems. In most cases, it is important to prevent this from happening, or at least minimizing the amount of the spill that enters surface drains and catch basins.
6. **Small spills** – to be cleaned with absorbent material in granular or blanket form to immobilize and absorb the spilled fluid.



7. **Spills in winter** – frozen ground is much less permeable to fluids, so spill 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.
8. **Spills on water** – spills that reach the watercourses will spread quickly, so speed of action is essential for containment. Only floating substances are amenable 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

In the event of a hazardous Material spill or incident, the following are to be advised

Station Emergency Response Team – SWO local 3203

Station Fire hall C/S Smokey local 3300

There are no Military Police stationed in Alert

8 Wing Environmental Officer CSN 827-3930

8 Wing Hazmat Officer CSN 827-7235

Hazardous Materials Incident Report Form (Appendix B)

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).

The WHMO will report all spills of hazardous wastes or other contaminants to the GNWT/GN Spill Line which exceed the following 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	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

5.1.4 Decontamination Action

1. Ensure the spill has been stopped and contained
2. Remove all contaminants 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 qualified site inspector will complete a site inspection, taking soil samples and submitting for appropriate analysis where necessary. This will have to be done during the summer months. The site inspector in conjunction with the W Env O, will come up with a remediation plan on how to best rectify the contamination.

5.1.6 Reporting Action

In the case of a spill the following forms will have to be filled out:

Hazardous Materials Incident Report Form (Appendix B)

During the remediation process a qualified site inspector shall fill out a daily process report.

5.2 SPILL RESPONSE TRAINING

To be conducted annually. All personnel will be trained in the following:

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

A spill kit is to be kept and maintained at a specified location at all times. The kit should contain at a minimum the following:

360-litre polyethylene over pack drum	Oil sorbent booms
Oil sorbent sheets	Drain cover
Caution tape	Plugging compound
Nitril gloves	Safety goggles
Tyvek coveralls	Instruction Booklet
Disposal Bags	Copy of spill reporting form

5.4 SPILL REPORT FORM

See appendix B Hazardous Materials Incident Report Form

5.5 EMERGENCY CONTACTS

INAC - Water Resources Division (867) 669-2654

Government Nunavut Department of Environment (867) 975-7735

Environment Canada (780) 951-8600

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: Map



Appendix B: Hazardous Materials Incident Report Form

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)	



Appendix C: MSDS Sheets

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

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.