Baffinland Iron Mines Corporation

Mary River Project

Attachment 5: Emergency Response and Spill Contingency Plan

Appendix 10C-1

2012-01-09	D	Approved for Use Environmental Permit	A. Grzegorczyk	J. Binns	S. Perry	
2012-01-06	C	Approved for Use	J. Keech	J. Binns	S. Perry	
2011-12-19	B	Approved for Use	A. Grzegorczyk	J. Binns	S. Perry	
2011-12-12	A	Approved for Use	A. Grzegorczyk	J. Binns	S. Perry	
DATE	REV.	STATUS	PREPARED BY	CHECKED BY	APPROVED BY	APPROVED BY
			HATCH			CLIENT

Revision No.	Revision Date	Changes	Approval
0	September 2010	Issued for inclusion in Application for PDW	
1	November 2011	Issued for inclusion in Application for Type A	
2	November 2011	Revised for inclusion in Application for Type A	
3	December 2011	Revised for inclusion in 2012 Work Plan	
4	January 2012	Revised for Inclusion in Type A Water License	

FOREWORD

The Emergency Response and Spill Contingency Plan (ERP) is a cornerstone of Baffinland's Environmental Management Plans. The current approved Spill Response and Contingency Plan was submitted to the NWB as part of the Type A Water License Application in February 2012 and is adequate for the level of activities currently taking place during the construction phase of the Project. The ERP, presented herein, and revised in January 2012, incorporates emergency response management into the existing approved spill plan. As the Project evolves, the ERP will undergo updates/revisions annually to reflect the increased complexities and environmental risks associated with the construction phase, operation phase, and ultimately closure. Next expected revision date is January 2013.

The ERP is supported by the following management plans:

1. Oil Pollution Emergency Plan (OPEP) – Milne Inlet Fuel Storage Facility – Appendix 10C-2
2. Oil Pollution Emergency Plan (OPEP) – Steensby Port Fuel Storage Facility – Appendix 10C-3
3. The Explosives Management Plan – Appendix 10C-4

Shipboard Oil Pollution Emergency Plans (SOPEPs) are proprietary documents specific to each vessel. Canadian regulations require every vessel transiting in Canadian water to have Transport Canada approved SOPEP.

This Emergency and Spill Response Plan for the Mary River Project has been implemented and is in effect. The plan will be updated and revised on an annual basis during the course of the Project. For the use during the construction phase, this current revision has been updated and expanded to contain all potential spill scenarios and roles and responsibilities applicable to construction phase of the Project. In response to the comments submitted by various review agencies Annex 6 of the ERP has been provided to describe future revisions of the ERP that will be updated upon project approval to include other periods of the project. For the distribution list of the plan, see Table 1. Additional copies of this Plan may be obtained from:

Baffinland Iron Mines Corporation
Suite 1016, 120 Adelaide Street West
Toronto, ON, Canada
M5H 1T1
Tel: (416) 364-8820
Fax: (416) 364-0193

Table 1.0: Distribution List for the Emergency Response and Spill Contingency Plan

Department of Environment - Environmental Protection Division PO Box 1000 Station 1300 Iqaluit, NU, Canada X0A 0H0 Tel: (867) 975-7700, 1-866-222-9063 Fax: (867) 975-7742	**Department of Fisheries and Oceans** - Central and Arctic Region 501 University Crescent Winnipeg, MN, Canada R3T 2N6 Tel: (204) 983-5000 Fax: (204) 984-2401
Qikiqtani Inuit Association PO Box 1340 Iqaluit, NU, Canada X0A 0H0 Tel: (867) 979-5391, 1-800-6672742 (Land Administrator) Fax: (867) 979-3238	**AANDC** - Nunavut Regional Office Land Administration Division PO Box 2200 Iqaluit, NU, Canada X0A 0H0 Tel: (867) 975-4280 (Land Administration Manager)
AANDC - Nunavut Regional Office Water Resources Division PO Box 2200 Iqaluit, NU, Canada X0A 0H0 Tel: (867) 975-4550 (Water Resources Manager)	**Mittimatalik Hunters and Trappers Organization** PO Box 189 Pond Inlet, NU, Canada X0A 0S0 Tel: (867) 899-8856 Fax: (867) 899-8095
Nunavut Impact Review Board PO Box 1360 Cambridge Bay, NU, Canada X0B 0C0 Tel: (867) 983-4600, 1-866-233-3033 Tax: (867) 983-2594	**Nunavut Water Board** PO Box 119 Gjoa Haven, NU, Canada X0B 1J0 Tel: (867) 360-6338 Fax: (867) 360-6369
Hamlet of Pond Inlet	**Hamlet of Hall Beach**
Hamlet of Cape Dorset	**Hamlet of Arctic Bay**
Hamlet of Igloolik	**Hamlet of Clyde River**
Hamlet of Kimmurut	

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SECTION 1.0 - INTRODUCTION

1.1 PURPOSE AND SCOPE

This Emergency Response and Spill Contingency Plan (ERP) has been developed by Baffinland Iron Mines Corporation (Baffinland) to identify potential emergencies that could arise during the construction phase of the Mary River project and to establish the framework for responding to these situations. Because the ERP was prepared during the Project planning stage (before construction and Project start-up), the plan will be updated before construction start-up and subsequently updated periodically to reflect the proposed Project and the specific responses, protocols, and response team and management contact information, once established.

1.2 GUIDING PRINCIPLES

Emergency events or situations are characterized by immediate threat to life, health, safety, environment, or property. The emergency response plan is designed to address these characteristics using the following principles:

- Ensure safety and well-being of personnel, the environment, and property.
- Identify evacuation route and muster station locations.
- Ensure effective communication between personnel and the emergency team.
- Ensure that procedures exist to respond, intervene, stop, or limit the emergency situation.
- Initiate response procedure and follow-up programs for emergencies.
- Baffinland is committed to provide insurance coverage as required or as deemed appropriate.
- Ensure when occurrences are investigated, root cause determination and mitigating measures are implemented to prevent re-occurrence.

1.3 REGULATORY FRAMEWORK

This Emergency Response and Spill Contingency Plan has been developed and implemented to ensure that Baffinland respects all applicable laws, regulations, and requirements from federal and territorial authorities. Baffinland complies with the permits, approvals, and authorizations required for the operations. The following regulatory and government documents constitute an integral part of the plan:

General

- Environmental Code of Practice for Aboveground and Underground Storage Tanks Systems Containing Petroleum and Allied Petroleum Products, 2003, CCME.
- National Fire Code 1995.
- Territorial Lands Act 1985.
- Territorial Land Use Regulations.
- Canada Oil and Gas Operations Act 1985.

- Canadian Environmental Protection Act.
- Fisheries Act.
- Transportation of Dangerous Goods Act and Regulations.
- Storage Tanks Systems for Petroleum Products and Allied Petroleum Products Regulation 2008.
- TP12402 – Oil Handling Facilities Standards, 1995, Transport Canada.

Shipping

- Canada Shipping Act Response Organizations and Oil Handling Facilities Regulations.
- Arctic Waters Pollution Prevention Act.
- Environmental Protection Act.
- Spill Contingency Planning and Reporting Regulations.
- Mine Site Reclamation Policy for Nunavut.

Territorial Acts and Regulations

- Nunavut Waters and Nunavut Surface Rights Tribunal Act 2002.
- Nunavut Environmental Protection Act.
- Nunavut Spill Contingency Planning and Reporting Regulations.

Site Specific

- Canada National Parks Act 2000.
- Canada Wildlife Act 1985.
- Migratory Birds Convention Act 1994.

For guidelines used to prepare the Emergency Response Plan, see Section 8.

1.4 LINK TO BAFFINLAND OIL POLLUTION EMERGENCY PLAN (OPEP)

The *Canada Shipping Act Response Organizations and Oil Handling Facilities Regulations* stipulates that operators of designated Oil Handling Facilities must have an onsite Oil Pollution Emergency Plan (OPEP – standards, TP12402 applies). This Act also applies to fuel storage in barges.

The OPEP and ship specific SOPEPs specifically address marine spills at Milne Port (Appendix 10C-2) and the future Steensby Port (Appendix 10C-3) The Fuel Storage Facility OPEPs for Milne Port and Steensby Port have been designed to complement this ERP. These OPEPs do not supersede existing contingency plans. They are conceived to address the specifics of the Fuel Storage Facility – the bulk incoming transfer of fuel and spill scenarios directly relating to these operations as required by TP12402.

1.5 ORGANIZATION AND RESPONSIBILITIES

1.5.1 Emergency Response Team

The Construction Manager is responsible to establish and implement the Emergency Response Team. The team will comprise site employees who receive special training to assist in an emergency. The Construction Manager in consultation with the HSE Manager will select qualified candidates in sufficient numbers to facilitate the response programs required by the plan as well as a designated Emergency Response Team lead to make final decisions.

The Emergency Response Team will receive the special training required for adequate response to onsite emergencies. The team will be trained in appropriate procedures to:

- Implement onsite safety and emergency response procedures.
- Respond to emergencies involving injuries and fatalities.
- Assist with evacuation procedures.
- Respond to emergencies involving fires or explosions.
- Control and mitigate spills or other accidental releases.
- Ensure the safety of employees during extreme weather conditions.

The HSE Manager with the support of Construction Manager will coordinate response actions internally and externally in an emergency. He/she will coordinate response actions with management, regulatory agencies, local authorities, and the communities, when necessary. Contact information for external agencies and local authorities will be made available when responsible personnel are identified. For the Emergency Response Team organization, see Figure 4.3.

Baffinland Emergency Personnel Contact Information is presented in Table 1.1.

1.6 RELATIONSHIP TO OTHER PLANS

Emergency situations are often related to specific activities such as explosive handling, shipping, or aircraft operations. In case of an activity-specific emergency, the response plan for that particular activity will be consulted. Specific action plans developed to support this ERP include:

- Milne Port OPEP (Appendix 10C-2) and Steensby Port OPEP (Appendix 10C-3) (ship-to-land fuel transfers at Milne Port and Steensby Port, ship to vessel at Steensby Port).
- Canadian Coast Guard Regional Response Plan (CCG, 2006).
- Shipboard Oil Pollution Emergency Plan (ship-specific plan).
- Explosives Management Plan (Appendix 10C-4).

These and other plans developed in support of the environmental impact statement (EIS) comply with relevant regulatory requirements.

1.7 BAFFINLAND'S COMMITMENTS

Baffinland provides adequate resources to implement and maintain the EHS Management System, including the necessary human, material, and financial resources. For Baffinland's Sustainable Development Policy, see Figure 1.1.

1.8 UPDATE OF THIS MANAGEMENT PLAN

The Emergency Response and Spill Contingency Plan will be regularly updated on the basis of management reviews, incident investigations, regulatory changes, or other Project-related changes.

This plan has been updated and revised to reflect activities associated with construction activities as described in the FEIS. Prior to the start of the construction phase the Emergency Response and Spill Contingency Plan will be updated with input from the EPCM contractor to reflect the complexities of the construction phase as outlined in Annex 6 and the appropriate contact information.

Figure 1-1: Sustainable Development Policy

SUSTAINABLE DEVELOPMENT POLICY

At Baffinland Iron Mines Corporation, we are committed to conducting all aspects of our business in accordance with the principles of sustainable corporate responsibility and always with the needs of future generations in mind. Everything we do is underpinned by our responsibility to protect the environment, to operate safely and fiscally responsibly and to create authentic relationships. We expect each and every employee, contractor, and visitor to demonstrate a personal commitment to this policy through their actions. We will communicate the Sustainable Corporate Policy to the public, all employees and contractors and it will be reviewed and revised as necessary on an annual basis.

These four pillars form the foundation of our corporate responsibility strategy:

- Health and Safety
- Environment
- Investing in our Communities and People
- Transparent Governance

1. 0 HEALTH AND SAFETY

We strive to achieve the safest workplace for our employees and contractors; free from occupational injury and illness from the very earliest of planning stages. Why? Because our people are our greatest asset. Nothing is as important as their health and safety.
We report, manage and learn from injuries, illnesses and high potential incidents to foster a workplace culture focused on safety and the prevention of incidents.

We foster and maintain a positive culture of shared responsibility based on participation, behaviour and awareness.
We allow our workers and contractors the right to stop any work if and when they see something that is not safe.

2. 0 ENVIRONMENT

We employ a balance of the best scientific and traditional Inuit knowledge to safeguard the environment.
We apply the principles of pollution prevention and continuous improvement to minimize ecosystem impacts, and facilitate biodiversity conservation.
We continuously seek to use energy, raw materials and natural resources more efficiently and effectively. We strive to develop pioneering new processes and more sustainable practices.
We understand the importance of closure planning. We ensure that an effective closure strategy is in place at all stages of project development and that progressive reclamation is undertaken as early as possible to reduce potential long-term environmental and community impacts.

3.0 INVESTING IN OUR COMMUNITIES AND PEOPLE

We respect human rights and the dignity of others. We honour and respect the unique culture, values and traditions of the Inuit people.
We contribute to the social, cultural and economic development of sustainable communities adjacent to our operations.
We honour our commitments by being sensitive to local needs and priorities through engagement with local communities, governments, employees and the public. We work in active partnership to create a shared understanding of relevant social, economic and environmental issues, and take their views into consideration when making decisions.

4.0 TRANSPARENT GOVERNANCE

We will take steps to understand, evaluate and manage risks on a continuing basis, including those that impact the environment, employees, contractors, local communities, customers and shareholders.
We ensure that adequate resources are available and that systems are in place to implement risk-based management systems, including defined standards and objectives for continuous improvement.
We measure and review performance with respect to our environmental, safety, health, socio-economic commitments and set annual targets and objectives.
We conduct all activities in compliance with the highest applicable legal requirements and internal standards
We strive to employ our shareholder's capital effectively and efficiently. We demonstrate honesty and integrity by applying the highest standards of ethical conduct.

Tom Paddon
President and Chief Executive Officer
September 2011

Table 1.1: Baffinland Emergency Personnel Contact Information

Person	Title	Contact Information

Note: To be updated upon Project Approval

SECTION 2.0 - GENERAL RESPONSE TO EMERGENCIES

2.1 EQUIPMENT AND PERSONAL PROTECTION

Equipment required to prevent or minimize the effects of an emergency are identified during detailed project design and provided at the Project facilities. A list of available Personal Protective Equipment, cleanup material, medical supply, etc. is also provided when specific project requirements are identified.

To prevent spills and to provide adequate response in case of spill events, Baffinland maintains the appropriate type and quantity of response equipment and materials onsite. The company will also put in place reasonable security measures.

Spill kits are strategically placed primarily in areas of fuel handling to facilitate immediate first response in the event of a hydrocarbon release to land. Annex 2 provides a list of the different spill kits and their contents (as purchased) that are available onsite. Over the course of operations, when materials in spill kits have been utilized, replacement materials may differ from that originally present in kits. Substituted spill kit materials will be of sufficient quality and quantity as appropriate to their locations and potential use.

In addition to the spill response material, a variety of mobile heavy equipment including excavators, front-end loaders, bull-dozers, haul trucks, Zodiac boat for in-land water use, and ocean support boat are available to aid in spill response and recovery efforts.

2.2 COMMUNICATION

Effective communication systems are critical to the success of emergency responses. The following provides an overview of communication procedures to be followed in an emergency event.

Main communication systems will be used internally to alert workers to danger, convey safety information, and maintain site control. Radios or satellite telephones will be used when work teams are working away from the main communication systems. The main system will consist of alarms or short signals that can easily be conveyed by audible signals.

Communication during Emergency

During emergency, a dispatch station will be contacted immediately. Information will be transmitted from the dispatch station to other project facilities. The dispatch station will be manned 24 hours a day by onsite personnel and will be equipped to handle all radio and telecommunications in the case of an emergency. Project facilities will be equipped with a phone system that will be capable of wide range communication when required. In the event of an emergency, there will be prompt notification of appropriate individuals including the Construction Manager, the HSE Manager, the site Safety Lead, Environmental Lead, the emergency response team, and BIM on-site company Manager.

Communication with the Public

Appropriate pre-designated BIM Company officer(s) will be charged with external communication during emergencies. More than one officer may be identified to address specific emergencies such as industrial accidents or spills. Meetings will be held to inform local communities and the public about onsite emergencies, when necessary.

Local residents, community leaders, other stakeholders, and non-governmental agencies will be contacted as appropriate and invited to attend these meetings. The designated officer(s) will coordinate dissemination of information to the media whenever necessary. Provision will also be made to inform family members of those involved in an emergency, if warranted.

2.3 GENERAL EVACUATION PROCEDURES

All employees will be instructed about emergency evacuation procedures during site induction. Muster location maps showing evacuation routes will be posted at conspicuous places at the site including working areas, facilities and notice boards. A muster list will be prepared and posted with the muster map. The list will provide information about emergency signals, instruction for operating emergency alarm systems, and the responsibilities of personnel. The list will be updated periodically to address current emergency response needs.

In an emergency, employees will proceed to the primary muster area for a head count. They will stay at this location, at the desecration of the ERT Lead, until told to move to a secondary muster, or another location, or be evacuated.

SECTION 3.0 - RESPONSE ACTIONS TO EMERGENCIES

3.1 INITIAL RESPONSES

Project personnel working at a site or at a facility may be the first to encounter an emergency and will be expected to initiate a response action. In such an emergency, a general response will be followed before any other activities. The general procedures include the following:

- Avoid danger to yourself, others, and the environment.

- Prevent further health or environmental effects, loss of material or damage to equipment, if this can be done safely.
- Report to the appropriate supervisor the type and location of the emergency as well as hazards present and other health and safety concerns.
- Communicate with individuals in the vicinity of the emergency to preliminarily assess their condition.
- Assess the size and severity of the emergency (i.e. minor or major emergency?).
- Ensure the safety of personnel and evacuate to a temporary safe location, if necessary.

3.2 RESPONSE ACTION

Response actions are considered briefly for the following potential general emergency situations:

- Necessities of life.
- Personnel Issues.
- Natural environment-related Issues.
- Operational incidents.

A minor incident could be an emergency that does not interrupt site operations, is not life-threatening, and does not result in any substantial environmental damage. In the event of a minor incident, onsite resources will be required to remedy the situation. Evacuation or offsite resources will not be necessary, and response can be coordinated by the HSE Manager.

A major or serious emergency may be an emergency that requires an interruption to site operations. The incident may be life-threatening and could involve substantial environmental or property damage. A serious emergency might require offsite resources for effective response. In the event of a serious emergency, further severity will be assessed by the Construction Manager. In consultation with the HSE Manager a decision will be made whether on- or offsite resources will be needed to remedy the situation.

For a summary of emergency response actions, see Table 3.1. The Consequence Severity and Risk Rating table (see Table 3.2) is used to further characterize operational incidents/accidents resulting in emergency situations. These tables provide guidance for appropriate emergency response actions.

In the event that multiple incidents occur simultaneously at the same location their cumulative effects will be exponentially greater than the effect of any singular incident or emergency. Baffinland will be prepared to handle a number of minor incidents, or a combination of a major and a minor incident; with effective response plans and training in place. All sites will be equipped with adequate spill response equipment and trained teams. In the event of multiple major incidents at the same location severity will be assessed by the HSE Manager and if necessary offsite resources will be called in for an effective response. If events occur at different locations there should be little to no cumulative effect, as each site is designed to be self sufficient in the event of an incident.

Table 3.1: Summary of Emergency Response Action

Emergency Situation	Response Action
NECESSITIES OF LIFE	
Lack of Adequate Shelter	• All-weather tents or trailers will provide shelter for personnel at the site • Fixed-wing and rotary aircraft will be available for evacuations • Refuge will be sought in, equipped refuge stations, vehicles, steel Quonset buildings, or other outbuildings at site
Lack of Heat	• Oil supply and stove components will be repaired or replaced as needed • Personnel may be removed to different onsite facilities • Proper clothing will be provided
Power Outages	• Back-up generators or standby/emergency portable generators will be available at all sites and facilities • Emergency heat can be provided by oil furnaces so an interruption of power will not result in a lack of heat
Interruptions to Potable Water Supply	• Water will be conserved; use will be restricted to drinking and for cooking over other uses • Boiled and bottled water may be provided to personnel during these restrictions • Equipment will be repaired or replaced as needed
Interruption of Food Supply	• Sufficient food supplies will be kept at each site to account for a prolonged delay in food deliveries • Food stuffs will be brought in by helicopter if required and available
Sewage System Failures	• Restrict water use to necessities (drinking, cooking) • Switch to latrine toilets and temporarily contain grey water
PERSONNEL ISSUES	
Medical Emergencies	• Initial response be will implemented immediately • Trained personnel will attend to the emergency • Victim may be evacuated to a medical facility
Missing Persons	• Personnel, equipment, vehicles, and aircraft will be mobilized for search and rescue • Additional resources and services from local communities will be mobilized as needed and if available

Table 3.1: Summary of Emergency Response Action (cont'd)

Emergency Situation	Response Action
Missing or Overdue Aircraft or Truck	• Dispatch will notify the HSE Manager who will initiate emergency action as needed • Other rescue operations will be implemented as needed • All vehicles have survival packs for equipment malfunction between camps • Contact Search and Rescue (SAR) external resources
NATURAL ENVIRONMENT-RELATED ISSUES	
Floods	• Washed out road sections will be repaired using available equipment on a timely basis.
Extreme Weather Conditions	• Initiate response actions as required relative to the necessities of life • Activities will cease or be modified • Sufficient supplies will be kept at each site for prolonged period
Wildlife Encounters/Incursions	• Personnel will be provided with training to respond to polar bears • Workers at coastal areas should have nearby shelter as refuge or if working on the land will be provided with trained bear monitors and suitable deterrents • Wildlife should be avoided and be given the right-of-way. • Wildlife feeding is not permitted under any circumstances
Seismicity	• Necessary (maintenance or design) action will be taken
OPERATIONAL INCIDENTS	
Fires	• Fire extinguishers will be stationed at work areas for trained personnel • Personnel will be evacuated when necessary • Trained, onsite personnel will respond to fires using onsite equipment
Ground Instability	• Evacuate workers in a timely manner • Qualified professional to inspect suspect area • Document the incidents
Automobile and Equipment Accidents	• Emergency action will be initiated depending on the circumstance • Equipment will be "tagged out" and will not operate until repairs have been made
Ship Grounding/Collision	• Action will be according to ship specific proprietary General Emergency Plans.
Airplane/Helicopter Accidents	• Rescue operations will be implemented as required • Further action will be according to the Aircraft Operating Plan
Explosions	• Evacuate workers • Qualified professional to inspect area of concern • Document the incident
Marine Fuel and Other Chemical Spills	• Action will be according to the Milne Port OPEP or Steensby Port OPEP
MULTIPLE EMERGENCIES	
Multiple Emergency	• Emergency team will anticipate potential multiple emergency events • HSE Manager will coordinate response actions

Table 3.2: Consequence Severity and Risk Rating Table

Consequence Severity	Risk Rating	Description
(5) Critical ***Major uncontrolled event or inefficiency with uncertain and perhaps prohibitively costly remediation.*** **Health & Safety:** Fatality. **Production**: More than six month production loss or expenditure. **Cost:** >$500,000,000 damage or additional costs. **Environmental Impact/Compliance:** Very serious environmental impacts with impairment on land/marine scape ecology. Long term, widespread effects on significant environment. **Corporate Image or Utility:** Corporate image tarnished internationally. **Community Affairs:** Non compliance with existing community agreement. Extreme and widespread community concerns with International exposure/influence. **Construction:** Long term delays to construction cost and scheduling.	EXTREME (E) (>$500,000,000)	Issues represents a **control weakness** which could cause a severe disruption to or have a **severe adverse effect** on operations and objectives
(4) Major ***Significant event or inefficiency that can be addressed but with great effort.*** **Health & Safety:** Lost time injury(s) potentially resulting in permanent disability. **Production:** Three to six months production or expenditure. **Cost:** $100,000,000 to $500,000,000. **Environmental Impact/Compliance:** Serious environmental impacts with impairment of ecosystems. Relatively widespread long-term effects. Regulatory approval withdrawn for a few months. **Corporate Image or Utility:** Corporate image tarnished within North America. **Community Affairs:** Much local community concerns with national exposure/influence. **Construction:** Delays to construction cost and scheduling.	HIGH (H) ($100,000,000 - $500,000,000)	Issues represents a **control weakness** which could cause a severe disruption to or have a **major adverse effect** on operations and objectives
(3) Moderate ***Moderate event or inefficiency that may need some physical attention and certainly engineering review.*** **Health & Safety:** Lost time injury (no permanent disability). **Production:** one to three production loss or expenditure. **Cost:** $1,000,000 to $100,000,000 damage or additional costs. **Environmental Impact/Compliance:** Some impairment on ecosystem function. Displacement of species. Moderate short-term widespread effects. Regulatory orders with significant cost implications. **Corporate Image or Utility:** Corporate image tarnished within Region. **Community Affairs:** Moderate local community concern with some potential permanent damage to relations.	MODERATE (M) ($1,000,000 - $100,000,000)	Issues represents a **control weakness** which could cause a severe disruption to or have moderate **adverse effect** on operations and objectives

Table 3.2: Consequence Severity and Risk Rating Table (cont'd)

Consequence Severity	Risk Rating	Description
(2) Minor ***Minor incident or inefficiency that may require engineering review and is easily and predictably remediated.*** **Health & Safety:** Injury (no lost time) **Production:** less than one month production loss or expenditure. **Cost:** $100,000 to $1,000,000 damage or additional costs. **Environmental Impact/Compliance:** Minor effects on biological or physical environment. Minor short-term damage to small areas. **Corporate Image or Utility:** Corporate image not affected, written complaint or concern dealt with internally. **Community Affairs:** Minimal local community concern with no lasting damage to relations.	LOW (L) ($100,000 - $1,000,000)	Issues represents a **minor control weakness** which could **cause minimal but reportable effect** on operations and objectives
(1) Insignificant ***Minor incident or inefficiency of little or no consequence.*** **Health & Safety:** No injury or lost time. **Production**: one to two weeks production loss or expenditure. **Cost:** <$100,000 damage or additional costs. **Environmental Impact/Compliance:** No lasting impacts. Low level effects on biological or physical environment. Limited damage to minimal area of low significance. **Corporate Image or Utility:** Corporate image not affected or verbal complaint dealt with internally. **Community Affairs:** No community concern	NEGLIGIBLE (N) (<$100,000)	Issues represents an **insignificant** control weakness

**Please See Volume 10 Appendix 10A-2: Hazard Identification and Risk Assessment Standard*

3.2.1 NECESSITIES OF LIFE ISSUES

Please refer to Table 3.1 for response actions.

3.2.1.1 Lack of Adequate Shelter

Events that may result in inadequate shelter could involve remote work far away from camps, weather, or fire related events. All-weather tents or trailers will provide shelter for personnel at the site. A fire or major storm event could result in the destruction of part or of the entire camp facility requiring large scale evacuation, for which there will be fixed-wing and rotary aircraft available. In the event of destruction of a camp, attempts will be made to mobilize workers to another camp or a safe location. When these attempts fail, evacuation action will be initiated. When evacuation is not possible due to weather, refuge will be sought in vehicles, steel Quonset buildings, or other outbuildings at site, several of which are heated.

3.2.1.2 Lack of Heat

Many buildings at site are equipped with oil-fired stoves. Events such as extreme weather, damage by wild animals, hostile actions, vandalism, and vehicle accidents may affect the supply of oil to the tent or trailer stoves resulting in a lack of heat. During a lack of heat emergency, oil supply and stove components will be repaired or replaced as needed. Further response may involve removal of personnel to other onsite facilities.

3.2.1.3 Power Outages

Power is supplied to camps via diesel fuel powered generators. Back-up generators or standby/emergency portable generators will be available. Events that may cause a power outage are those that affect the generators, such as extreme weather, damage by wild animals, fires, hostile actions, vandalism, and vehicle accidents. Heat for many buildings are provided by oil furnaces so an interruption of power will result in a lack of heat for some buildings, but adequate oil furnaces would be available in other buildings for heat. During these outages back-up power supply will be directed at communications equipment and emergency lighting, over other uses.

3.2.1.4 Interruption to Potable Water Supply

All camps sites will be equipped with water storage tanks. Pumped water will be supplied to some camps while delivery trucks will supply other camps with potable water. Extreme weather (i.e. lines freezing), vandalism, mechanical failures, and fuel and other chemical spills may cause an interruption to potable water supply. When such an interruption occurs, water use will be restricted to drinking and for cooking over other uses. Boiled and bottled water may be provided to personnel during these restrictions. Equipment will be repaired or replaced as needed. If necessary water will be hauled by truck from the nearest appropriate alternative source. Baffinland will ensured that the alternative source meets the regulatory drinking water requirements and is of an appropriate size to be utilized as a temporary source of drinking water; this is not anticipated to be a problem given the abundance of lakes in the region and the generally high water quality. This temporary source will be used while long-term alternative supply sources are identified, if required, in consultation with regulatory authorities.

3.2.1.5 Interruption to Food Supply

Food arrives from outside the site primarily by air for perishable goods, and by sealift for non-perishables. Therefore, prolonged poor weather could limit airlifts of perishable food items. Airstrip lighting will make it easier for pilots to land during some events such as extreme weather. Sufficient food supplies will be kept at each site to account for a prolonged delay in food deliveries.

3.2.1.6 Sewage System Failures

Sewage at the camps will be treated using package sewage treatment plants. An interruption in sewage disposal could arise out of plant inoperability, poor treatment performance, or due to a frozen outfall. Troubleshooting and repairs will be undertaken immediately if a system fails to

ensure ongoing treatment. If the problem is expected to persist for some time, back-up procedures will be implemented as follows:

- Restrict water use to necessities (drinking, cooking, etc.)
- Switch to latrine toilets and temporarily contain greywater. Please note that if latrines are not approved for use under the Type A Water License, Nunavut Water Board (NWB) approval will be obtained prior to construction and use of latrine facilities.
- Develop emergency or alternate disposal options in consultation with applicable government agencies

3.2.2 PERSONNEL ISSUES

3.2.2.1 Medical Emergencies

In the event of medical or related emergencies, any person who discovers someone injured will implement initial response (see Section 3.1), and identify back-up assistance, preferably the dedicated onsite medical professionals or the Emergency Response team will respond.

The onsite medical professionals will implement their protocols to address medical emergencies, providing further care, coordinating uninjured personnel to assist in the response, and arrange transfer to other health care facilities in Pond Inlet or Iqaluit as necessary.

If the victim(s) will require facilities and services beyond that which can be given onsite, the victim(s) could be evacuated from site to receive further medical treatment at Pond Inlet or Iqaluit. A fixed-wing aircraft and several rotary-wing aircraft will be available at Mary River camp or area for medical evacuation. The HSE Manager or Safety Lead will make the necessary arrangements as directed by the onsite medical professional. Information required to initiate a medical evacuation include: name, location and contact information of caller and patient; family or relative information, patient's medical information; and, receiving hospital information.

In the event of a fatality at a work site, Baffinland will exercise discretion for, offer counselling to, and consult with family and/or community members as well as meet all regulatory requirements for notification and scene preservation.

3.2.2.2 Missing Persons

To reduce the potential for missing persons, personnel will check-in regularly and execute proper remote work practices as outlined in Baffinland's or contractor's health and safety plan. Resources such as personnel, equipment, land vehicles, and aircraft will be mobilized to aid search and rescue operations. Additional resources and services from local communities will be drawn upon as needed and if available access external SAR.

3.2.2.3 Missing or Overdue Aircraft or Truck

Aircraft and truck will remain in contact with dispatch while departing from and en route between sites. In the event that a vehicle does not report, the HSE Manager will be notified and they will in

turn initiate the Emergency Response action. Additional support for rescue operations will be implemented with site personnel and appropriate regulatory authorities as needed.

In the event of an accident, injuries will be reported to one of the designated trained first aid personnel in camp as soon as possible. Injuries will be reported immediately to medical personnel, who will implement treatment as required.

3.2.3 NATURAL ENVIRONMENT-RELATED ISSUES

3.2.3.1 Floods

Flooding could potentially occur within local watersheds affecting access along roads and the railway if a crossing structure was made inoperable. Serious emergencies are not envisaged from flooding. Washed out road sections will be repaired using available equipment. Other infrastructure such a buildings and equipment could also be affected by flooding. In the event that a building or piece of equipment is damaged during a flood it will be properly inspected and all necessary repairs completed before it is returned to operation. If it is impossible to adequately repair the affected infrastructure given the extent of the damage or limited equipment available it will be sectioned off and removed from use until a time when proper repairs are possible.

3.2.3.2 Extreme Weather Conditions

Baffin Island experiences extreme weather conditions nearly year-round and snow is possible during any month of the year. This, by necessity, requires the Project to develop health and safety plans tailored to these conditions. These extreme weather conditions will be considered emergencies when prolonged and affecting the safety of employees, equipment or facilities.

When prolonged extreme weather conditions such as cold or poor visibility presents health and safety concerns, risk will be assessed and activities will be curtailed or modified, as appropriate. If white-out conditions persist, communications with the HSE Manager might be necessary to decide the course of action and if travel or rescue is necessary. Work activities that are affected by severe winds, such as aircraft departures/arrivals and work at height, will be curtailed as appropriate.

Sufficient supplies (including food and back-up electrical generators) will be kept at each site in the event of prolonged weather-related interruptions, so as to adequately cater the necessities of life. All vehicles are equipped with survival packs in the event of equipment malfunction between camps. Further response will involve moving personnel to other onsite facilities or evacuation to offsite facilities.

3.2.3.3 Wildlife Encounters and Incursions

The possibility exists that polar bears may be encountered in coastal areas year round and much more rarely, at inland locations such as Mary River during the open water periods (i.e., July to October). Polar bear safety training will be provided to Project personnel as part of site orientation. Specific personnel will be provided with training to monitor and respond to polar bears. Workers at coastal areas should have nearby shelter (trailers, operable vehicles, helicopter) as refuge, or should be accompanied by a dedicated bear monitor, if working on the land, at a distance from

camp facilities. Other wildlife (hare, fox, wolf and caribou) should be avoided and given the right-of-way. Wildlife feeding is not permitted under any circumstances.

Although unlikely, vehicle collision with wildlife is possible. To minimize collisions personnel will abide by the prescribed speed limits imposed on Project-related traffic. Wildlife fatalities from traffic incidents or other events will be reported to the HSE Manager, who will in turn contact Government of Nunavut wildlife officer and local hunters and trapper organizations. Firearms will be prohibited at all sites, except for use by trained bear monitors.

3.2.3.4 Seismicity

The Government of Nunavut *Good Building Practices Guideline* 2nd edition, December 2005, Appendix K will be used for the basis of seismic design of the facilities.

The consequences of seismic events are considered to be low, and a design to prevent effects from seismic occurrence will be a focus. In the case of a seismic occurrence, the necessary action will be taken.

3.2.4 OPERATIONAL INCIDENTS

Note: All incidents, regardless of damage or injury, will be investigated and root cause determined so control measures will be instituted to prevent reoccurrence.

3.2.4.1 Fires

Any scheduled burning onsite, such as incineration, will follow regulatory requirements and control procedures. Fire extinguishers will be stationed at work areas including shops, fuel farms and dispensing areas, kitchens, incinerators, generators, etc. Personnel will be evacuated from site if a fire cannot be immediately controlled or impacts necessities of life or personnel issues. Trained onsite personnel will respond to fires using onsite equipment and notify regulatory authorities as needed. All on-site personnel will be trained in the use of fire extinguishers.

3.2.4.2 Ground Instability

Incidents relating to ground instability could involve railway embankment, pit wall, waste rock or ore stockpile embankment, road embankment, leading to injuries or damage to equipment or facilities. There will be a focus on incorporating geo-technical knowledge, adequate design and quality installation into all project facilities. If a qualified professional feel there is a risk of geotechnical failure proactive preventative measures will be taken to address the problem and ensure geotechnical stability of the area in question. In such emergencies, the Safety Lead and the HSE Manager will be notified so that necessary response action can be implemented. A qualified professional will inspect the suspected area of failure and will ensure that the area is properly secured and isolated. The incident will be documented and appropriate mitigative and preventative programs developed to limit or minimize subsequent incidents and risks. In the event of an incident pre-existing preventative measures will be revaluated and updated/adjusted to ensure similar incidents do not occur again.

3.2.4.3 Automobile and Equipment Accidents

Accidents with vehicles and other equipment will be reported to a supervisor as soon as possible to initiate the Emergency Response action. Priority response, if warranted, will be given to necessities of life and, if a fuel spill has occurred, the Emergency and Spill Plan (see Section 5.5) will be initiated. After priority issues are resolved, equipment will be "tagged out" and will not operate until repairs have been made.

3.2.4.4 Ship Grounding/Collision

Each ship will have a proprietary general emergency plan/checklist according to the International Safety Management Code (ISM Code) for the Safe Operation of Ships and for Pollution Prevention.

3.2.4.5 Airplane/Helicopter Accidents

Contracted commercial air carriers will be equipped with standard operating procedures to address specific response actions to be taken in airplane emergency situations. Baffinland will have the emergency response equipment and develop emergency response procedures for aircraft incidents occurring on the airstrips.

3.2.4.6 Explosives

An Explosives Management Plan (FEIS, Appendix 10D-4) is developed for the Project to address responses to incidents that may arise from transporting, handling and use, and storage of explosives and explosive components onsite.

3.2.4.7 Fuel and Other Chemical Spills

A Spill Response Plan is developed specifically to address fuel and other hazardous materials land-based spills, releases or discharges at the Mine Site (refer to Section 6.0 of this document). Marine fuel spills at the Milne Port or Steensby Port are addressed with by the Milne Port OPEP (FEIS, Appendix 10C-2) and the Steensby Port OPEP (FEIS, Appendix 10C-3).

3.3 MULTIPLE EMERGENCIES

3.3.1 Multiple Emergencies

Multiple emergencies can occur either by coincidence or by one incident leading to or causing another. In the case of multiple emergencies, the guiding principles outlined in Section 1.2 will provide direction for appropriate response action. The emergency team will anticipate potential multiple incidents that could occur due to the occurrence of an emergency and be prepared to take actions as may be required. Sufficient resources will be available to address the potential for multiple emergences. The Safety Lead assisted by the HSE Manager will coordinate response actions.

SECTION 4.0 - ROLES AND RESPONSIBILITIES

As part of the Emergency Response and Spill Contingency Plan, Baffinland is responsible for implementing, through its project management team, the following procedures with regard to spill incidents:

- Train site personnel in emergency and spill response procedures and the proper use of response equipment and materials.
- In the event of an emergency or spill, mobilize required site personnel, equipment and tools.
- Implement the required health and safety procedures at the site of the emergency or spill.
- Eliminate the fire hazards and potential ignition sources near the emergency or spill area.
- Control the source of the spill (i.e., reduce or stop product discharge).
- Contain the spilled product using the most appropriate methods and equipment (i.e., dykes, ditches, sorbent materials, containment booms, and other barriers).
- Evaluate the possibilities of recovering spilled materials.
- Obtain, if required, assistance from government agencies such as Environment Canada, the Canadian Coast Guard and/or Fisheries and Oceans Canada.
- Obtain, if required, additional assistance by hiring local rangers or residents from the nearest communities and/or firms specialized in spill response operations.
- Comply with applicable guidelines and regulations.
- Conduct a preliminary assessment of environmental impacts to marine, freshwater and terrestrial ecosystems and natural resources.
- Report the spill to the Government of Nunavut Spill Report Line, to QIA, and to the water license inspector within 24 hours of the event, and submit a written spill report using the appropriate form.
- Investigate every occurrence, regardless of damage or injury, to determine root cause and implement control measures to prevent reoccurrence.

4.1 RESPONSE MANAGEMENT STRUCTURE

All spill procedures and response functions are to be implemented through the Emergency Response Management Team (see Figure 4.3). Table 1.1 presents the management team responsible for overseeing emergency spill response operations and their contact information.

Once a spill event is reported, the Safety Lead establishes a specific strategy for containing and controlling the spill and to initiate the cleanup activities. Other site personnel such as the Fire Chief, HSE Manager, and Construction Manager may act as technical advisers before and during the intervention. The trained Spill Response Team will conduct all emergency spill response operations under the leadership of the Environmental Lead. During the cleanup phase of the intervention other site personnel (e.g., heavy equipment operators, labourers) could be involved in the intervention.

The Management Organizational Chat is provided as Figure 4.1, the Site Specific (Steensby or Mine Site/Milne Inlet) Management Organization Chart is provided as Figure 4.2 and the Spill Response Team organization chart is provided as Figure 4.3.

Figure 4-1: Management Organization Chart

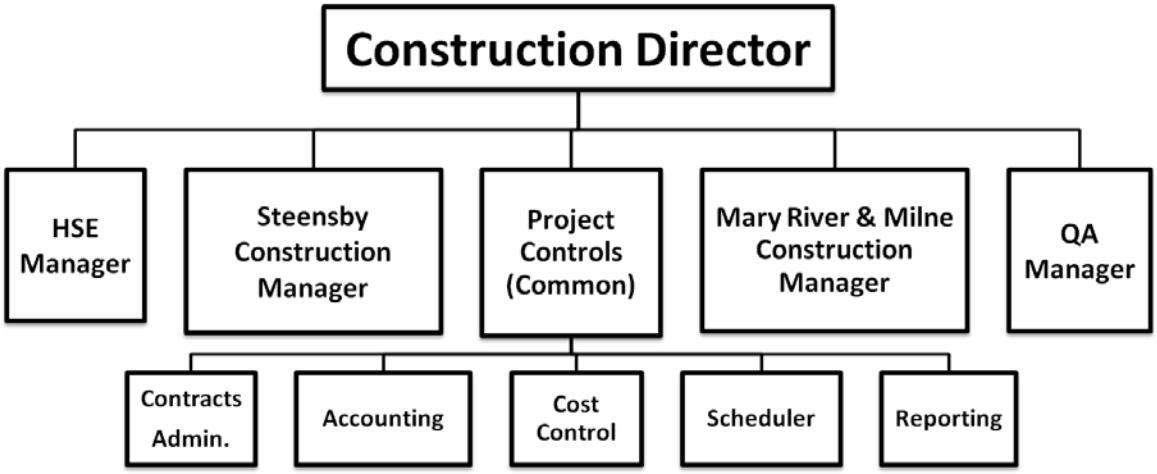


Figure 4-2: Site Specific (Steensby or Mine Site/Milne Inlet) Management Organization Chart

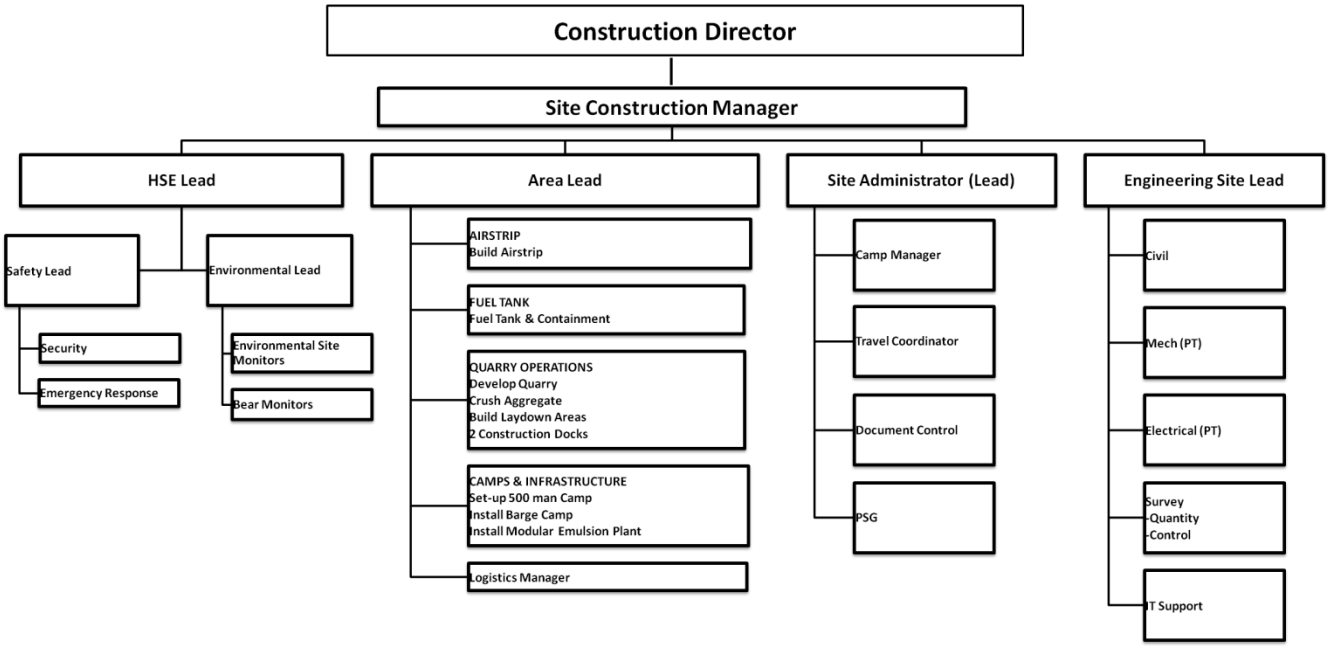
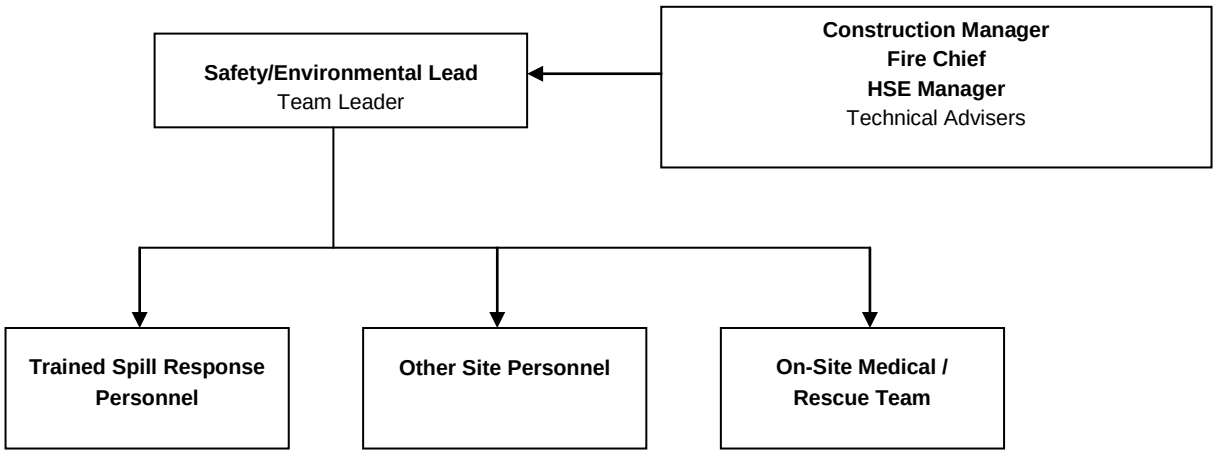


Figure 4-3: Spill Response Team Organization Chart



4.1.1 Safety/Environmental Lead

As part of the spill response plan, the Safety/Environmental Lead, acting as incident commander, is responsible for implementing the following procedures:

- Assume authority over the spill scene and personnel involved.
- Activate the Spill Response Plan.
- Evaluate the initial situation and assesses the magnitude of the spill.
- Develop an overall plan of action.
- Collect photographic records of the spill event and cleanup efforts.
- Prepare a root cause analysis and an incident investigation for major spills.
- Report to the Construction Manager and provide recommendations on resource requirements (additional manpower, equipment, material) to complete the cleanup effort. The responsibility of the coordinator is to mobilize personnel and equipment to implement the cleanup.

The Safety/Environmental Lead will be accessible to the Canadian Coast Guard during the entire incident.

4.1.2 HSE Manager

The responsibilities of the HSE Department include the following:

- Report the spill to NWT 24-hour Spill Report Line at (867) 920-8130, to Qikiqtani Inuit Association (QIA) Lands Administrator at (867) 975-8422, and (Aboriginal Affairs and Northern Development Canada (AANDC) Water Inspector at (867) 975-4555.
- Provide liaison with management to keep them informed of cleanup activities.
- Collect photographic records of the spill event and cleanup efforts.
- Obtain additional required resources not available onsite for spill response and cleanup.

- Act as the spokesperson with government agencies as appropriate.
- Document the cause of the spill and effectiveness of the cleanup effort, and recommend the appropriate measures to prevent a recurrence of the spill.
- Prepare and submit follow-up documentation required by appropriate regulators.
- Ensure that the spill is cleaned up and follow-up communication and reports are filed with the AANDC, and QIA Land Administrator. Ensure that the spill reports submitted to QIA include photographic records and an updated map showing Universal Transverse Mercator (UTM) coordinates, date, and amount and nature of the spill.

4.1.3 Corporate Contact

The responsibilities of the Corporate Contact include the following:

- Work with the HSE Department on regulatory follow-up as necessary; and
- Act as the spokesperson with government agencies as well as the public and media on any significant spill events.

4.1.4 Other Site Personnel – Responders

All responders are to be trained under the Emergency Response Plan outlined in Section 4.3. The number of responders and their specific tasks is estimated in accordance with the spill scenarios outlined in Section 6 of the OPEPs, as applicable.

4.1.5 Onsite Medical/Rescue Team

Depending on the scale of the spills/emergency scenario, fire response and medical emergency procedures will be initiated.

4.1.6 Shipping Companies

When shipping hazardous materials to and from the site, transport companies are required to carry out their operations in accordance with federal and international Transport of Dangerous Goods Regulations [i.e., TDGR – Clear Language, International Maritime Dangerous Goods (IMDG), and International Air Transport Association (IATA)].

In the event of a spill of hazardous materials (exceeding the quantities listed in Part 8.1 (1) of the TDGR) during transport, the shipping company will immediately report the incident to the RCMP and the Nunavut Emergency Services at 1-800-693-1666 (as stated in Part 8.1 (5), TDGR). The immediate report must include as much of the information listed in Part 8.2, TDGR, as is known at the time of the report. A follow-up report must be made, in writing, to the Director General within 30 days after the occurrence of the accidental release, the "dangerous goods accident" or the "dangerous goods incident". The follow-up report must include the information listed in Part 8.3, TDGR.

If a spill occurs on water during transport or during the transfer of hazardous materials from ship to land, the shipping company is responsible to implement the appropriate spill response measures in

accordance to their spill response plan. If needed, the Baffinland Spill Response Team can be available to assist the shipping company in their emergency response operations.

4.2 COORDINATION WITH COAST GUARDS AND GOVERNMENT AGENCIES

4.2.1 Canadian Coast Guard

The response to a spill at Milne Port or Steensby Port will be managed in coordination with the Canadian Coast Guard, lead response agency north of 60º.

The Central and Arctic Regional Response Plan (2006) and the Baffin Region, Nunavut Area Plan outline the Canadian Coast Guard`s response capability for the Baffin region. The plans are components of the Canadian Coast Guard National Response Plan, which is the responsibility of the Director of Safety and Environmental Response Systems, Ottawa. It establishes the framework and procedures by which Central and Arctic Region will prepare for, assess, respond to, and document actions in response to pollution incidents in the region. This capability and the information contained in the Coast Guard plans are considered a valuable resource in planning spill response at both Milne Port and Steensby Port.

4.2.2 Regional Environmental Emergencies Team (REET)

The Environment Canada, Regional Environmental Emergencies Team (REET) is a multi-agency, multi-disciplinary group specializing in environmental emergencies. REET is designed to provide consolidated and coordinated environmental advice, information and assistance in the event of an environmental emergency. REET members represent several federal, provincial and municipal government departments, aboriginal communities, private sector agencies, and local individuals.

During emergency response situations a REET operates as a flexible and expandable multi-disciplinary and multi-agency team brought together to obtain and provide comprehensive and coordinated environmental advice, information and assistance to the On-Scene Commander or Lead Agency.

4.3 TRAINING

The HSE Manager will be responsible for coordinating emergency response training onsite. The Emergency Response Team will participate in training and emergency response exercises to ensure that all members are trained in equipment use and emergency response methods. The Emergency Response Team members will be trained in emergency identification and currently accepted response action techniques. Training will be related to specific emergency response roles, and will include:

- Emergency chain-of-command;
- Communication methods and signals;
- Emergency equipment and use;
- Emergency evacuation;
- Offsite support and use;

- Marine spill response; and
- Marine shoreline recovery operations.

Emergency personnel will receive training in first aid and Cardiopulmonary Response (CPR) and will practice hands-on rescue techniques. Employees will undergo formal safety and emergency response training. The training will identify site-specific hazards and hazards associated with the project in general. The training will also review standard operating procedures, use of personal protective equipment, signalling an emergency, evacuation routes and muster locations, reporting and notification protocol, and other general safety procedures.

As part of site orientation and ongoing awareness training, all site personnel are informed that any spill of fuel or other hazardous liquids or solids, whatever the extent, has to be reported to their immediate supervisor.

An appropriate number of site personnel are selected and appropriately trained to form the Emergency Response Team. Crew members are trained in emergency spill response procedures and operations. Training includes knowledge in the following:

- Properties of hazardous materials used onsite (including proper storage, transportation handling, and disposal of Ammonium Nitrate and Fuel Oils as per the Hazardous Materials and Hazardous Waste Management Plan).
- Common causes of spills.
- Environmental effects of spills.
- Worker health and safety during emergency interventions.
- Personal protective equipment and clothing.
- Spill response procedures and techniques on land, water, snow, and ice, and during all four seasons.
- Spill response equipment and materials.

4.3.1 Hands-On Training and Deployments

Hands-on training will include:

- Review of inventory of spill equipment;
- Hands-on instruction – boom connections, tow bridles, rope handling, basic knots and attachment and deployment accessories;
- Simulated deployment of booms and related gear on water using appropriate vessels; and
- Debriefing and lessons learned.

4.4 EXERCISES

Following the annual delivery of training (see Section 4.3), a comprehensive spill exercise will be undertaken. The exercise is structured to test the readiness of both management and responders and to practice and validate the logistics of the deployment of spill gear. The exercise content will be different from year to year so that it can best validate the various elements of the OPEP and the appropriateness of the response. Factors that will be evaluated include:

- Activation of the ERP / OPEP;
- Effectiveness of management response;
- Site safety;
- Communications;
- Equipment deployment for specific scenarios;
- Reporting and coordination with external agencies;
- Exercise coordination with Canadian Coast Guard; and
- Exercise coordination with ship.

4.5 COMMUNICATION

The types of communications for which members of the team will participate include the following:

- Formal written correspondence and meetings with stakeholders;
- Site visits by community representatives;
- Design, construction and planning meetings;
- Field inspections and monitoring reports disseminated by the HSE Manager;
- Electronic communications;
- Tailgate/toolbox meetings;
- Formal written correspondence and meetings with government regulatory bodies; and
- Formal environmental awareness training.

Communications will be appropriately recorded and filed for future reference. Where appropriate, the copies of communications will be forwarded to the Construction Manager(s), and Vice President Sustainability.

4.6 EXTERNAL COMMUNICATIONS

Effective forms of communication include the proactive notification to external stakeholders of Project activity. Project activity updates will be provided to the communities of the Region through various means including regular meetings, public notices and radio announcements as appropriate. Baffinland will endeavour to maintain Community Liaison Offices to assist in this regard.

SECTION 5.0 - SPILL RESPONSE PROCEDURES

A spill is defined as the discharge of a hazardous product out of its containment and into the environment. Potential hazards to humans, vegetation, water resources, fish and wildlife vary in severity, depending on several factors including nature of the material, quantity spilled, location and season. Diesel and Jet Fuels are the main products that may be spilled and therefore spill response procedures focus on this hazardous material. Other chemicals that may be spilled include sewage water, calcium chloride flakes and small quantities of lubricants and oils.

All site personnel are trained on the procedures to be followed to report a spill and initiate spill response. The first person to notice a spill takes the following steps:

1. Immediately warn other personnel working near the spill area.
2. Evacuate the area if the health and safety of personnel is threatened.
3. In the absence of danger, and before the spill response team arrives at the scene, take any safe and reasonable measure to stop, contain and identify the nature of the spill.
4. Notify the HSE Manager, who will initiate the spill response operations.

All spill response interventions carried out by the spill response team follow these general procedures:

Source Control – Reduce or stop the flow of product without endangering anyone. This could involve very simple actions such as turning off a pump, closing a valve, or sealing a puncture hole with almost anything handy (e.g., a rag, piece of wood, tape), raising a leaky or discharging hose to a level higher than the product level inside the tank, or transferring fuel from leaking containers.

Control of Free Product – Prevent or limit the spread of the spilled material. Accumulate/concentrate spilled product in an area to facilitate recovery. Barriers positioned down-gradient of the spill will slow or stop the progression of the spill. Barriers can consist of absorbent booms, dykes, berms, or trenches (dug in the ground or in ice).

Protection – Evaluate the potential dangers of the spill to protect sensitive ecosystems and natural resources. Block or divert the spilled material away from sensitive receptors. This can also be achieved by using various types of barriers.

Clean up the Spill – Recover and containerize as much free product as possible. Recover and containerize/treat contaminated soil, water, and snow. Pressure-wash contaminated bedrock surfaces, shorelines, ice and recover as much as possible oily water for containerization and/or treatment.

Report the Spill – Provide basic information such as date and time of the spill, type and amount of product discharged, photographic records, location and approximate size of the spill, actions already taken to stop and contain the spill, meteorological conditions and any perceived threat to human health or the environment. Reporting requirements are presented on Section 7.

Response procedures specific to spills on land, water, snow and ice are presented in the following sections. Procedures vary depending on the season. Spill response operations, techniques, equipment and materials are further detailed in the spill response training course manual.

5.1 SPILLS ON LAND

Response to spills on land will include the general procedures previously detailed. The main spill control techniques involve the use of two types of barriers: dykes and trenches. Barriers should be placed downgradient (down-slope) from the source of the spill, and as close as possible to the source of the spill. Barriers slow the progression of the spill and also serve as containment to allow recovery of the spill.

Depending on the volume spilled, the site of the spill as well as available material, a dyke may be built with soil, booms, lumber, snow, etc. A plastic liner should be placed at the foot of and over the dykes to protect the underlying soil or other material and to facilitate recovery of the spill. Construct dykes in such a way as to accumulate a thick layer of free product in a single area (V-shaped or U-shaped).

Trenches are useful in the presence of permeable soil and when the spilled fuel is migrating below the ground surface. A plastic liner should be placed on the down-gradient edge of the trench to protect the underlying soil. Liners should not be placed at the bottom of the trench to allow water to continue flowing underneath the layer of floating oil (if applicable).

The use of large quantities of absorbent materials to recover important volumes of spilled fluids should be avoided. Large volumes of free-product should be recovered and containerized, as much as possible, by using vacuums and pumps appropriate to the material. Mixtures of water and fuel may be processed through an oil-water separator. Absorbent sheets should be used to soak up residual fuel on water, on the ground (soil and rock), and on vegetation. Peat moss may also be sprinkled on vegetation to absorb films of petroleum products.

5.2 SPILLS ON WATER

Response to spills on water include the general procedures previously detailed. Various containment, diversion and recovery techniques are discussed in the following sections. The following elements must be considered when conducting response operations:

- Type of waterbody or water course (lake, ocean, stream, river);
- Water depth and surface area;
- Wind speed and direction;
- Presence and range of tides;
- Type of shoreline; and
- Seasonal considerations (open-water, freeze-up, break-up, frozen).

Containment of a diesel fuel slick on the ocean requires the deployment of mobile floating booms to intercept, control, contain and concentrate (i.e., increase thickness) the floating oil. One end of the booms is anchored to shore while the other is towed by a boat and use to circle the diesel fuel slick and return it close to shore for recovery using a skimmer. Reducing the surface area of the slick

increases its thickness and thereby improves recovery. Mechanical recovery equipment (i.e.,skimmers and oil/water separators) will be mobilized to site if required. Refer to Milne Port OPEP (Appendix 10C-2) and Steensby Port OPEP (Appendix 10C-3).

If diesel fuel is spilled in a **lake** it may not be possible to deploy booms using a boat. In this case, measures are taken to protect sensitive and accessible shoreline (spills resulting from traffic incidents). The diesel fuel slick is monitored to determine the direction of migration. In the absence of strong winds the oil will likely flow towards the discharge of the lake. Measures are taken to block and concentrate the oil slick at the lake discharge using booms where it will subsequently be recovered using a portable skimmer, a vacuum, or sorbent materials.

In small slowly-flowing rivers, **streams**, channels, inlets or ditches, inverted weirs (i.e., siphon dams) are used to stop and concentrate moving diesel fuel for collection while allowing water to continue to flow unimpeded. In the case of floating diesel fuel, in a **stream**, heading for a culvert (i.e., at a road crossing) a culvert block is used to stop and concentrate moving fuel for collection while allowing water to continue to flow unimpeded. In both cases diesel fuel will then be recovered using a portable skimmer or sorbent materials.

In the case of spills in larger **rivers**, with fast moving currents, diversion booming is used to direct the oil slick ashore for recovery. Single or multiple booms (i.e., cascading) may be used for diversion. Typically, the booms are anchored across the river at an angle. The angle will depend on the current velocity. Choosing a section of a river that is both wider and shallower makes boom deployment easier. Diversion booming may also be used to direct an oil slick away from a sensitive area to be protected.

5.3 SPILLS ON SNOW AND ICE

In general, snow and ice will slow the movement of hydrocarbons. The presence of snow may also hide the diesel fuel slick and make it more difficult to follow its progression. Snow is generally a good natural sorbent, as hydrocarbons have a tendency to be soaked up by snow through capillary action.

However, the use of snow as absorbent material is to be limited as much as possible. Snow and frozen ground also prevent hydrocarbons from migrating down into soil or at least slow the migration process. Ice prevents seepage of fuel into the water.

Response to spills on snow and ice includes the general procedures previously detailed. Most response procedures for spills on land may be used for spills on snow and ice. The use of dykes (i.e., compacted snow berms lined with plastic sheeting) or trenches (dug in ice) slow the progression of the fuel and also serve as containment to allow recovery of the fuel.

Free-product is recovered by using a vacuum, a pump, or sorbent materials. Contaminated snow and ice is scraped up manually or using heavy equipment depending on volumes. The contaminated snow and ice is placed in containers or within lined berms on land. A contaminated snow storage site is located at Milne Port, the Mine Site and Steensby Port. Once enough snow has melted, the oily water is removed from the storage and processed through an oily water treatment

system. Hydrocarbons recovered will be burned in the camp incinerator or shipped offsite for processing.

5.4 WILDLIFE PROTECTION PROCEDURES

In response to a spill event, techniques used to prevent wildlife from becoming oiled or contaminated, by preventing animals from entering the contaminated area, will consist of hazing and other deterrents. This will be accomplished using a combination of both audible and visual devices, including but not limited to:

- Pyrotechnics, i.e. shell crackers, screamers, propane cannons for shore based spills
- Visual scare tactics, i.e.: helicopters, emergency response vessels or other water vessels
- Broadcast sounds, i.e. Breco Bird Scarer designed to float with an oil spill
- Exclusion, i.e. netting applied in smaller contaminated areas such as settling or evaporation ponds

These techniques need to be set in place immediately after a spill occurrence so as to minimize environmental impact.

The size of the spill and location in relation to sensitive wildlife areas must be assessed at the time of the event as to correctly apply the appropriate level of deterrence. Only workers trained in the safe and proper use of certain hazing equipment will be permitted to haze wildlife. Personal Protective Equipment will be worn by all personnel using equipment, as per manufactures instructions, and that the minimum will include the use of eye and ear protection. Other workers in the vicinity of such devices should also use ear protection or remain a safe distance away. Hazing through the use of pyrotechnics should not be used too close to dry vegetation or flammable spill materials due to fire hazard.

Hazing should be equal and continuous in all contaminated areas to prevent wildlife from being hazed into an area where they may be in danger. It is also important to ensure that hazing efforts do not cause already contaminated animals to scatter and techniques are applied as soon as possible to prevent wildlife from contacting spills off the surface of waters (if applicable).

All emergency response vessels shall be equipped with deterrent devices to ensure timely response in case of a spill occurrence off-shore. To prevent habituation, variation of hazing techniques will be used such as changing the location, appearance and types of hazing or using a combination of hazing techniques.

Efforts shall be made to collect alive or dead oiled wildlife. In the event of a spill occurring in or around a water body, shorelines and beaches shall be inspected for contaminated wildlife to be collected. Emergency Response vessels shall be equipped with dip-nets, large plastic collecting bags for dead wildlife, and cardboard boxes or cloth bags for live oiled wildlife. To ensure alive oiled wildlife be dealt with humanely, capture and handling of wildlife shall only be done by trained and permitted individuals. Gloves shall be worn when handling contaminated wildlife (leather gloves for raptors and mammals, latex/rubber gloves for ducks and small shorebirds). Wildlife will be kept individually within cloth bags or ventilated cardboard boxes and label the date and time animal was

found, name of finder, location and name of species, if known. Wildlife treatment facilities will then be contacted for advisement on treatment. All contaminated wildlife will be held in a warm quiet place until treatment. The CWS will be consulted to determine the most humane treatment strategy to be implemented for live oiled wildlife, whether rehabilitation or euthanization.

For wildlife mortalities each carcass shall be bagged and labelled individually. The date and time animal was found, name of finder, location and name of species, if known shall be documented. Canadian Wildlife Services (CWS) shall be consulted and approval obtained prior to disposing of any dead wildlife. Contact information for experts in bird hazing and bird exclusion, oiled bird rehabilitation, and, permits needed to haze, salvage, hold and clean, or euthanize birds, are shown in Table 5-1.

Table 5-1: Emergency Contacts in Case of Spills Affecting Wildlife

Name	Location	Phone Number	Purpose
Canadian Wildlife Services (CWS)	Qimugjuk	1-867-979-7279	• Knowing and providing information on the migratory bird resource and species at risk (under CWS jurisdiction) in the area of a spill (this includes damage assessment and restoration planning after the event) • Minimizing the damage to birds by deterring unoiled birds from becoming oiled • Ensuring the humane treatment of captured migratory birds and species at risk by determining the appropriate response and treatment strategies which may include euthanization or cleaning and rehabilitation.
Cobequid Wildlife Rehabilitation Centre	Brookfield, NS	1-902-893-0253	Provide veterinary care and rehabilitation for wildlife
Nunavut Emergency Management	P.O. Box 1000, Station 700 Iqaluit, NU X0A 0H0	1-800-693-1666	Nunavut Emergency Management is responsible for developing the territorial emergency response plans, coordinating general emergency operations at the territorial and regional levels, and supporting community emergency response operations.
International Bird Rescue	International	1-888-447-7143	Wildlife rehabilitation specialists, can manage all aspects of wildlife response

5.5 DISPOSAL OF SPILLED MATERIAL

Plastic ore sacks, steel drums, or other appropriate container as approved by the HSE Manager are used to contain and transport contaminated soil for treatment. Depending on the nature of the spilled contaminant, the soil may be treated for remediation at Baffindland's land farm at Milne Port (hydrocarbon based spills, sewage spills). Contaminated soil resulting from the spill of hazardous chemicals will be treated as a hazardous waste and shipped to a licensed facility for treatment and disposal (refer to FEIS, Appendix 10D-4: Waste Management Plan for Construction Operations and

Closure). Temporary storage of contaminated materials is within lined berms. Used sorbent material is burned in the site incinerators.

SECTION 6.0 - POTENTIAL SPILL ANALYSIS

To prepare for emergency spill response, potential spill analysis was conducted on various worst-case scenarios. The exercise serves to identify potential risk areas, as well as to determine the fate of spilled products and their environmental effects. This section examines spill scenarios as they relate to the early construction phase, for more information on spill analysis in the construction and operation phases of the project please refer to Annex 6.

Three (3) types of materials are susceptible to cause environmental, health and safety concerns should a spill occur while being transported, stored and handled: fuel, explosives and untreated sewage. These materials are handled/used daily in sufficiently large quantities to warrant the evaluation of potential spill scenarios. All other hazardous materials, chemicals or wastes are handled/used/stored in smaller quantities and packaged/transported in small containers that limit the magnitude of the spills that can occur.

6.1 FUEL SPILLS

For locations of the tank farms and temporary fuel depots at each of the Project sites, see Annex 1. For the expected max quantities of fuel stored at each location during construction, see Table 6.1.

The fuel tank farms are designed to have bermed spill containment with capacity equal to the volume of the largest tank plus 10% of the volume of the remaining tanks or 110% volume of the largest tank, whichever is greater. In calculating the volume, the footprint of the smaller tanks is subtracted.

The above basis is consistent with the document Design Rationale for Fuel Storage and Distribution Facilities published by the Department of Public Works of the Northwest Territories. The lining in the bermed area is an impervious high-density polyethylene (HDPE) membrane. Refuelling stations are equipped with a lined and bermed area to contain minor spills or leaks during refuelling. The liner (e.g., 40 mm hypolon liner or equivalent) is protected by sand bedding. Vehicles and mobile equipment drive onto this bedding for refuelling. All fuel transfer is done by pumps with auto shut off valves (similar to gas station pump handles).

All fuel storage areas are equipped with spill kits for emergency response and a current Spill Response Plan will be maintained that identifies spill kit locations and response plans. The spill kit contains the appropriate type, size and quantity of equipment for the volume/type of product present in the storage location as well as the environment likely to be affected by a spill (i.e., ground, river, lake, ocean).

For each method of fuel storage and transfer, specific procedures related to fuel storage and transfer will be developed, and proper containment and emergency response equipment will be provided to meet or exceed regulatory requirements. The Emergency Response and Spill

Contingency Plan governs land-based operations, and the Transport Canada approved OPEPs govern ship to shore fuel transfers for Milne Port and Steensby Port.

6.1.1 Potential Fuel Spill Scenarios

6.1.1.1 Scenario 1: Tank Farms Area Spill

The tank farms located at Milne Port, Steensby Port and the Mine Site are constructed in an impermeable secondary containment structure (lined and bermed containment area). The construction is in compliance with building codes and best practices for tank farm facilities. The low point of the containment area is fitted with a pumping system for capture/disposal of runoff in this secondary containment area. The same pumping system is used to recover large spills, should they occur. For the capacity of the tank farms at each location, along with the finished capacity of the secondary containment, see Table 6.1.

Table 6-1: Fuel Storage

Location	Peak Number of Tanks and Capacity of Fuel Storage during Construction		Total Storage Capacity
Milne Port	2 steel tank @ 1.5 ML	Jet- A	48 ML
	1 steel tank @ 5 ML, 4 steel tanks @ 10 ML	Diesel (CP-43)	
Mine Site	2 steel tank @ 1.5 ML	Jet- A	18.6 ML
	3 steel tank @ 5.2 ML	Diesel (CP-43)	
Steensby Inlet	5 steel tanks @ 1 ML	Jet- A	40 ML
	15 tanks @ 1 ML, 20 ML fuel barge	Diesel (CP-43)	

In light of the capacities of the secondary containments, fuel spills outside these containment areas is unlikely to occur. Detailed procedures (site wide application) and work instructions (task specific) are in place as well as the Environmental Protection Plan (EPP) to deal with the cleaning of equipment and machinery entering and exiting the tank farms as well as dealing with contamination resulting from traffic in and out of the secondary containment areas.

6.1.1.2 Scenario 2: Day Tank/Temporary Storage Area Spill

All stand-alone day storage facilities, whether temporary (construction period) or permanent (mine pit), are double-walled iso-tanks. In the 2012 Works seven of these tanks will be required and will be located at Steensby, during the construction phase given the need for the various sites and multiple railways camps there could be up to 100 double-walled iso-tanks in use at one time. In light of the nature of the tanks and capacities of the secondary containment, fuel spills outside these containment areas are unlikely to occur.

Detailed procedures (site-wide application) and work instructions (task-specific) are in place, along with the Environmental Protection Plan (EPP) to deal with refuelling operations.

The most likely source of spills is during refuelling or refilling the day tanks with fuel. These operations are carried out by trained personnel who stop the fuel transfer operation whenever a leak is detected and all dispensing will be done with auto shut off fuel dispensers.

6.1.1.3 Scenario 3: Road Accident Tanker Truck Spill

Description of Incident	Spill of the contents of a tanker truck or fuel re-supply truck to a stream. Spill occurs in an isolated area between Milne Port and Mary River or an isolated area along the railway construction road
Potential Causes	Human error, vehicle mechanical failure, or, traffic accident
Product Spilled	1. Tote Road: Diesel fuel, Jet-A Fuel 2. Ice Road: Diesel fuel
Maximum Volume Spilled	20 000 to 50 000 L (content of a tanker truck) This would require the rupture of the tanker.
Estimated Time to Spill Entire Volume	Spillage can be limited depending on severity of incident/accident 10 minutes to 48 hours – depending on severity of rupture or piping / valving associated with the tanker truck.
Immediate Receiving Medium	Soil, streams, lakes
Most Probable Direction of Spill Migration	Varies with specific location of spill
Distance and Direction to Closest Body of Water	1. Tote Road - Downstream and into a river named Phillips Creek; the road between Mary River and Milne Port follows Phillips Creek, and crosses many streams (that discharge into Phillips Creek) over a distance of approximately 50 km. Phillips Creek eventually discharges into the ocean at Milne Port. 2. Ice Road – depends on location of accident
Resources to Protect	1. Tote Road: Streams, Phillips Creek and the ocean. 2. Ice Road: various water ways and lakes along the ice road
Estimated Emergency Spill Response Time	60 minutes after spill is reported to site personnel (assuming truck driver is injured and cannot commence spill response procedures).
Spill Response Procedures	1. Contain and recover diesel slick downriver as described in Section 6.2, protect shorelines using sorbent booms. Collect free-product for temporary storage. Clean-up soiled shorelines. If the response crew arrives before the complete spill, seal the leak where feasible, contain and recover oil spill on ground using dykes and trenches. Also, if the truck driver is not injured, he will act as a first responder and immediately initiate the spill contingency plan as defined in section 6 using the spill kit kept in the fuel trucks. 2. Once the treatment is achieved, the content of the reservoir is normally pumped by a vacuum truck to be discharged elsewhere. Therefore a vacuum truck is available in the area. In case of a spill of non-treated wastewater (sewage), the slick would be pumped using the vacuum truck. The piping would be repaired and the content of the truck would be discharged back in the oily water treatment unit. Impacted soils (if any) would be excavated and placed within the contaminated soil treatment area at the Mine Site or Steensby Port.

6.1.1.4 Scenario 4: Marine Resupply Spill – Milne Port or Steensby Port

The Milne Port OPEP (Appendix 10C-2) and Steensby Port OPEP (Appendix 10C-3) present the range of spill scenarios probable for these facilities.

6.2 EXPLOSIVES TRANSPORT AND STORAGE

For the hazard class and potential impacts for explosives to be used on the Mary River Project, see Table 6.2. For an overview of the on-hand quantities of explosives, see Table 6.3. For the location of the explosives storage facilities at Milne Port, the Mine site, and Steensby Port, see the site layout drawings in Annex 1. The Explosives Management Plan (Appendix 10C-4) deals with explosives management for the Construction phase of the Project.

Ammonium nitrate is the single-largest material that will be used for explosives at the Mine Site. At Steensby Port, the 1-tonne tote bags of ammonium nitrate will be stored and transported in Sea Can containers from the storage area to the emulsion manufacturing plant located at Steensby Port and the Mine Site. The spill of ammonium nitrate prill to the environment during transportation is thus unlikely to occur as the contents of a ripped tote bag would be contained inside the Sea Can container.

Table 6-2: Explosives Hazard Classes and Potential Impacts

Material	Class	Potential Impact
Ammonium Nitrate	5.1	Water contamination
Packaged Explosives	1	Negligible with proper handling
Blasting Caps	1	Negligible with proper handling
Acetic Acid	8	Water contamination
Nitric Acid	8	Water contamination
Ethylene Glycol	3	Water contamination
Sodium Nitrite	5.1	Water contamination
N7 Emulsifier		Water contamination
N23 and LZ Emulsifier		Water contamination
N4 Emulsifier		Water contamination

Table 6-3: Quantities of Explosives Stored Onsite

Material	Purpose	Total Quantities (kg)	Storage Type	Stored at Mine Site Quantities (kg)	Stored at Steensby Site Quantities (kg)
Pre-Packaged Explosives	Explosive agent	200,000	1 tonne tote bags, AN storage pad	100,000	100,000
Ammonium Nitrate	Polymer	6,000,000	20,000 kg Sea Cans, 37,000 kg magazines	3,000,000	3,000,000

6.2.1 Potential Spill Scenarios Related to Explosives

6.2.1.1 Scenario 1: Spill of Ammonium Nitrate

Ammonium nitrate dissociates readily in water to form ammonia, which in its un-ionized form, is toxic to aquatic organisms and fish. Storage on land, away from water sources largely eliminates the risk of ammonia losses to water bodies.

All partially full contaminated or ripped bags of prill, spilled prill and used empty bags are collected and stored in a dedicated contained location for shipment offsite for disposal. Spills within the storage facility are completely contained. All spills are recorded on a spill report and all tote bags are inspected regularly by the explosives contractor.

A spill of ammonium nitrate on mine roads is highly unlikely, however, accidental spills of ammonium nitrate from an explosives truck will be cleaned up immediately and reported to the HSE Manager and logged as required by regulations. Clean up will be done by employees licensed to handle explosives and the contaminated material will be handled as per spills occurring within the storage area.

6.2.1.2 Scenario 2: Spill of Emulsion

Emulsion materials are acutely toxic to aquatic life. Release of emulsions to receiving water could have adverse impacts on aquatic life and fish. Therefore, emulsion material is stored at the emulsion plant where spills can be contained 100% within the confine of the building. Spills in this area are cleaned by employees licensed to handle explosives. Clean-up materials will be segregated in an appropriate area; incompatible materials will not be stored together, pursuant to MSDS and WSCC regulations.

When and if a spill occurs, a spill report will be filled by the explosives contractor and HSE Manager. If a spill exceeds reportable quantities, notification will be made under the spill reporting regulations applicable in Nunavut.

6.2.1.3 Scenario 3: Spill of Emulsion During transport

Given the precautions taken in the design of the storage facilities and the suitability of containers used for storage and transport, major spills are most likely to be caused by traffic accident involving

the explosives truck. If such an accident occurs, explosive material will be recovered by employees licensed to handle explosives and the contaminated material will be handled as per spills occurring in the storage area.

6.3 UNTREATED SEWAGE

There will be three permanent camps (the Mine Site, Steensby Port and Milne Port). Each camp will be equipped with a dedicated wastewater treatment facility (see Appendix 10D-3: Fresh Water, Sewage and Wastewater Management Plan) with rotating biological contactor units (RBC) or superior.

At remote areas, such as the mine maintenance/mine office, explosives handling facility, non-serviced railway camps, wastewater will be collected in local holding tanks and transported by tanker truck for treatment at the closest WWTF.

6.3.1.1 Scenario 1: Sewage Spill at Milne Port or Steensby Port

Description of Incident	Spill from the Rotating Biological Contactor reservoir. A pipe is accidently dislodged and non treated wastewater escape the reservoir
Potential Causes	Pipe or mechanical failure
Product Spilled	Raw sewage
Maximum Volume Spilled	15,000 litres
Estimated Time to Spill Entire Volume	15 minutes
Immediate Receiving Medium	Milne Port or Steensby Port
Most Probable Direction of Spill Migration	Milne Port or Steensby Port
Distance and Direction to Closest Body of Water	150 m.
Resources to Protect	Milne Port or Steensby Port
Estimated Emergency Spill Response Time	15 minutes after spill is noticed.
Spill Response Procedures	None

6.3.1.2 Scenario 2: Mine Site Sewage Spill

Description of Incident	Spill from the Rotating Biological Contactor reservoir.
Potential Causes	A pipe has accidently being dislodged and non treated wastewater escapes the reservoir
Product Spilled	Raw sewage
Maximum Volume Spilled	15,000 litres
Estimated Time to Spill Entire Volume	15 minutes
Immediate Receiving Medium	Soil
Most Probable Direction of Spill Migration	Downstream and into a local depression east of the RBC wastewater treatment facility. That local depression dries in the summer and intercepts the maximum spilled volume.
Distance and Direction to Closest Body of Water	200 m.
Resources to Protect	One stream and Camp Lake.
Estimated Emergency Spill Response Time	15 minutes after spill is noticed.
Spill Response Procedures	A vacuum truck is available at the Mine Site. In case of a spill of non-treated wastewater (sewage), the slick would be pumped using the vacuum truck. The piping would be repaired and the content of the truck would be discharged back in the RBC treatment unit. Impacted soils (if any) would be excavated and disposed of in an incinerator or discharge back in the RBC.

6.3.1.3 Scenario 3: Sewage Transport Truck Spill

Description of Incident	Spill from the tanker truck transporting raw sewage from one of the temporary camp site to one of the permanent WWTF
Potential Causes	Road accident
Product Spilled	Raw sewage
Maximum Volume Spilled	10 000 litres
Estimated Time to Spill Entire Volume	Depends on severity of accident and damage sustained by the tanker truck
Immediate Receiving Medium	soil
Distance and Direction to Closest Body of Water	Depends on location of accident
Resources to Protect	Soil and waterways
Estimated Emergency Spill Response Time	Immediate if driver is not injured; up to 60 minutes if ERP Team is required.
Spill Response Procedures	Spillage is contained. Impacted soils (if any) is excavated and disposed of in an incinerator or discharge back in the RBC.

SECTION 7.0 - REPORTING REQUIREMENTS

Quantities of hazardous substances spilled that require reporting are listed in Schedule B of the Nunavut Spill Contingency and Reporting Regulation. Please refer to Annex 7.

After the initial field emergency response to the spill event, spills are reported to the 24-hour Spill Report Line (see Annex 3 for Spill Report Form):

24-Hour Spill Report Line
spills@gov.nt.ca
Tel. (867) 920-8130 or
Fax (867) 920-8127

Failure to report a spill can lead to fines. The Qikiqtani Inuit Association Lands Administrator will also be promptly notified at (867) 975-8422 or via e-mail. Similarly, the AANDC Water Resources Officer will be promptly notified of the spill event at (867) 975-4289 or via e-mail. In the event of a spill on the ocean, the incident will be reported to the Canadian Coast Guard (Arctic region) 1-800-265-0237 (24-hour).

It is the responsibility of the HSE Manager on behalf of the Operations Manager to prepare the proper reports and transmit them to regulatory authorities. Table 7.1 presents an additional contact list for spill reporting. The HSE Manager will determine on a spill by spill basis whom on the list is to be contacted.

Table 7.1: Contact List for Spill Reporting

Department	Person	E-mail	Telephone
AANDC-Waters (Iqaluit)	David Aberenthy	david.aberenthy@aandc aandc.gc.ca	**(867) 975-4555**
AANDC-Field Operations	Andrew Keim	andrew.keim@aandc.gc.ca	**(867) 975-4289**
DFO-Iqaluit	Georgina Williston	georgina.williston@dfo-mpo.gc.ca	**(613) 925-2865 Ext. 131**
EC-Iqaluit	Curtis Didham	curtis.didham@ec.gc.ca	**(867) 975-4644**
GN-DOE	Robert Eno	reno@gov.nu.ca	**(867) 975-5907**
Qikiqtani Inuit Association	Salamonie Shoo	landadmin@qia.ca	**(867) 975-8422**
Pond Inlet Health Clinic			**(867) 899-7500** **(867) 899-8431**
Pond Inlet RCMP			**(867) 899-1111**
Qikiqtani General Hospital (Iqaluit)			**(867) 979-7300**

NOTE: *To be updated upon Project Approval if necessary*

The spill event is reported in writing using the standard Spill Report Form (see Annex 3).

The written report includes the following information:

- Date and time of incident;
- Location or map coordinates and direction of spill movement if warranted;
- Party responsible for the spill;
- Type and estimated quantities of spilled contaminant(s);
- Specific immediate cause of incident;
- Status of the spill indicating if spilled materials are still moving or now at steady-state;
- Approximate surface of contaminated area;
- Photographic record of spill event and cleanup efforts;
- Factors affecting spill or recovery such as temperature and wind;
- Status on containment actions indicating whether a) naturally, b) booms, dykes, or other, c) no containment implemented;
- Corrective action taken or proposed, to clean, contain, or dispose spilled material;
- Whether assistance is required and in what form;
- Whether the spill poses a hazard to persons or property (i.e., fire, drinking water);
- Comments and recommendations;
- Name, position, and employer of person reporting the spill; and
- Name, position, department of person to whom the spill is reported.

In addition, QIA requests that Baffinland produce a site map(s) listing the location in UTM coordinates, date, amount, and nature of the substance spilled. The map(s) should be updated annually and will be provided along with annual report requirements. The map(s) will also detail major project components and relevant water-bodies.

In the event of a spill involving the marine carrier delivering bulk fuel, Baffinland will ensure that the subcontractor reports any spill event under its responsibility.

SECTION 8.0 - REFERENCES

1. The *Guidelines for Preparation of Hazardous Material Spill Contingency Plans* describe parameters that should be considered in the development of hazardous material spill emergency plans.
2. The CCME *Code of Practice for Used Oil Management* defines appropriate environmental options for handling, storage, collection, recycling, transport, reuse and/or disposal of used oils in Canada.
3. The *Field Guide for Oil Spill Response in Arctic Waters* developed for the Emergency Prevention, Preparedness and Response Working Group, describes precise response methods and strategies for emergency response operations and provides technical support documentation.
4. The *Land Transportation Emergency Response Guideline for Petroleum Spills* developed by the Canadian Petroleum Products Institute outlines scope, emergency response code of practice, response time guidelines, response equipment, and personnel capability requirements.
5. INAC, Nunavut Regional Office, *Draft Recommended Best Practices for Storage and Handling of Petroleum and Allied Petroleum Products on Federal Crown Lands in Nunavut*, March 2009.
6. Department of Sustainable Development, Environmental Protection Service:
    - *Environmental Guidelines for Contaminated Site Remediation, January 2002*

- *A Guide to the Spill Contingency Planning and Reporting Regulations*
- *Environmental Guidelines for Industrial Projects on Commissioner's Lands, January 2002*
- *Environmental Guidelines for Industrial Waste Discharges, January 2002*
- *Environmental Guidelines for Management of Hazardous Waste, January 2002*
- *Illustrated Homeowner's Guide to Heating Oil Tank Inspection, February 2008*

7. Canadian Coast Guard, Central and Arctic Region, 2006. *Regional Response Plan*. April 2006.
8. Government of Nunavut, *Good Building Practices Guideline* 2nd edition, December 2005.
9. *The Mining Association of Canada Crisis Management Planning Guide* – March 2007. Available at: www.mining.ca/www/media_lib/TSM_Documents/TSM_Publications/2007/Crisis_Man_03_2007.pdf.
10. Canadian Wildlife Services. National Policy on Oiled Birds and Oiled Species at Risk. January 2000
11. International Petroleum Industry Environmental Conservation Association. A guide to Oiled Wildlife Response Planning. 2004

ANNEX 1

Site Maps and Drawings

The following figures present site layouts and tank farm drawings and are attached in FEIS, Appendix 3B, Attachment 9 (Drawings):

- Milne Port Construction Works Site Layout
- Mine Site Construction Works Site Layout
- Steensby Port Construction Works Site Layout

ANNEX 2

Spill Kits and Contents

See Annex 4, Resident Spill Response Equipment, Milne Port OPEP (Appendix 10C-2)

ANNEX 3

Standard Nunavut Spill Report Form

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 ENVIRONMENT	
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 ☐ COG ☐ 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			

PAGE 1 OF _____

ANNEX 4

List of MSDS of Hazardous Materials Used Onsite

- 750 Silt Stop (2p.)
- APS 703d#3 Floc Log (2p.)
- APS 705 Silt Stop (2p
- APS 706b Floc Log (2p.)
- Agricultural Lime (4p.)
- Aluminum Sulphate (1p.)
- Aviation Fuel (7p.)
- Calcium Chloride Flake (4p.)
- Cast Booster (3p.)
- Citric Acid (6p.)
- CP-43 Diesel (6p.)
- Detonating Cord (3p.)
- DR-133 POLYMER (4p.)
- Electric Dentonators (4p.)
- Emulsion Explosives - Dyno AP (3p.)
- EZ-MUD (6p.)
- Gasoline (6p.)
- GE Polyfloc Ap1138 (5p.)
- Jet A (7p.)
- Lubtrac Rod Grease (4p.)
- Non-Electric Detonators (5p.)
- Packaged Emulsion Explosives (3p.)
- Packaged Dynamites and Explosive Gelatins (3p.)
- Potassium Chloride (Potash) (4p.)
- POLY-PLUS* RD (6p.)
- ROD EASE (6p.)
- Shock Tube (3p.)
- Soda Ash (7p.)
- Sodium Hydroxide (7p.)
- SUPER-VIS* (6p.)
- Tellus T32 (4p.)
- W-OB POLYMER (4p.)

ANNEX 5

Relevant MSDS of Hazardous Materials Used Onsite

Shell Canada Limited

Material Safety Data Sheet

Effective Date: 2005-08-15
Supersedes: 2002-08-14

Class B3 Combustible Liquid

Class D2B Skin Irritation

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT:	**SHELL* JET A-1**
SYNONYMS:	Aviation Turbine Fuel (Kerosene Type) May contain anti-icing additive (Diethylene Glycol Monomethyl Ether)
PRODUCT USE:	Fuel Solvent
MSDS Number:	142-011

MANUFACTURER
Shell Canada Limited
P.O. Box 100, Station M
400-4th Ave. S.W.
Calgary, AB Canada
T2P 2H5

TELEPHONE NUMBERS	
Shell Emergency Number	1-800-661-7378
CANUTEC 24 HOUR EMERGENCY NUMBER	613-996-6666
For general information:	1-800-661-1600
For MSDS information:	403-691-3982
(From 7:30 to 4:30 Mountain Time)	403-691-2220

This MSDS was prepared by the Toxicology and Product Stewardship Section of Shell Canada Limited.

*An asterisk in the product name designates a trade-mark(s) of Shell Canada Limited, used under license by Shell Canada Products.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS Number	% Range	WHMIS Controlled
Kerosene (Petroleum), Hydrodesulfurized	64742-81-0	60 - 100	Yes

See Section 8 for Occupational Exposure Guidelines.

3. HAZARDS IDENTIFICATION

Physical Description: Liquid Bright Clear Hydrocarbon Odour

Routes of Exposure: Exposure will most likely occur through skin contact or inhalation.

Hazards:

Combustible Liquid.
Irritating to skin.

	Vapours are moderately irritating to the eyes. Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis. Vapours are moderately irritating to the respiratory passages.
Handling:	Eliminate all ignition sources. Avoid prolonged exposure to vapours. Wear suitable gloves and eye protection. Bond and ground transfer containers and equipment to avoid static accumulation. Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

For further information on health effects, see Section 11.

4. FIRST AID

Eyes:	Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.
Skin:	Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.
Ingestion:	DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.
Inhalation:	Remove victim from further exposure and restore breathing, if required. Obtain medical attention.
Notes to Physician:	The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis. If more than 2.0 mL/kg has been ingested, vomiting should be induced with supervision. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before vomiting, gastric lavage with a cuffed endotracheal tube should be considered.

5. FIRE FIGHTING MEASURES

Extinguishing Media:	Carbon Dioxide Foam Dry Chemical Water Fog
Firefighting Instructions:	Caution - Combustible. Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Vapours may travel along ground and flashback along vapour trail may occur. Product will float and can be reignited on surface of water. Do not use a direct stream of water as it may spread fire. Containers exposed to intense heat from fires should be cooled with water to prevent vapour pressure buildup, which could result in container rupture. Container areas exposed to direct flame contact should be cooled with large quantities of water as needed to prevent weakening of container structure. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus.
Hazardous Combustion Products:	A complex mixture of airborne solid, liquid, particulates and gases will evolve when this material undergoes pyrolysis or combustion. Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

6. ACCIDENTAL RELEASE MEASURES

Issue warning "Combustible". Eliminate all ignition sources. Isolate hazard area and restrict access. Handling equipment must be grounded. Work upwind of spill if it is safe to do so. Avoid direct contact with material. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Dike and contain land spills; contain spills to water by booming. Use water fog to knock down vapours; contain runoff. Absorb residue or small spills with absorbent material and remove to non-leaking containers for disposal. Recommended materials: Clay or Sand Flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations. Notify appropriate environmental agency(ies).

7. HANDLING AND STORAGE

Handling: Avoid excessive heat, sparks, open flames and all other sources of ignition. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Vapours are heavier than air and will settle and collect in low areas and pits, displacing breathing air. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapours are gone. Vapours may accumulate and travel to distant ignition sources and flashback. Do not cut, drill, grind, weld or perform similar operations on or near containers. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Do not pressurize drum containers to empty them. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities. Launder contaminated clothing prior to reuse. Use good personal hygiene. Combustible.

Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Keep container tightly closed.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

THE FOLLOWING INFORMATION, WHILE APPROPRIATE FOR THIS PRODUCT, IS GENERAL IN NATURE. THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT WILL VARY DEPENDING ON THE CONDITIONS OF USE.

OCCUPATIONAL EXPOSURE LIMITS (Current ACGIH TLV/TWA unless otherwise noted):

Kerosene/Jet fuels, as total hydrocarbon vapour (skin) : 200 mg/m3 (Application restricted to conditions in which there are negligible aerosol exposures.)
Skin Notation: Absorption through skin, eyes and mucous membranes may contribute significantly to the total exposure.

Mechanical Ventilation: Use explosion-proof ventilation as required to control vapour concentrations. Concentrations in air should be maintained below the occupational exposure limit if unprotected personnel are involved. Local ventilation recommended where mechanical ventilation is ineffective in controlling airborne concentrations below the recommended occupational exposure limit. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere.

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection:	Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes. Provide an eyewash station in the area.
Skin Protection:	Avoid contact with skin. Use protective clothing and gloves manufactured from nitrile. Safety showers should be available for emergency use.
Respiratory Protection:	Avoid breathing vapour or mists. If exposure has the potential to exceed occupational exposure limits, use an appropriate NIOSH-approved respirator. Use a NIOSH-approved chemical cartridge respirator with organic vapour cartridges or use a NIOSH-approved supplied-air respirator.

9. PHYSICAL DATA

Physical State:	Liquid
Appearance:	Bright Clear
Odour:	Hydrocarbon Odour
Odour Threshold:	Not available
Freezing/Pour Point:	Freeze Point < -47 °C
Boiling Point:	145 - 300 °C
Density:	775 - 840 kg/m3 @ 15 °C
Vapour Density (Air = 1):	Not available
Vapour Pressure (absolute):	1 - 1.4 kPa @ 37.8 °C
pH:	Not available
Flash Point:	Tag Closed Cup > 43 °C
Lower Explosion Limit:	0.7 % (vol.)
Upper Explosion Limit:	5 % (vol.)
Autoignition Temperature:	210 °C
Viscosity:	< 8 cSt @ -20 °C
Evaporation Rate (n-BuAc = 1):	Not available
Partition Coefficient (log K_{ow}):	3.3 - 6
Water Solubility:	Insoluble
Other Solvents:	Hydrocarbon Solvents

10. STABILITY AND REACTIVITY

Chemically Stable:	Yes
Hazardous Polymerization:	No
Sensitive to Mechanical Impact:	No
Sensitive to Static Discharge:	Yes
Hazardous Decomposition Products:	Thermal decomposition products are highly dependent on combustion conditions.
Incompatible Materials:	Avoid strong oxidizing agents.
Conditions of Reactivity:	Avoid excessive heat, open flames and all ignition sources.

11. TOXICOLOGICAL INFORMATION

Ingredient (or Product if not specified)	Toxicological Data
Kerosene (Petroleum), Hydrodesulfurized	LD50 Dermal Rabbit > 2000 mg/kg LD50 Oral Rat > 5000 mg/kg

Routes of Exposure: Exposure will most likely occur through skin contact or inhalation.

Irritancy:	This product is expected to be irritating to skin but is not predicted to be a skin sensitizer.
Chronic Effects:	Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Prolonged exposure to high vapour concentration can cause headache, dizziness, nausea, blurred vision and central nervous system depression.
Pre-existing Conditions:	Pre-existing eye, skin and respiratory disorders may be aggravated by exposure to this product.
Carcinogenicity and Mutagenicity:	The International Agency for Research on Cancer (IARC) considers that this product is not classifiable as to its carcinogenicity to humans. Middle distillates have caused skin cancers in laboratory animals when applied repeatedly and left in place between applications. This effect is believed to be caused by the continuous irritation of the skin. Good personal hygiene should be maintained to avoid this risk.

12. ECOLOGICAL INFORMATION

Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities. May cause physical fouling of aquatic organisms.

Biodegradability:	Not readily biodegradable. Rapid volatilization.
Bioaccumulation:	Potential for bioaccumulation.
Partition Coefficient (log K_{ow}):	3.3 - 6

Aquatic Toxicity

Product is expected to be toxic to aquatic organisms.

Ingredient:	Toxicological Data
Kerosene (Petroleum), Hydrodesulfurized	EL50 - growth rate (WAF method) Algae (72hr) 1 - 10 mg/L. EL50 (WAF method) Daphnia Magna (48hr) 1 - 10 mg/L. LL50 (WAF method) Rainbow Trout (96hr) 1 - 10 mg/L.

Definition(s): LL and EL are the lethal loading concentration and effective loading concentration respectively. The concentration represents the amount of substance added to the system to obtain a toxic concentration. They replace the traditional LC and EC for low solubility substances.
WAF is the water accommodated fraction. A slightly soluble hydrocarbon is stirred into water and the insoluble portions are removed. The remaining solution is the water accommodated fraction.

13. DISPOSAL CONSIDERATIONS

Waste management priorities (depending on volumes and concentration of waste) are: 1. recycle (reprocess), 2. energy recovery 3. incineration, 4. disposal at a licenced waste disposal facility. Do not attempt to combust waste on-site. Incinerate at a licenced waste disposal site with approval of environmental authority.

14. TRANSPORTATION INFORMATION

Canadian Road and Rail Shipping Classification:

UN Number	UN1863
Proper Shipping Name	FUEL, AVIATION, TURBINE ENGINE
Hazard Class	Class 3 Flammable Liquids
Packing Group	PG III
Additional Information	Not Regulated in Containers Less Than or Equal to 450 Litres.
Shipping Description	FUEL, AVIATION, TURBINE ENGINE Class 3 UN1863 PG III Not Regulated in Containers Less Than or Equal to 450 Litres.

15. REGULATORY INFORMATION

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations (*CPR*)* and the MSDS contains all the information required by the CPR*.*

WHMIS Class:	Class B3 Combustible Liquid Class D2B Skin Irritation
DSL/NDSL Status:	This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act.
Other Regulatory Status:	No Canadian federal standards.

16. ADDITIONAL INFORMATION

LABEL STATEMENTS

Hazard Statement :	Combustible Liquid. Irritating to skin.
Handling Statement:	Eliminate all ignition sources. Avoid prolonged exposure to vapours. Wear suitable gloves and eye protection. Bond and ground transfer containers and equipment to avoid static accumulation. Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.
First Aid Statement :	Wash contaminated skin with soap and water. Flush eyes with water. If overcome by vapours remove to fresh air. Do not induce vomiting. Obtain medical attention.

Revisions: This MSDS has been reviewed and updated.
Changes have been made to:
Section 3
Section 4
Section 5
Section 7
Section 8
Section 9
Section 12
Section 14

Shell Canada Limitée

Fiche signalétique

FS en vigueur le : 2005-08-15
Remplace celle du : 2002-08-14

Catégorie B3 Liquide combustible

Catégorie D2B Irritation de la peau

1. IDENTIFICATION DU PRODUIT ET DE LA SOCIÉTÉ

NOM COMMERCIAL :	**CARBUREACTEUR SHELL* A-1**
SYNONYMES :	Carburant aviation pour moteurs à turbines (type kérosène) Peut contenir un additif antigivre (éther monométhylique du diéthylèneglycol)
UTILISATION DU PRODUIT :	Carburant. Solvant.
NUMÉRO DE LA FS :	142-011

NOM DU FABRICANT
Shell Canada Limitée
P.O. Box 100, Station M
400-4th Ave. S.W.
Calgary, AB Canada
T2P 2H5

NUMÉROS DE TÉLÉPHONE	
Numéro d'urgence de Shell	1 800 661-7378
Numéro d'urgence de CANUTEC (24 heures)	(613) 996-6666
Pour information générale	1 800 661-1600
Pour information sur la FS	(403) 691-3982
(De 7 h 30 à 16 h 30, heure des Rocheuses)	(403) 691-2220

Cette FS a été préparée par le groupe de toxicologie et bonne gestion des produits de Shell Canada Limitée.

* L'astérisque dans la désignation du produit signifie <<Marque déposée de Shell Canada Limitée, utilisée en vertu d'une licence par Produits Shell Canada>>.

2. COMPOSITION/INFORMATION SUR LES INGRÉDIENTS

Ingrédients	N° CAS	%	Contrôlé par SIMDUT
Kerosène (pétrole), hydrodésulfurisé	64742-81-0	60 - 100	Oui

Voir la section 8 pour les directives sur l'exposition.

3. IDENTIFICATION DES RISQUES

Description physique : Liquide. Brillant Clair Odeur d'hydrocarbure.

Voies d'entrée : L'exposition à ce produit est le plus susceptible de se produire par contact avec la peau ou inhalation.

Effets potentiels sur la santé :	Liquide combustible. Irritant pour la peau. Les vapeurs sont modérément irritantes pour les yeux. Il peut y avoir vomissement apres ingestion du produit. Éviter d'aspirer le produit vomi dans les poumons étant donné que de petites quantités peuvent causer une pneumonie par aspiration. Les vapeurs sont modérément irritantes pour les voies respiratoires.
Information sur la manipulation :	Éliminer toutes les sources d'inflammation. Éviter l'exposition prolongée aux vapeurs. Porter des protecteurs oculaires et des gants appropriés. Mettre à la masse et à la terre le matériel et les contenants de transfert pour éviter l'accumulation d'électricité statique. Les contenants vides sont dangereux, car ils peuvent contenir des poussières, des vapeurs ou des résidus liquides inflammables/explosifs. Tenir loin des étincelles et de la flamme nue.

Pour plus d'information sur les effets sur la santé, voir la section 11.

4. PREMIERS SOINS

Contact avec les yeux :	Rincer les yeux à grande eau pendant au moins 15 minutes en gardant les paupières ouvertes. En cas d'irritation et si celle-ci persiste, obtenir des soins médicaux.
Contact avec la peau :	Laver la peau contaminée a l'eau et au savon doux pendant au moins 15 minutes. En cas d'irritation et si celle-ci persiste, obtenir des soins médicaux.
Ingestion :	NE PAS FAIRE VOMIR! OBTENIR IMMÉDIATEMENT DES SOINS MÉDICAUX. Empêcher le produit d'être aspiré dans les poumons en plaçant le personne incommodée sur son côté gauche. Si la personne incommodée vomit spontanément, lui faire placer la tête entre les jambes de façon à empêcher que le liquide ne soit aspiré dans les poumons.
Inhalation :	Éloigner la personne incommodée de l'endroit contaminé et rétablir la respiration s'il y a lieu. Obtenir des soins médicaux.
Remarques à l'intention du médecin :	Le principal danger qui puisse résulter de l'ingestion accidentelle de ce produit est son aspiration dans les poumons, ce qui causerait alors une pneumonie chimique. Si plus de 2,0 mL par kg de poids ont été avalés, faire vomir sous surveillance. Si des symptômes tels que la perte du réflexe pharyngé, des convulsions ou la perte de connaissance surviennent avant que la personne ait vomi, envisager la possibilité de procéder à un lavage gastrique avec une sonde endotrachéale à ballonnet.

5. LUTTE EN CAS D'INCENDIE

Moyens d'extinction :	Gaz carbonique Mousse Poudre Brouillard d'eau

Mesures spéciales de lutte en cas d'incendie :	Attention - Produit combustible. Les vapeurs forment un mélange inflammable/détonant dans l'air entre les limites inférieure et supérieure d'inflammabilité. Les vapeurs peuvent se déplacer au niveau du sol et il peut y avoir retour des flammes le long du chemin qu'elles ont emprunté. Le produit va flotter et peut se réenflammer à la surface de l'eau. Ne pas utiliser un jet d'eau direct, ce qui pourrait propager l'incendie. Les contenants exposés à la chaleur intense en cas d'incendie doivent être refroidis à l'eau afin de prévenir une hausse de la pression due aux vapeurs, ce qui pourrait les faire se rupturer. Les parties des contenants exposées au contact direct des flammes doivent être refroidies à grande eau afin de prévenir une faiblesse de laparoi des contenants. Ne pas pénétrer sur les lieux d'un incendie dans un espace clos sans vêtements protecteurs appropriés et sans appareil respiratoire autonome à surpression homologué.
Produits de combustion dangereux :	Un mélange complexe de particules solides et liquides en suspension dans l'air et des gaz seront libérés lors de la pyrolyse ou de la combustion. Gaz carbonique, monoxyde de carbone et composés organiques non identifiés peuvent se former lors de la combustion.

6. MESURES EN CAS DE REJET ACCIDENTEL

Avertir que ce produit est combustible. Éliminer toutes les sources d'inflammation. Circonscrire l'endroit dangereux et en interdire l'accès. Mettre à la terre l'équipement qui sert à manipuler ce produit. Travailler dans le sens du vent par rapport au produit répandu s'il est prudent de le faire. Éviter tout contact direct avec ce produit. Utiliser un appareil respiratoire approprié (s'il y a lieu) et porter des vêtements protecteurs. N'arrêter les fuites que s'il est prudent de le faire. Endiguer et contenir les déversements terrestres; contenir les rejets accidentels dans les eaux au moyen de barrages flottants. Se servir d'eau pulvérisée pour supprimer les vapeurs; empêcher cette eau de se répandre. Absorber les résidus ou les petites quantités répandues avec une matière absorbante et mettre dans des contenants hermétiques avant de s'en débarrasser. Produits recommandés : Argile ou Sable Rincer les lieux à grande eau pour enlever toutes les traces de résidus. Se débarrasser du produit récupéré conformément aux directives d'élimination. Avertir les agences de protection de l'environnement appropriées.

7. ENTREPOSAGE ET MANUTENTION

Manutention :	Éviter la chaleur excessive, les étincelles, les flammes nues et toutes les autres sources d'inflammation. Mettre à la terre l'équipement fixe ainsi que les contenants qui servent au transvasement et le matériel de façon à prévenir l'accumulation d'électricité statique. Les vapeurs sont plus lourdes que l'air et vont s'accumuler dans les regions basses et les fosses en deplacant l'air respirable. Éteindre les lampes pilotes, les cigarettes et fermer toutes les autres sources d'inflammation avant d'utiliser ce produit et jusqu'à ce que toutes les vapeurs se soient dissipées. Les vapeurs peuvent s'accumuler et se propager vers une source d'inflammation éloignée provoquant ainsi un retour des flammes. Ne pas effectuer d'opérations de découpage, de forage, de meulage, de soudage ou autres sur ou près des contenants. Les contenants vides sont dangereux car ils peuvent contenir des poussières, des vapeurs ou des résidus inflammables/explosifs. Ne pas utiliser de pression pour vider les fûts. Se laver à l'eau et au savon avant de manger, boire, fumer, se maquiller ou aller aux toilettes. Laver les vêtements contaminés avant de les porter de nouveau. Observer une bonne hygiène personnelle. Combustible.
Entreposage :	Entreposer dans un endroit frais, sec et bien ventilé, loin de la chaleur et des sources d'inflammation. Garder le contenant fermé hermétiquement.

8. CONTRÔLES DE L'EXPOSITION, PROTECTION PERSONNELLE

LES RENSEIGNEMENTS SUIVANTS, QUOIQUE APPROPRIÉS POUR CE PRODUIT, ONT UNE PORTÉE GÉNÉRALE. LE CHOIX DE L'ÉQUIPEMENT DE PROTECTION PERSONNELLE SERA FONCTION DES CONDITIONS D'UTILISATION.

Limites d'exposition en milieu de travail (VLE/MPT actuelle selon l'ACGIH, sauf avis contraire)
Kérosène/carburéacteurs, sous forme de vapeur d'hydrocarbures totaux (peau): 200 mg/m3 (Application limitée aux conditions où l'exposition aux aérosols est négligeable.)
Mention Peau: L'absorption par la peau, les yeux ou les muqueuses peut contribuer de façon significative à l'exposition totale.

Ventilation mécanique : Système de ventilation requis de façon à prévenir l'accumulation des vapeurs. En présence de personnel non protégé, la concentration du produit dans l'air doit être maintenue sous la limite d'exposition en milieu de travail. Ventilation locale recommandée lorsque le système de ventilation mécanique est insuffisant pour maintenir la concentration du produit dans l'air du lieu de travail sous la limite d'exposition conseillée. De l'air d'appoint doit toujours être fourni pour remplacer l'air rejeté (de façon générale ou locale). Lorsqu'il faut pénétrer dans un espace clos (par exemple, un réservoir de stockage), observer la marche à suivre appropriée, y compris en ce qui a trait à la ventilation et à la vérification de l'air du réservoir.

ÉQUIPEMENT DE PROTECTION PERSONNELLE :

Yeux et visage : Lunettes de sécurité et(ou) masque couvrant tout le visage si le produit est manipulé d'une façon où il pourrait y avoir éclaboussement dans les yeux. Prévoir un poste de lavage des yeux à proximité.

Peau (mains, bras et corps) : Éviter le contact avec la peau. Porter des vêtements et des gants protecteurs faits de nitrile. Des douches doivent être disponibles en cas d'urgence.

Voies respiratoires : Éviter de respirer les vapeurs ou le brouillard. Si l'exposition a le potentiel de dépasser les limites pour le lieu de travail, utiliser le respirateur approprié homologué par le NIOSH. Utiliser un respirateur a cartouche filtrante protégeant contre les vapeurs organiques homologué par le NIOSH ou un respirateur a adduction d'air homologué par le NIOSH.

9. PROPRIÉTÉS PHYSIQUES ET CHIMIQUES

Description physique :	Liquide.
Aspect/couleur :	Brillant Clair
Odeur :	Odeur d'hydrocarbure.
Seuil moyen de perception de l'odeur :	Non disponible
Point de congélation/point d'écoulement :	Point de congélation < -47 °C
Point d'ébullition :	145 - 300 °C
Masse volumique :	775 - 840 kg/m3 @ 15 °C
Densité de vapeur (air = 1) :	Non disponible
Tension de vapeur (absolu) :	1 - 1,4 kPa @ 37,8 °C
pH :	Non disponible
Point d'éclair :	Vase clos Tag > 43 °C
Limite d'inflammabilité inférieure :	0,7 % (vol.)
Limite d'inflammabilité supérieure :	5 % (vol.)
Température d'autoinflammation :	210 °C
Viscosité :	< 8 cSt @ -20 °C

Vitesse d'évaporation (n-BuAc = 1) : Non disponible
Coefficient de distribution eau/huile (log K_{oc}) : 3,3 - 6
Solubilité dans l'eau : Insoluble
Autre solvant : Solvants à base d'hydrocarbures

10. STABILITÉ ET RÉACTIVITÉ

Chimiquement stable : Oui
Polymérisation dangereuse : Non
Sensibilité au choc mécanique : Non
Sensibilité à l'électricité statique : Oui
Produits de décomposition dangereux : Les produits de la décomposition thermique dépendent en grande partie des conditions de la combustion.
Matériaux incompatibles : Éviter les oxydants puissants.
Conditions de réactivité : Éviter la chaleur excessive, les flammes nues et toutes les autres sources d'inflammation.

11. INFORMATION TOXICOLOGIQUE

Ingrédient (ou produit si non précisé)	Données toxicologiques
Kerosène (pétrole), hydrodésulfurisé	DL50 Cutanée Lapin > 2 000 mg/kg DL50 Orale Rat > 5 000 mg/kg

Voies d'entrée : L'exposition à ce produit est le plus susceptible de se produire par contact avec la peau ou inhalation.
Irritation : Ce produit devrait causer une irritation de la peau mais il n'est pas supposé être un agent de sensibilisation de la peau.
Toxicité chronique : Le contact prolongé et répété de ce produit avec la peau peut causer un dégraissement et un dessèchement de la peau se traduisant par une irritation et une dermite. L'exposition prolongée à des vapeurs très concentrées peut causer des maux de tête, des étourdissements, des nausées, une vision brouillée e t une dépression du systeme nerveux central.
Conditions préexistantes : Des troubles préexistants des yeux, de la peau et des voies respiratoires peuvent être aggravés par une exposition à ce produit.
Carcinogénicité et mutagénicité : Selon le Centre international de recherche sur le cancer (CIRC), ce produit ne peut être classé en fonction de sa cancérogénicité pour les humains. Des distillats moyens ont causé des cancers de la peau chez des animaux de laboratoire lorsqu'ils ont été appliqués de façon répétée et laisses en place entre les applications. Cela serait causé par une irritation continue de la peau. Une bonne hygiene personnelle doit être observée pour prevenir ce risque.

12. RENSEIGNEMENTS ÉCOLOGIQUES

Ne pas laisser ce produit ou l'eau qui sert à combattre un incendie où ce produit est en cause pénétrer dans les égouts, les lacs, les cours d'eau ou les canalisations d'eau potable. Boucher les égouts et bloquer les fossés. Les règlements provinciaux exigent et les règlements fédéraux peuvent exiger que les agences de protection de l'environnement ou d'autres organismes soient avertis en cas de déversement. La région polluée doit être nettoyée et remise à son état original ou à la satisfaction des autorités. Peut causer une pollution des organismes aquatiques.

Biodégradabilité:	N'est pas facilement biodégradable. Volatilisation rapide.
Bioaccumulation:	Possibilité d'accumulation dans les organismes vivants.
Partition Coefficient (log K_{ow}):	3,3 - 6

Toxicité en Milieu Aquatique

Le produit devrait être toxique pour les organismes aquatiques.

Ingrédient:	Données toxicologiques
Definition(s):	CL et CE sont respectivement la concentration de la charge létale et la concentration de la charge effective. La concentration représente la quantité de la substance qui est placée dans l'eau de façon à obtenir la concentration toxique. Ces concentrations remplacent les concentrations létales et effectives traditionnelles pour les substances à faible solubilité. WAF (water accomodated fraction) est la fraction adaptée à l'eau. Un hydrocarbure légèrement soluble est remué dans de l'eau, puis la partie insoluble est enlevée. La solution restante correspond à la fraction adaptée à l'eau.
Kerosène (pétrole), hydrodésulfurisé	CE50 - vitesse de croissance (méthode WAF) Algues (72hr) 1 - 10 mg/L CE50 (Méthode WAF) Daphnia Magna (72hr) 1 - 10 mg/L CL50 (méthode WAF) Truite arc-en-ciel (96hr) 1 - 10 mg/L

13. ÉLIMINATION DU PRODUIT

Priorités de gestion des déchets (selon leur volume et leur concentration) : 1. Recycler (retraiter), 2. Récupérer l'énergie 3. Incinérer, 4. Remettre à une intallation d'élimination des déchets autorisée. Ne pas essayer de brûler les déchets sur les lieux. Incinérer avec l'approbation des organismes de protection de l'environnement dans un endroit approuvé détenant un permis.

14. RENSEIGNEMENTS SUR LE TRANSPORT

Description d'expédition du TMD (route et rail)

Numéro de l'ONU	UN1863
Nom d'expédition approprié	CARBURÉACTEUR
Classe de danger	Class 3 Liquides inflammables
Groupe d'emballage	PG III
Renseignements additionnels	Non réglementé en contenants de 450 litres ou moins.
Description d'expédition	CARBURÉACTEUR Class 3 UN1863 PG III Non réglementé en contenants de 450 litres ou moins.

15. RENSEIGNEMENTS SUR LA RÉGLEMENTATION

Ce produit a été classifié conformément aux critères de danger du Règlement sur les produits contrôlés (RPC) du Canada et la FS contient toute l'information requise en vertu du RPC.

Catégorie SIMDUT et description :	Catégorie B3 Liquide combustible Catégorie D2B Irritation de la peau
Statut LPCE/NLPCE :	Ce produit, ou tous ses composants, figurent sur la liste intérieure des substances, en vertu de la Loi canadienne sur la protection de l'environnement.
Autres règlements :	Normes fédérales canadiennes inexistantes.

16. AUTRES RENSEIGNEMENTS

ÉTIQUETTE

Mention de danger :	Liquide combustible. Irritant pour la peau.
Précautions lors de la manipulation :	Éliminer toutes les sources d'inflammation. Éviter l'exposition prolongée aux vapeurs. Porter des protecteurs oculaires et des gants appropriés. Mettre à la masse et à la terre le matériel et les contenants de transfert pour éviter l'accumulation d'électricité statique. Les contenants vides sont dangereux, car ils peuvent contenir des poussières, des vapeurs ou des résidus liquides inflammables/explosifs. Tenir loin des étincelles et de la flamme nue.
Premiers soins :	Laver la peau contaminée à l'eau et au savon. Rincer les yeux à grande eau. Si une personne est incommodée par les vapeurs, l'amener à l'air frais. Ne pas faire vomir. Obtenir des soins médicaux.

Révisions : Cette fiche signalétique a été révisée et mise à jour.
Des modifications ont été apportées à :
Rubrique 3
Rubrique 4
Rubrique 5
Rubrique 7
Rubrique 8
Rubrique 9
Rubrique 12
Rubrique 14

Shell Canada Limited

Material Safety Data Sheet

Effective Date: 2005-11-07
Supersedes: 2002-11-06

Class B3 Combustible Liquid

Class D2B Skin Irritation

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT:	**ULTRA LOW SULPHUR DIESEL CP-43**
SYNONYMS:	Diesel Automotive Gas Oil
PRODUCT USE:	Fuel
MSDS Number:	320-043

SUPPLIER	**TELEPHONE NUMBERS**	
Shell Canada Limited (SCL)	**Shell Emergency Number**	1-800-661-7378
P.O. Box 100, Station M	**CANUTEC 24 HOUR EMERGENCY NUMBER**	613-996-6666
400-4th Ave. S.W.		
Calgary, AB Canada	For general information:	1-800-661-1600
T2P 2H5	For MSDS information:	403-691-3982
	(From 7:30 to 4:30 Mountain Time)	

This MSDS was prepared by the Toxicology and Product Stewardship Section of Shell Canada Limited.

*An asterisk in the product name designates a trade-mark(s) of Shell Canada Limited, used under license by Shell Canada Products.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS Number	% Range	WHMIS Controlled
Fuels, Diesel, No. 2	68476-34-6	100	Yes

See Section 8 for Occupational Exposure Guidelines.

3. HAZARDS IDENTIFICATION

Physical Description: Liquid Clear To Yellow Hydrocarbon Odour

Routes of Exposure: Exposure will most likely occur through skin contact or inhalation.

Hazards:

Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.
Combustible Liquid.
Irritating to skin.
Vapours are moderately irritating to the eyes.
Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis.
Vapours are moderately irritating to the respiratory passages.

Handling: Eliminate all ignition sources.
Avoid prolonged exposure to vapours.
Wear suitable gloves and eye protection.
Bond and ground transfer containers and equipment to avoid static accumulation.
Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

For further information on health effects, see Section 11.

4. FIRST AID

Eyes: Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

Skin: Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

Ingestion: DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person.

Inhalation: Remove victim from further exposure and restore breathing, if required. Obtain medical attention.

Notes to Physician: The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis. If more than 2.0 mL/kg has been ingested, vomiting should be induced with supervision. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before vomiting, gastric lavage with a cuffed endotracheal tube should be considered.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Dry Chemical
Carbon Dioxide
Foam
Water Fog

Firefighting Instructions: Caution - Combustible. Do not use a direct stream of water as it may spread fire. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus. Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Vapours may travel along ground and flashback along vapour trail may occur. Avoid inhalation of smoke. Product will float and can be reignited on surface of water. Delayed lung damage can be experienced after exposure to combustion products, sometimes hours after the exposure.

Hazardous Combustion Products: A complex mixture of airborne solid, liquid, particulates and gases will evolve when this material undergoes pyrolysis or combustion. Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

6. ACCIDENTAL RELEASE MEASURES

Issue warning "Combustible". Eliminate all ignition sources. Isolate hazard area and restrict access. Handling equipment must be grounded. Work upwind of spill if it is safe to do so. Avoid direct contact with material. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Dike and contain land spills; contain spills to water by booming. Use water fog to knock down vapours; contain runoff. Absorb residue or small spills with absorbent material and remove to non-leaking containers for disposal. Recommended materials: Clay or Sand Flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations. Notify appropriate environmental agency(ies).

7. HANDLING AND STORAGE

Handling: Combustible. Avoid excessive heat, sparks, open flames and all other sources of ignition. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Vapours are heavier than air and will settle and collect in low areas and pits, displacing breathing air. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapours are gone. Vapours may accumulate and travel to distant ignition sources and flashback. Do not cut, drill, grind, weld or perform similar operations on or near containers. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Do not pressurize drum containers to empty them. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities. Launder contaminated clothing prior to reuse. Use good personal hygiene.

Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Keep container tightly closed.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

THE FOLLOWING INFORMATION, WHILE APPROPRIATE FOR THIS PRODUCT, IS GENERAL IN NATURE. THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT WILL VARY DEPENDING ON THE CONDITIONS OF USE.

OCCUPATIONAL EXPOSURE LIMITS (Current ACGIH TLV/TWA unless otherwise noted):

Diesel fuel, as total hydrocarbons (skin): 100 mg/m3
Skin Notation: Absorption through skin, eyes and mucous membranes may contribute significantly to the total exposure.

Mechanical Ventilation: Concentrations in air should be maintained below the occupational exposure limit if unprotected personnel are involved. Use explosion-proof ventilation as required to control vapour concentrations. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere. Local ventilation recommended where mechanical ventilation is ineffective in controlling airborne concentrations below the recommended occupational exposure limit.

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection:	Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes. Provide an eyewash station in the area.
Skin Protection:	Impervious gloves (viton, nitrile) should be worn at all times when handling this material. In confined spaces or where the risk of skin exposure is much higher, impervious clothing should be worn. Safety showers should be available for emergency use.
Respiratory Protection:	If exposure exceeds occupational exposure limits, use an appropriate NIOSH-approved respirator. Use a NIOSH-approved chemical cartridge respirator with organic vapour cartridges or use a NIOSH-approved supplied-air respirator. For high airborne concentrations, use a NIOSH-approved supplied-air respirator, either self-contained or airline breathing apparatus, operated in positive pressure mode.

9. PHYSICAL DATA

Physical State:	Liquid
Appearance:	Clear To Yellow
Odour:	Hydrocarbon Odour
Odour Threshold:	Not available
Freezing/Pour Point:	Cloud Point-43 °C
Boiling Point:	150 - 330 °C
Density:	< 850 kg/m3 @ 15 °C
Vapour Density (Air = 1):	Not available
Vapour Pressure (absolute):	Not available
pH:	Not available
Flash Point:	Pensky-Martens CC > 40 °C
Lower Flammable Limit:	1 % (vol.)
Upper Flammable Limit:	6 % (vol.)
Autoignition Temperature:	250 °C
Viscosity:	1.3 - 3.6 cSt @ 40 °C
Evaporation Rate (n-BuAc = 1):	Not available
Partition Coefficient (log K_{ow}):	Not available
Water Solubility:	Insoluble
Other Solvents:	Hydrocarbon Solvents

10. STABILITY AND REACTIVITY

Chemically Stable:	Yes
Hazardous Polymerization:	No
Sensitive to Mechanical Impact:	No
Sensitive to Static Discharge:	Yes
Hazardous Decomposition Products:	Thermal decomposition products are highly dependent on combustion conditions.
Incompatible Materials:	Avoid strong oxidizing agents.
Conditions of Reactivity:	Avoid excessive heat, open flames and all ignition sources.

11. TOXICOLOGICAL INFORMATION

Ingredient (or Product if not specified)	Toxicological Data
Fuels, Diesel, No. 2	LD50 Dermal Rabbit > 5000 mg/kg LD50 Oral Rat = 9000 mg/kg

Routes of Exposure: Exposure will most likely occur through skin contact or inhalation.

Irritancy: This product is expected to be irritating to skin but is not predicted to be a skin sensitizer.

Acute Toxicity: Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.

Chronic Effects: Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Prolonged exposure to high vapour concentration can cause headache, dizziness, nausea, blurred vision and central nervous system depression.

Pre-existing Conditions: Pre-existing eye, skin and respiratory disorders may be aggravated by exposure to this product.

Carcinogenicity and Mutagenicity: The International Agency for Research on Cancer (IARC) considers that this product is not classifiable as to its carcinogenicity to humans. Middle distillates have caused skin cancers in laboratory animals when applied repeatedly and left in place between applications. This effect is believed to be caused by the continuous irritation of the skin. Good personal hygiene should be maintained to avoid this risk. The American Conference of Governmental Industrial Hygienists (ACGIH) has classified this product as A3 - confirmed animal carcinogen with unknown relevance to humans.

12. ECOLOGICAL INFORMATION

Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities. May cause physical fouling of aquatic organisms.

Biodegradability: Not readily biodegradable.

Bioaccumulation: Potential for bioaccumulation.

Partition Coefficient (log K_{ow}): Not available

Aquatic Toxicity

May be harmful to aquatic life.

Ingredient:	Toxicological Data
Fuels, Diesel, No. 2	EL50 - growth rate Algae (72hr) 10 - 100 mg/L. EL50 Daphnia Magna (48hr) 10 - 100 mg/L. LL50 (WAF method) Rainbow Trout (96hr) 10 - 100 mg/L.

Definition(s): LL and EL are the lethal loading concentration and effective loading concentration respectively. The concentration represents the amount of substance added to the system to obtain a toxic concentration. They replace the traditional LC and EC for low solubility substances.

WAF is the water accommodated fraction. A slightly soluble hydrocarbon is stirred into water and the insoluble portions are removed. The remaining solution is the water accommodated fraction.

13. DISPOSAL CONSIDERATIONS

Waste management priorities (depending on volumes and concentration of waste) are: 1. recycle (reprocess), 2. energy recovery 3. incineration, 4. disposal at a licenced waste disposal facility. Do not attempt to combust waste on-site. Incinerate at a licenced waste disposal site with approval of environmental authority.

14. TRANSPORTATION INFORMATION

Canadian Road and Rail Shipping Classification:

UN Number	UN1202
Proper Shipping Name	DIESEL FUEL
Hazard Class	Class 3 Flammable Liquids
Packing Group	PG III
Additional Information	Not Regulated in Containers Less Than or Equal to 450 Litres.
Shipping Description	DIESEL FUEL Class 3 UN1202 PG III Not Regulated in Containers Less Than or Equal to 450 Litres.

15. REGULATORY INFORMATION

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations (*CPR*)* and the MSDS contains all the information required by the CPR*.

WHMIS Class:	Class B3 Combustible Liquid Class D2B Skin Irritation
DSL/NDSL Status:	This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act.
Other Regulatory Status:	No Canadian federal standards.

16. ADDITIONAL INFORMATION

LABEL STATEMENTS

Hazard Statement :	Combustible Liquid. Irritating to skin.
Handling Statement:	Eliminate all ignition sources. Avoid prolonged exposure to vapours. Wear suitable gloves and eye protection. Bond and ground transfer containers and equipment to avoid static accumulation. Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

First Aid Statement : Wash contaminated skin with soap and water.
Flush eyes with water.
If overcome by vapours remove to fresh air.
Do not induce vomiting.
Obtain medical attention.

Revisions: This MSDS has been reviewed and updated.
Changes have been made to:
Section 1
Section 3
Section 5
Section 8
Section 9
Section 12

Shell Canada Limitée

Fiche signalétique

FS en vigueur le : 2005-11-07
Remplace celle du : 2002-11-06

Catégorie B3 Liquide combustible

Catégorie D2B Irritation de la peau

1. IDENTIFICATION DU PRODUIT ET DE LA SOCIÉTÉ

NOM COMMERCIAL :	**CARB. DIESEL A TENEUR ULTRA-FAIBLE EN SOUFRE PT-43**
SYNONYMES :	Diesel Gazole automobile
UTILISATION DU PRODUIT :	Carburant.
NUMÉRO DE LA FS :	320-043

NOM DU FOURNISSEUR
Shell Canada Limitée (SCL)
P.O. Box 100, Station M
400-4th Ave. S.W.
Calgary, AB Canada
T2P 2H5

NUMÉROS DE TÉLÉPHONE

Numéro d'urgence de Shell	1 800 661-7378
Numéro d'urgence de CANUTEC (24 heures)	(613) 996-6666
Pour information générale	1 800 661-1600
Pour information sur la FS (De 7 h 30 à 16 h 30, heure des Rocheuses)	(403) 691-3982

Cette FS a été préparée par le groupe de toxicologie et bonne gestion des produits de Shell Canada Limitée.

* L'astérisque dans la désignation du produit signifie <<Marque déposée de Shell Canada Limitée, utilisée en vertu d'une licence par Produits Shell Canada>>.

2. COMPOSITION/INFORMATION SUR LES INGRÉDIENTS

Ingrédients	N° CAS	%	Contrôlé par SIMDUT
Carburant, Diesel, No. 2	68476-34-6	100	Oui

Voir la section 8 pour les directives sur l'exposition.

3. IDENTIFICATION DES RISQUES

Description physique : Liquide. De clair à jaune Odeur d'hydrocarbure.

Voies d'entrée : L'exposition à ce produit est le plus susceptible de se produire par contact avec la peau ou inhalation.

Effets potentiels sur la santé :

Les concentrations de vapeurs supérieures au niveau d'exposition recommandé irritent les yeux et les voies respiratoires, peuvent causer des maux de tête et des étourdissements, sont anesthésiques et peuvent avoir d'autres effets sur le système nerveux central.
Liquide combustible.
Irritant pour la peau.
Il peut y avoir vomissement apres ingestion du produit. Éviter d'aspirer le produit vomi dans les poumons étant donné que de petites quantités peuvent causer une pneumonie par aspiration.
Les vapeurs sont modérément irritantes pour les yeux.
Les vapeurs sont modérément irritantes pour les voies respiratoires.

Information sur la manipulation : Éliminer toutes les sources d'inflammation.
Éviter l'exposition prolongée aux vapeurs.
Porter des protecteurs oculaires et des gants appropriés.
Mettre à la masse et à la terre le matériel et les contenants de transfert pour éviter l'accumulation d'électricité statique.
Les contenants vides sont dangereux, car ils peuvent contenir des poussières, des vapeurs ou des résidus liquides inflammables/explosifs. Tenir loin des étincelles et de la flamme nue.

Pour plus d'information sur les effets sur la santé, voir la section 11.

4. PREMIERS SOINS

Contact avec les yeux : Rincer les yeux à grande eau pendant au moins 15 minutes en gardant les paupières ouvertes. En cas d'irritation et si celle-ci persiste, obtenir des soins médicaux.

Contact avec la peau : Laver la peau contaminée a l'eau et au savon doux pendant au moins 15 minutes. En cas d'irritation et si celle-ci persiste, obtenir des soins médicaux.

Ingestion : NE PAS FAIRE VOMIR! OBTENIR IMMÉDIATEMENT DES SOINS MÉDICAUX. Empêcher le produit d'être aspiré dans les poumons en plaçant le personne incommodée sur son côté gauche. Si la personne incommodée vomit spontanément, lui faire placer la tête entre les jambes de façon à empêcher que le liquide ne soit aspiré dans les poumons. Ne rien faire prendre par la bouche à une personne qui a perdu connaissance.

Inhalation : Éloigner la personne incommodée de l'endroit contaminé et rétablir la respiration s'il y a lieu. Obtenir des soins médicaux.

Remarques à l'intention du médecin : Le principal danger qui puisse résulter de l'ingestion accidentelle de ce produit est son aspiration dans les poumons, ce qui causerait alors une pneumonie chimique. Si plus de 2,0 mL par kg de poids ont été avalés, faire vomir sous surveillance. Si des symptômes tels que la perte du réflexe pharyngé, des convulsions ou la perte de connaissance surviennent avant que la personne ait vomi, envisager la possibilité de procéder à un lavage gastrique avec une sonde endotrachéale à ballonnet.

5. LUTTE EN CAS D'INCENDIE

Moyens d'extinction : Poudre
Gaz carbonique
Mousse
Brouillard d'eau

Mesures spéciales de lutte en cas d'incendie :	Attention - Produit combustible. Ne pas utiliser un jet d'eau direct, ce qui pourrait propager l'incendie. Ne pas pénétrer sur les lieux d'un incendie dans un espace clos sans vêtements protecteurs appropriés et sans appareil respiratoire autonome à surpression homologué. Les vapeurs forment un mélange inflammable/détonant dans l'air entre les limites inférieure et supérieure d'inflammabilité. Les vapeurs peuvent se déplacer au niveau du sol et il peut y avoir retour des flammes le long du chemin qu'elles ont emprunté. Ne pas respirer la fumée. Le produit va flotter et peut se réenflammer à la surface de l'eau. Des dommages retardés aux poumons peuvent survenir après exposition aux produits de combustion, parfois des heures après l'exposition.
Produits de combustion dangereux :	Un mélange complexe de particules solides et liquides en suspension dans l'air et des gaz seront libérés lors de la pyrolyse ou de la combustion. Gaz carbonique, monoxyde de carbone et composés organiques non identifiés peuvent se former lors de la combustion.

6. MESURES EN CAS DE REJET ACCIDENTEL

Avertir que ce produit est combustible. Éliminer toutes les sources d'inflammation. Circonscrire l'endroit dangereux et en interdire l'accès. Mettre à la terre l'équipement qui sert à manipuler ce produit. Travailler dans le sens du vent par rapport au produit répandu s'il est prudent de le faire. Éviter tout contact direct avec ce produit. Utiliser un appareil respiratoire approprié (s'il y a lieu) et porter des vêtements protecteurs. N'arrêter les fuites que s'il est prudent de le faire. Endiguer et contenir les déversements terrestres; contenir les rejets accidentels dans les eaux au moyen de barrages flottants. Se servir d'eau pulvérisée pour supprimer les vapeurs; empêcher cette eau de se répandre. Absorber les résidus ou les petites quantités répandues avec une matière absorbante et mettre dans des contenants hermétiques avant de s'en débarrasser. Produits recommandés : Argile ou Sable Rincer les lieux à grande eau pour enlever toutes les traces de résidus. Se débarrasser du produit récupéré conformément aux directives d'élimination. Avertir les agences de protection de l'environnement appropriées.

7. ENTREPOSAGE ET MANUTENTION

Manutention :	Combustible. Éviter la chaleur excessive, les étincelles, les flammes nues et toutes les autres sources d'inflammation. Mettre à la terre l'équipement fixe ainsi que les contenants qui servent au transvasement et le matériel de façon à prévenir l'accumulation d'électricité statique. Les vapeurs sont plus lourdes que l'air et vont s'accumuler dans les regions basses et les fosses en deplacant l'air respirable. Éteindre les lampes pilotes, les cigarettes et fermer toutes les autres sources d'inflammation avant d'utiliser ce produit et jusqu'à ce que toutes les vapeurs se soient dissipées. Les vapeurs peuvent s'accumuler et se propager vers une source d'inflammation éloignée provoquant ainsi un retour des flammes. Ne pas effectuer d'opérations de découpage, de forage, de meulage, de soudage ou autres sur ou près des contenants. Les contenants vides sont dangereux car ils peuvent contenir des poussières, des vapeurs ou des résidus inflammables/explosifs. Ne pas utiliser de pression pour vider les fûts. Se laver à l'eau et au savon avant de manger, boire, fumer, se maquiller ou aller aux toilettes. Laver les vêtements contaminés avant de les porter de nouveau. Observer une bonne hygiène personnelle.
Entreposage :	Entreposer dans un endroit frais, sec et bien ventilé, loin de la chaleur et des sources d'inflammation. Garder le contenant fermé hermétiquement.

8. CONTRÔLES DE L'EXPOSITION, PROTECTION PERSONNELLE

LES RENSEIGNEMENTS SUIVANTS, QUOIQUE APPROPRIÉS POUR CE PRODUIT, ONT UNE PORTÉE GÉNÉRALE. LE CHOIX DE L'ÉQUIPEMENT DE PROTECTION PERSONNELLE SERA FONCTION DES CONDITIONS D'UTILISATION.

Limites d'exposition en milieu de travail (VLE/MPT actuelle selon l'ACGIH, sauf avis contraire)
Carburant diesel, sous forme d'hydrocarbures totaux, vapeurs et aérosol (peau) : 100 mg/m3
Mention Peau: L'absorption par la peau, les yeux ou les muqueuses peut contribuer de façon significative à l'exposition totale.

Ventilation mécanique : En présence de personnel non protégé, la concentration du produit dans l'air doit être maintenue sous la limite d'exposition en milieu de travail. Système de ventilation requis de façon à prévenir l'accumulation des vapeurs. De l'air d'appoint doit toujours être fourni pour remplacer l'air rejeté (de façon générale ou locale). Lorsqu'il faut pénétrer dans un espace clos (par exemple, un réservoir de stockage), observer la marche à suivre appropriée, y compris en ce qui a trait à la ventilation et à la vérification de l'air du réservoir. Ventilation locale recommandée lorsque le système de ventilation mécanique est insuffisant pour maintenir la concentration du produit dans l'air du lieu de travail sous la limite d'exposition conseillée.

ÉQUIPEMENT DE PROTECTION PERSONNELLE :

Yeux et visage : Lunettes de sécurité et(ou) masque couvrant tout le visage si le produit est manipulé d'une façon où il pourrait y avoir éclaboussement dans les yeux. Prévoir un poste de lavage des yeux à proximité.

Peau (mains, bras et corps) : Des gants résistants (Viton, nitrile) doivent toujours être portés lors de la manipulation de ce produit. Dans les espaces clos ou lorsque le risque d'exposition de la peau est plus élevé, porter des vêtements résistant au produit. Des douches doivent être disponibles en cas d'urgence.

Voies respiratoires : Si l'exposition dépasse les limites pour le lieu de travail, utiliser le respirateur approprié homologué par le NIOSH. Utiliser un respirateur a cartouche filtrante protégeant contre les vapeurs organiques homologué par le NIOSH ou un respirateur a adduction d'air homologué par le NIOSH. En cas de concentrations élevées dans l'air, utiliser un respirateur à adduction d'air homologué par le NIOSH, soit autonome ou à canalisation d'air fonctionnant en pression positive intermittente.

9. PROPRIÉTÉS PHYSIQUES ET CHIMIQUES

Description physique :	Liquide.
Aspect/couleur :	De clair à jaune
Odeur :	Odeur d'hydrocarbure.
Seuil moyen de perception de l'odeur :	Non disponible
Point de congélation/point d'écoulement :	Point de trouble-43 °C
Point d'ébullition :	150 - 330 °C
Masse volumique :	< 850 kg/m3 @ 15 °C
Densité de vapeur (air = 1) :	Non disponible
Tension de vapeur (absolu) :	Non disponible
pH :	Non disponible
Point d'éclair :	V.cl. Pensky-Martens > 40 °C
Limite d'inflammabilité inférieure :	1 % (vol.)
Limite d'inflammabilité supérieure :	6 % (vol.)
Température d'autoinflammation :	250 °C
Viscosité :	1,3 - 3,6 cSt @ 40 °C

Vitesse d'évaporation (n-BuAc = 1) :	Non disponible
Coefficient de distribution (log K_{oe}) :	Non disponible
Solubilité dans l'eau :	Insoluble
Autre solvant :	Solvants à base d'hydrocarbures

10. STABILITÉ ET RÉACTIVITÉ

Chimiquement stable :	Oui
Polymérisation dangereuse :	Non
Sensibilité au choc mécanique :	Non
Sensibilité à l'électricité statique :	Oui
Produits de décomposition dangereux :	Les produits de la décomposition thermique dépendent en grande partie des conditions de la combustion.
Matériaux incompatibles :	Éviter les oxydants puissants.
Conditions de réactivité :	Éviter la chaleur excessive, les flammes nues et toutes les autres sources d'inflammation.

11. INFORMATION TOXICOLOGIQUE

Ingrédient (ou produit si non précisé)	Données toxicologiques
Carburant, Diesel, No. 2	DL50 Cutanée Lapin > 5 000 mg/kg DL50 Orale Rat = 9 000 mg/kg

Voies d'entrée :	L'exposition à ce produit est le plus susceptible de se produire par contact avec la peau ou inhalation.
Irritation :	Ce produit devrait causer une irritation de la peau mais il n'est pas supposé être un agent de sensibilisation de la peau.
Toxicité aiguë :	Les concentrations de vapeurs supérieures au niveau d'exposition recommandé irritent les yeux et les voies respiratoires, peuvent causer des maux de tête et des étourdissements, sont anesthésiques et peuvent avoir d'autres effets sur le système nerveux central.
Toxicité chronique :	Le contact prolongé et répété de ce produit avec la peau peut causer un dégraissement et un dessèchement de la peau se traduisant par une irritation et une dermite. L'exposition prolongée à des vapeurs très concentrées peut causer des maux de tête, des étourdissements, des nausées, une vision brouillée e t une dépression du systeme nerveux central.
Conditions préexistantes :	Des troubles préexistants des yeux, de la peau et des voies respiratoires peuvent être aggravés par une exposition à ce produit.
Carcinogénicité et mutagénicité :	Selon le Centre international de recherche sur le cancer (CIRC), ce produit ne peut être classé en fonction de sa cancérogénicité pour les humains. Des distillats moyens ont causé des cancers de la peau chez des animaux de laboratoire lorsqu'ils ont été appliqués de façon répétée et laisses en place entre les applications. Cela serait causé par une irritation continue de la peau. Une bonne hygiene personnelle doit être observée pour prevenir ce risque. L'American Conference of Governmental Industrial Hygienists (ACGIH) a classé ce produit A3 - cancérogène connu pour les animaux, sans effet connu pour les humains.

12. RENSEIGNEMENTS ÉCOLOGIQUES

Ne pas laisser ce produit ou l'eau qui sert à combattre un incendie où ce produit est en cause pénétrer dans les égouts, les lacs, les cours d'eau ou les canalisations d'eau potable. Boucher les égouts et bloquer les fossés. Les règlements provinciaux exigent et les règlements fédéraux peuvent exiger que les agences de protection de l'environnement ou d'autres organismes soient avertis en cas de déversement. La région polluée doit être nettoyée et remise à son état original ou à la satisfaction des autorités. Peut causer une pollution des organismes aquatiques.

Biodégradabilité: N'est pas facilement biodégradable.
Bioaccumulation: Possibilité d'accumulation dans les organismes vivants.
Coefficient de distribution (log K_{oe}): Non disponible

Toxicité en Milieu Aquatique

Peut être nocif pour la vie aquatique.

Ingrédient:	Données toxicologiques
Definition(s):	CL et CE sont respectivement la concentration de la charge létale et la concentration de la charge effective. La concentration représente la quantité de la substance qui est placée dans l'eau de façon à obtenir la concentration toxique. Ces concentrations remplacent les concentrations létales et effectives traditionnelles pour les substances à faible solubilité. WAF (water accomodated fraction) est la fraction adaptée à l'eau. Un hydrocarbure légèrement soluble est remué dans de l'eau, puis la partie insoluble est enlevée. La solution restante correspond à la fraction adaptée à l'eau.
Carburant, Diesel, No. 2	CE50 - vitesse de croissance Algues (72hr) 10 - 100 mg/L CE50 Daphnia Magna (72hr) 10 - 100 mg/L CL50 (méthode WAF) Truite arc-en-ciel (96hr) 10 - 100 mg/L

13. ÉLIMINATION DU PRODUIT

Priorités de gestion des déchets (selon leur volume et leur concentration) : 1. Recycler (retraiter), 2. Récupérer l'énergie 3. Incinérer, 4. Remettre à une intallation d'élimination des déchets autorisée. Ne pas essayer de brûler les déchets sur les lieux. Incinérer avec l'approbation des organismes de protection de l'environnement dans un endroit approuvé détenant un permis.

14. RENSEIGNEMENTS SUR LE TRANSPORT

Description d'expédition du TMD (route et rail)

Numéro de l'ONU	UN1202
Nom d'expédition approprié	DIESEL
Classe de danger	Class 3 Liquides inflammables
Groupe d'emballage	PG III
Renseignements additionnels	Non réglementé en contenants de 450 litres ou moins.
Description d'expédition	DIESEL Class 3 UN1202 PG III Non réglementé en contenants de 450 litres ou moins.

15. RENSEIGNEMENTS SUR LA RÉGLEMENTATION

Ce produit a été classifié conformément aux critères de danger du Règlement sur les produits contrôlés (RPC) du Canada et la FS contient toute l'information requise en vertu du RPC.

Catégorie SIMDUT et description :	Catégorie B3 Liquide combustible Catégorie D2B Irritation de la peau
Statut LPCE/NLPCE :	Ce produit, ou tous ses composants, figurent sur la liste intérieure des substances, en vertu de la Loi canadienne sur la protection de l'environnement.
Autres règlements :	Normes fédérales canadiennes inexistantes.

16. AUTRES RENSEIGNEMENTS

ÉTIQUETTE

Mention de danger :	Liquide combustible. Irritant pour la peau.
Précautions lors de la manipulation :	Éliminer toutes les sources d'inflammation. Éviter l'exposition prolongée aux vapeurs. Porter des protecteurs oculaires et des gants appropriés. Mettre à la masse et à la terre le matériel et les contenants de transfert pour éviter l'accumulation d'électricité statique. Les contenants vides sont dangereux, car ils peuvent contenir des poussières, des vapeurs ou des résidus liquides inflammables/explosifs. Tenir loin des étincelles et de la flamme nue.
Premiers soins :	Laver la peau contaminée à l'eau et au savon. Rincer les yeux à grande eau. Si une personne est incommodée par les vapeurs, l'amener à l'air frais. Ne pas faire vomir. Obtenir des soins médicaux.

Révisions : Cette fiche signalétique a été révisée et mise à jour.
Des modifications ont été apportées à :
Rubrique 1
Rubrique 3
Rubrique 5
Rubrique 8
Rubrique 9
Rubrique 12

Material Safety Data Sheet

Preparation Date: 21-Nov-2006 **Revision Date:** 1-May-2009 **Revision Number:** 1

SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION

Supplier(s):

Orica Canada Inc.
Maple Street
Brownsburg, QC
For MSDS Requests: 1-450-533-4201

Orica USA Inc.
33101 E. Quincy Avenue
Watkins, CO 80137-9406
For MSDS Requests: 1-303-268-5000

Product Name:	**Ammonium Nitrate Solution, Nitric Acid Ammonium Salt Solution**
Product Code:	20011
Alternate Name(s):	Not Available
UN-No:	UN2426
Recommended Use:	Fertilizer, manufacture of explosives.

Emergency Telephone Number: FOR CHEMICAL EMERGENCIES (24 HOUR) INVOLVING TRANSPORTATION, SPILL, LEAK, RELEASE, FIRE OR ACCIDENTS: **IN CANADA CALL:** THE ORICA TRANSPORTATION EMERGENCY RESPONSE SYSTEM AT **1-877-561-3636. IN THE U.S. CALL: CHEMTREC 1-800-424-9300. IN THE U.S.:** FOR LOST, STOLEN, OR MISPLACED EXPLOSIVES CALL: BATF **1-800-800-3855.** FORM ATF F 5400.0 MUST BE COMPLETED AND LOCAL AUTHORITIES (STATE/MUNICIPAL POLICE, ETC.) MUST BE ADVISED.

SECTION 2 – HAZARD IDENTIFICATION

Emergency Overview:
Danger. Oxidizing agent. The product causes burns of eyes, skin and mucous membranes. Irritating to respiratory system. May cause methemoglobinemia.

Appearance:	**Physical State:**	**Odor:**
Opaque Liquid	Liquid	Mild ammoniacal

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	**CAS-No**	**Weight %**
Ammonium Nitrate	6484-52-2	80-90

SECTION 4 – FIRST AID MEASURES

General Advice:	In case of accident or if you feel unwell, seek medical advice IMMEDIATELY (show the product label where possible)
Eye Contact:	Immediately flush with plenty of water, also under the eyelids, for at leat 15 minutes. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Immediate medical attention is required.
Skin Contact:	Wash off immediately with soap and plenty of water, removing all contaminated clothes and shoes. If skin irritation persists, call a physician.
Inhalation:	Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. If breathing is difficult, give oxygen. Give cardiopulmonary resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical advice IMMEDIATELY.
Ingestion:	Rinse mouth. Do not induce vomiting. Never give anything by mouth to an unconscious person. If spontaneous vomiting occurs, have victim lean forward with head positioned to avoid breathing in of vomitus, rinse mouth and administer more water. Immediate medical attention is required.

Notes to physician: Symptomatic. Administer oxygen if there are signs of cyanosis. If clinical condition deteriorates, administer 10cc Methylene Blue intravenously. It is unlikely for this to be required with methemoglobin level of less than 40%.

SECTION 5 – FIRE-FIGHTING MEASURES

Flammable properties: Oxidizer. The product itself does not burn.

Suitable extinguishing media: Use Water only, in as much volume as possible to cool the burning mass quickly. Chemical extinguishers will not work. Fire-fighters should wear positive pressure self-containing breathing apparatus (SCBA) and full turnout gear. Water may be applied through fixed extinguishing system (sprinklers) as long as people need not be present for the system to operate.

Unsuitable extinguishing media: Chemical extinguishers will not work. Attempts to smother a fire involving this product will be ineffective as it is its own oxygen source. Smother this product could lead to decomposition and explosion. This product is more sensitive to detonation if contaminated with organic or oxidisable material or if heated while confined. Unless the mass of product on fire is flooded with water, re-ignition is possible.

Specific hazards arising from the chemical: Toxic gases and vapours will be released by the thermal decomposition of this material. At higher temperatures, decomposition may be explosive, especially if confined. Immediately evacuate all personnel from the area to a safe distance. Guard against re-entry.

Protective equipment and precautions for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH approved (or equivalent) and full protective gear.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Methods for containment: No information available.

Methods for cleaning up: Carefully collect spilled material in a closed, metal container. Keep in suitable, closed containers for disposal. For release to land, contain discharge by constructing dykes or applying inert absorbent; for release to water, utilize damming and/or water diversion to minimize the spread of contamination. Collect contaminated soil and water, and absorbent for proper disposal. Notify applicable government authority if release is reportable or could adversely affect the environment. Clean contaminated surface thoroughly.

SECTION 7 – HANDLING AND STORAGE

Handling: Use only in area provided with appropriate exhaust ventilation. Avoid breathing vapors or mists. Handle in accordance with good industrial hygiene and safety practice. Wear personal protective equipment.

Storage: 10-30°C above crystallization temperature of product. Ammonium Nitrate Liquor, in low concentrations, is very corrosive to mild steel and untreated concrete. Stainless steel and aluminium are adequate. Avoid materials made of copper, iron, or bronze.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Other exposure guidelines: Ammonium Nitrate: ORICA Guideline 5 mg/m^3 (internal TWA)

Engineering Measures: Full-Handling precautions should be taken at all times. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction.

Personal Protective Equipment

- **Eye/Face Protection:** Face-shield. Tightly fitting safety goggles.
- **Skin Protection:** Impervious gloves and protective clothing made from cotton
- **Respiratory Protection:** In case of insufficient ventilation wear suitable respiratory equipment. A NIOSH-approved respirator, if concentrations in air are unknown or in excess of established exposure guidelines

Hygiene Measures: Handle in accordance with good industrial hygiene and safety practice.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Chemical Name:	Nitric Acid Ammonium Salt Solution	**Chemical Family:**	Nitrates
Appearance:	Opaque Liquid	**Odor:**	Mild Ammoniacal
Physical State:	Liquid	**Viscosity:**	No information available
pH:	5 – 6 (0.1M solution in water)	**Flash Point:**	Not applicable
Autoignition Temperature:	Not applicable	**Boiling Point/Range:**	Not applicable
Melting Point/Range:	Not available	**Flammable Limits (Upper):**	Not applicable
Flammable Limits (Lower):	Not applicable	**Explosion Power:**	No data available
Specific Gravity:	1.3-1.38 g/cc	**Water Solubility:**	Not applicable
Other Solubility:	Soluble in alcohols.	**Vapor Pressure:**	no data available
Oxidizing Properties:	Oxidizer	**Partition Coefficient (n-octanol/water):**	No data available

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable under recommended storage conditions.

Conditions to avoid: Keep away from heat, flame, and sparks.

Incompatible materials: Avoid oxidizable materials, metal powder, bronze & copper alloys, fuels (e.g. lubricants, machine oils), fluorocarbon lubricants, acids, corrosive liquids, chlorate, sulphur, sodium nitrite, charcoal, coke and other finely divided combustibles, strong oxidizing and reducing agents. Keep away from combustible material.

Hazardous decomposition products: The following toxic decomposition products may be released. At temperatures above 210°C, decomposition may be explosive, especially if confined. Nitrogen oxides (NOx). Carbon oxide. Hydrocarbons. At higher temperatures, decomposition may be explosive, especially if confined.

Hazardous Polymerization: Hazardous polymerization does not occur

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute Toxicity

Product Information: Irritating to eyes. May cause skin irritation. Harmful if swallowed. May cause methemoglobinemia.

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ammonium Nitrate	2217 mg/kg Rat	3000 mg/kg Rabbit	88.8 mg/L Rat 4 h

Subchronic Toxicity (28 Days): Ammonium Nitrate: Ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by navy lips, tongue and mucous membranes, with skin color being slate grey. Further manifestation is characterized by headache, weakness, dyspnea, dizziness, stupor, respiratory distress and death due to anoxia. If ingested, nitrates may be reduced to nitrites by bacteria in the digestive tract. Signs and symptoms of nitrite poisoning include methemoglobinemia, nausea, dizziness, increased heart rate, hypotension, fainting and, possibly shock.

Chronic Toxicity: May cause methemoglobinemia.

Carcinogenicity: The ingredients of this product are not classified as carcinogenic by ACGIH (American Conference of Governmental Industrial Hygienists) or IARC (International Agency for Research on Cancer), not regulated as carcinogens by OSHA (Occupational Safety and Health Administration), and not listed as carcinogens by T\NTP (National Toxicology Program).

Mutagenic effects: There is no evidence of mutagenic potential.

Irritation: Irritating to eyes. May cause irritation of respiratory tract. May cause skin irritation in susceptible persons.

Reproductive effects: No information is available and no adverse reproductive effects are anticipated.

Developmental effects: No information is available and no adverse developmental effects are anticipated.

Target Organ: Eyes, skin, respiratory system, blood, liver, urinary tract, gastrointestinal tract (GI), endocrine system, & immune system.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity effects: There is no known ecological information for this product.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal Method: Dispose of in accordance with National, State and local regulations. Should not be released into the environment. Do not dispose of waste with normal garbage, or to sewer systems. Call upon the services of an Orica Technical Representative.

Contaminated packaging Empty containers should be taken for local recycling, recovery or waste disposal.

SECTION 14 – TRANSPORT INFORMATION

DOT Proper Shipping Name: Ammonium Nitrate Liquid
Hazard Class: 5.1
UN-No: UN2426
Packing group: II
TDG Proper Shipping Name: Ammonium Nitrate Liquid
Hazard Class: 5.1
UN-No: UN2426
Packing group: II

Transportation Emergency Telephone Number: 1-877-561-3636 or CHEMTREC: 1-800-424-9300

SECTION 15 – REGULATORY INFORMATION

CANADIAN CLASSIFICATION: This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and this MSDS contains all the information required by the CPR

WHMIS hazard class: C: Oxidizer. D-2B. Toxic.

USA CLASSIFICATION:

SARA Regulations Sections 313 and 40 CFR 372: This product contains the following toxic chemical(s) subject to reporting requirements, Ammonium Nitrate (6484-52-2).

SARA 311/312 Hazardous Categorization

Acute Heath Hazard: Yes
Chronic Health Hazard: No
Fire Hazard: Yes
Reactive Hazard: No
Sudden Release of Pressure Hazard: No

Ozone Protection and 40 CFR 42: No reportable quantities of ozone depleting agents

Other Regulations/Legislations which apply to this product: New Jersey Right-to-Know, Pennsylvania Right-to-Know, Massachusetts Right-to-Know, Rhode Island Right-to-Know, Florida, New Jersey Special Health Hazard Substance List, Minnesota Hazardous Substance List, California Director's List of Hazardous Substances, California Proposition 65.

TSCA: Complies **DSL:** Complies **NDSL:** Complies

The components in the product are on the following international inventory lists:

Chemical Name	TSCA	DSL	NDSL	ENCS	EINECS	ELINCS	CHINA	KECL	PICCS	AICS
Ammonium Nitrate	X	X	-	X	X	-	X	X	X	X

Legend: X – Listed

SECTION 16 – OTHER INFORMATION

Prepared by: **Safety Health & Environment**
303-268-5000

Preparation Date: 14-May-2004
Revision Date: 1-May-2009

The information contained herein is offered only as guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and Orica will not be liable for any damages, losses, injuries or consequential damages which may result from the use of or reliance on any information contained herein.

End of MSDS

Technical Data Sheet

The Power of Partnership

Ammonium Nitrate Solution

Description

Liquid Ammonium Nitrate (NH4NO3: hot concentrated solution).

Application

Ammonium Nitrate (AN) Solution is the primary oxidizer used in the manufacture of bulk and packaged emulsion explosives; required for more complex blasting applications than conventional ammonium nitrate fuel oil (ANFO) mixtures.

Key Benefits

- AN Solution is low cost.
- Easily moved by bulk, rail or truck shipments.
- Ammonium Nitrate Solution is transported as an oxidizer.
- Solution can be used in the production of bulk and packaged explosives.

Technical Properties

Ammonium Nitrate Solution (ANS)	
AN (wt%)	65-85[1]
PH	3.5-5.5
Appearance	Clear
Hole Type	Wet or Dry
Delivery System	Pumped
Freeze Point	18°-75°C (64°-167°F)[2]
Shipping Temperature (summer)	93°-107°C (200°-225°F)[2]
Shipping Temperature (winter)	104°-116°C (220°-245°F)[2]

Packaging

Available in Bulk loads only. Shipments can be made in either an insulated DOT approved bulk road truck or rail car.

Product Classification USA

Authorized Name:	*Ammonium nitrate, liquid*
Proper Shipping Name:	Ammonium Nitrate, Liquid
Classification:	5.1
UN No:	2426

Product Classification Canada

Authorized Name:	*Ammonium nitrate, liquid*
Proper Shipping Name:	Ammonium Nitrate, Liquid
Classification:	5.1
UN No:	2426

Storage and Handling

Storage

Ammonium Nitrate (AN) Solution must be stored at 10°-30° C (18°-48° F) above the product's freeze point, dependent upon concentration required / shipped.

If there is any concern an Orica Technical Representative should be contacted.

Disposal

Disposal of explosive materials can be hazardous. Methods of safe disposal of explosives may vary, depending on the user's situation. Please contact an Orica Technical Representative for information on safe practices.

Safety

Ammonium Nitrate Solution poses the following hazards:

- Supports combustion
- Decomposes with excessive heating, releasing toxic fumes
- Thermal and chemical burns
- Toxic to aquatic organisms
- See the MSDS for complete product details.

Trademarks

ORICA
www.oricaminingservices.com

Ammonium Nitrate Solution

Disclaimer

The information contained herein is based on experience and is believed to be accurate and up to date as at the date of its preparation. However, uses and conditions of use are not within the manufacturer's control and users should determine the suitability of such products and methods of use for their purposes. Neither the manufacturer nor the seller makes any warranty of any kind, express or implied, statutory or otherwise, except that the products described herein shall conform to the manufacturer's or seller's specifications. The manufacturer and the seller expressly disclaim all other warranties, INCLUDING, WITHOUT LIMITATION, WARRANTIES CONCERNING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Under no circumstances shall the manufacturer or the seller be liable for indirect, special, consequential, or incidental damages without limitation, damages for lost or anticipated profits. Explosives based on Ammonium Nitrate may react with pyritic materials in the ground and create potentially hazardous situations. Orica accepts no responsibility for any loss or liability arising from use of the product in ground containing pyritic or other reactive material.

Orica Canada Inc.
301 Hotel De Ville
Brownsburg, QC J8G 3B5
Tel: +1 303 268 5000
Fax: +1 303 268 5250

Orica USA Inc.
33101 East Quincy Ave
Watkins, CO 80137
Tel: +1 303 268 5000
Fax: +1 303 268 5250

Emergency Contact Telephone Numbers

For chemical emergencies (24 hour) involving transportation, spill, leak, release, fire or accidents:
Canada: Orica Canada emergency response **1-877-561-3636**
USA: Chemtrec **1-800- 424-9300**

For lost, stolen or misplaced explosives:
USA: BATFE **1-800-800-3855**. Form ATF F5400.0 must be completed and local authorities (state / municipal police, etc) must be advised.

Notes

1. Minimum of 65%.
2. Dependent upon concentration required / shipped, maximum shipping temperature 116° C (240° F).

Material Safety Data Sheet

Preparation Date: 18-Feb-2008 **Revision Date:** 15-Mar-2011 **Revision Number:** 2

SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION

Supplier(s):

Orica Canada Inc.
Maple Street
Brownsburg, QC
For MSDS Requests: 1-450-533-4201

Orica USA Inc.
33101 E. Quincy Avenue
Watkins, CO 80137-9406
For MSDS Requests: 1-303-268-5000

Product Name:	**Ammonium Nitrate Prill**
Product Code:	40002
Alternate Name(s):	AN Prill
UN-No:	UN1942
Uses:	Fertilizer, Manufacture of Explosives. Manufacture of Blasting Agents.

Emergency Telephone Number: FOR CHEMICAL EMERGENCIES (24 HOUR) INVOLVING TRANSPORTATION, SPILL, LEAK, RELEASE, FIRE OR ACCIDENTS: **IN CANADA CALL:** THE ORICA TRANSPORTATION EMERGENCY RESPONSE SYSTEM AT **1-877-561-3636. IN THE U.S. CALL: CHEMTREC 1-800-424-9300. IN THE U.S.:** FOR LOST, STOLEN, OR MISPLACED EXPLOSIVES CALL: BATF **1-800-800-3855.** FORM ATF F 5400.0 MUST BE COMPLETED AND LOCAL AUTHORITIES (STATE/MUNICIPAL POLICE, ETC.) MUST BE ADVISED.

SECTION 2 – HAZARD IDENTIFICATION

Emergency Overview:
Irritating to eyes, respiratory system and skin. May cause methemoglobinemia.

Appearance:	**Physical State:**	**Odor:**
Grey or white prills	Prills	Odorless

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	**CAS-No**	**Weight %**
Ammonium Nitrate	6484-52-2	98-100

SECTION 4 – FIRST AID MEASURES

General Advice:	In case of accident or if you feel unwell, seek medical advice IMMEDIATELY (show the product label where possible)
Eye Contact:	Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Immediate medical attention is required.
Skin Contact:	Wash off immediately with soap and plenty of water, removing all contaminated clothes and shoes. If skin irritation persists, call a physician.
Inhalation:	Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give cardiopulmonary resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical advice IMMEDIATELY.
Ingestion:	Immediate medical attention is required. If victim is alert and not convulsing, rinse mouth out and give 200-300 mL (1 cup) of water to dilute material. Do no induce vomiting. Clean mouth with water and afterwards drink plenty of water. If spontaneous vomiting occurs, have victim lean forward with head positioned to avoid breathing in of vomitus, rinse mouth and administer more water. Never give anything by mouth to and unconscious person.

Notes to physician: Symptomatic. Administer oxygen if there are signs of cyanosis. If clinical condition deteriorates, administer 10cc Methylene Blue intravenously. It is unlikely for this to be required with methemoglobin level of less than 40%.

SECTION 5 – FIRE-FIGHTING MEASURES

Flammable properties: Not itself combustible by assists fire in burning materials. The product does not flash. Rate of burning: attempts to smother a fire involving this product will be ineffective as it is its own oxygen source.

Suitable extinguishing media: Use Water only, in as much volume as possible to cool the burning mass quickly. Chemical extinguishers will not work. Fire-fighters should wear positive pressure self-containing breathing apparatus (SCBA) and full turnout gear. Water may be applied through fixed extinguishing system (sprinklers) as long as people need not be present for the system to operate.

Unsuitable extinguishing media: Chemical extinguishers will not work. Attempts to smother a fire involving this product will be ineffective as it is its own oxygen source. Smother this product could lead to decomposition and explosion. This product is more sensitive to detonation if contaminated with organic or oxidisable material or if heated while confined. Unless the mass of product on fire is flooded with water, re-ignition is possible.

Specific hazards arising from the chemical: Toxic gases and vapours will be released by the thermal decomposition of this material. At higher temperatures, decomposition may be explosive, especially if confined. Immediately evacuate all personnel from the area to a safe distance. Guard against re-entry.

Protective equipment and precautions for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH approved (or equivalent) and full protective gear.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Methods for containment: Avoid dust formation. Do not breathe dust. Prevent further leak if safe to do so.

Methods for cleaning up: Avoid the use of metal tools containing iron and/or copper. Collect product in suitable containers for recovery or disposal. Prevent product from entering drains. Notify applicable government authority if release is reportable or could adversely affect the environment.

SECTION 7 – HANDLING AND STORAGE

Handling: Avoid contact with eyes or skin. Wash thoroughly with soap and water after handling. Wash clothing before re-use. Locate safety shower and eyewash station closest to chemical handling area. The use of coveralls is recommended. Use good industrial hygiene and housekeeping practices. Keep away from open flames, hot surfaces and sources of ignition

Storage: Store in a cool, well-ventilated area. Keep away from heat, sparks, and flames. Keep storage containers closed. Store at 10-27°C (50-80°F). Do not expose closed containers to temperatures above 40°C (104°F). Product is mildly corrosive to concrete and steel. Stainless steel and aluminium are adequate. Avoid materials made of copper, iron, or bronze.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Other exposure guidelines: Ammonium Nitrate: ORICA Guideline 5 mg/m^3 (internal TWA)

Engineering Measures: Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction.

Personal Protective Equipment

Eye/Face Protection: Tightly fitting safety goggles.

Skin Protection: Gloves and protective clothing made from cotton should be impervious under normal conditions

Respiratory Protection: In case of insufficient ventilation wear suitable respiratory equipment. A NIOSH-approved respirator, if concentrations in air are unknown or in excess of established exposure guidelines

Hygiene Measures: Handle in accordance with good industrial hygiene and safety practice. Recommendations listed in this section indicate the type of equipment, which will provide protection against over exposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Chemical Name:	Nitric Acid Ammonium Salt	**Chemical Family:**	Nitrates
Appearance:	Grey or white prills	**Odor:**	Odorless
Physical State:	Solid prills	**Viscosity:**	No information available
pH:	5 – 6 (0.1M solution in water)	**Flash Point:**	Not applicable
Autoignition Temperature:	Not applicable	**Boiling Point/Range:**	210°C/ 410°F
Melting Point/Range:	160–165°C/ 320-329°F	**Flammable Limits (Upper):**	Not applicable
Flammable Limits (Lower):	Not applicable	**Explosion Power:**	No data available
Specific Gravity:	1.72 g/cc	**Water Solubility:**	79% @25
Other Solubility:	Soluble in Alkalies, alcohols, acetone. Insoluble in ether.	**Vapor Pressure:**	0 mm Hg @20°C
Oxidizing Properties:	Oxidizer	**Partition Coefficient (n-octanol/water):**	No data available

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable under normal conditions. Decomposition Temperature: Ammonium Nitrate will spontaneously decompose at 210°C.

Conditions to avoid: Keep away from open flames, hot surfaces and sources of ignition. Not expected to be sensitive to static discharge. Not expected to be sensitive to mechanical impact. Keep away from light.

Incompatible materials: Avoid oxidizable materials, metal powder, bronze & copper alloys, fuels (e.g. lubricants, machine oils), fluorocarbon lubricants, acids, corrosive liquids, chlorate, sulphur, sodium nitrite, charcoal, coke and other finely divided combustibles, strong oxidizing and reducing agents. Keep away from combustible material.

Hazardous decomposition products: The following toxic decomposition products may be released. At temperatures above 210°C, decomposition may be explosive, especially if confined. Nitrogen oxides (NOx). Carbon oxide. Hydrocarbons. At higher temperatures, decomposition may be explosive, especially if confined.

Hazardous Polymerization: None under normal processing. Hazardous polymerization does not occur. Explosive material under shock conditions.

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute Toxicity

Product Information: Irritating to eyes. May cause skin irritation. Harmful if swallowed. May cause methemoglobinemia.

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ammonium Nitrate	2217 mg/kg Rat	3000 mg/kg Rabbit	88.8 mg/L Rat 4 h

Subchronic Toxicity (28 Days): Ammonium Nitrate: Ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by navy lips, tongue and mucous membranes, with skin color being slate grey. Further manifestation is characterized by headache, weakness, dyspnea, dizziness, stupor, respiratory distress and death due to anoxia. If ingested, nitrates may be reduced to nitrites by bacteria in the digestive tract. Signs and symptoms of nitrite poisoning include methemoglobinemia, nausea, dizziness, increased heart rate, hypotension, fainting and, possibly shock.

Chronic Toxicity: May cause methemoglobinemia.

Carcinogenicity: The ingredients of this product are not classified as carcinogenic by ACGIH (American Conference of Governmental Industrial Hygienists) or IARC (International Agency for Research on Cancer), not regulated as carcinogens by OSHA (Occupational Safety and Health Administration), and not listed as carcinogens by T\NTP (National Toxicology Program).

Mutagenic effects: There is no evidence of mutagenic potential.

Irritation: Irritating to eyes. May cause irritation of respiratory tract. May cause skin irritation in susceptible persons.

Reproductive effects:	No information is available and no adverse reproductive effects are anticipated.
Developmental effects:	No information is available and no adverse developmental effects are anticipated.
Target Organ:	Eyes, skin, respiratory system, blood, liver, urinary tract, gastrointestinal tract (GI), endocrine system, & immune system.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity effects:	Dissolves slowly in water. Harmful to aquatic life at low concentrations. Environmental Effects: Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.
Persistence/Degradability:	No data available.
Mobility in Environmental media:	Dissolves slowly in water

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal Method:	Dispose of in accordance with National, State and local regulations. Should not be released into the environment. Do not dispose of waste with normal garbage, or to sewer systems. Call upon the services of an Orica Technical Representative.

SECTION 14 – TRANSPORT INFORMATION

DOT Proper Shipping Name:	Ammonium Nitrate
Hazard Class:	5.1
UN-No:	UN1942
Packing group:	III
TDG Proper Shipping Name:	Ammonium Nitrate
Hazard Class:	5.1
UN-No:	UN1942
Packing group:	III

Transportation Emergency Telephone Number: 1-877-561-3636 or CHEMTREC: 1-800-424-9300

SECTION 15 – REGULATORY INFORMATION

CANADIAN CLASSIFICATION: This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and this MSDS contains all the information required by the CPR

WHMIS hazard class: C: Oxidizer. D-2B. Toxic.

USA CLASSIFICATION:

SARA Regulations Sections 313 and 40 CFR 372: This product contains the following toxic chemical(s) subject to reporting requirements, Ammonium Nitrate (6484-52-2).

SARA 311/312 Hazardous Categorization

Acute Heath Hazard:	Yes
Chronic Health Hazard:	No
Fire Hazard:	Yes
Reactive Hazard:	No
Sudden Release of Pressure Hazard:	No

Ozone Protection and 40 CFR 42: No reportable quantities of ozone depleting agents

Other Regulations/Legislations which apply to this product: New Jersey Right-to-Know, Pennsylvania Right-to-Know, Massachusetts Right-to-Know, Rhode Island Right-to-Know, Florida, New Jersey Special Health Hazard Substance List, Minnesota Hazardous Substance List, California Director's List of Hazardous Substances, California Proposition 65.

TSCA: Complies **DSL:** Complies **NDSL:** Complies

The components in the product are on the following international inventory lists:

Chemical Name	TSCA	DSL	NDSL	ENCS	EINECS	ELINCS	CHINA	KECL	PICCS	AICS
Ammonium Nitrate	X	X	-	X	X	-	X	X	X	X

Legend: X – Listed

SECTION 16 – OTHER INFORMATION

Prepared by: **Safety Health & Environment**
303-268-5000

Preparation Date: 18-Feb-2008
Revision Date: 15-Mar-2011

The information contained herein is offered only as guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and Orica will not be liable for any damages, losses, injuries or consequential damages which may result from the use of or reliance on any information contained herein.

End of MSDS

ANNEX 6

Future Revision Upon Project Approval

At the request of various regulatory bodies Annex 6 has been added to the ERP to provide an understanding of the spill related risks associated with the Construction and Operation phases of the project as well as to provide the contingencies and emergency response procedure that will be in place to manage these risks. It is important to note that this is to be considered a broad overview and more up-to-date plans will be provided in the annual Emergency and Spill Response Plan updates as we approach each project phase.

Construction

The Construction phase of the Mary River Project provides a set of unique risks and circumstances that differ from both the 2012 Work and the Operational phase. As the Construction phase is approached and more information becomes available the Spill and Emergency Response Plan will be updated to address the specific concerns of the construction phase.

The key risks found in the Construction phase are similar to those found in the 2012 Work, the major difference being scale. Arctic grade diesel fuel, aviation fuel, and ammonium nitrate make up the vast majority of hazardous materials that are in danger of spilling during the Construction phase.

Fuel Management

Fuel Transport is the activity during which a fuel spill is most likely to occur. When fuel is being transported from the ship to the port or by fuel tanker truck over land a situation exists with a higher risk of spilling and more severe consequences. As such special care must be undertaken during fuel transportation. The situations in which fuel is most likely to be spilt and their respective mitigation measures are as follows.

Ship to Shore

Fuel must be unloaded from ships at both the Milne and Steensby Ports during construction. At Steensby the bulk fuel transfer from ship to shore discharge takes place up to twice a year between the months of June to September and there is approximately 20 ML of petroleum product that is transferred to the fuel tanks by means of a single floating hose with an approximate length of 1000 meters deployed between the vessel and the connecting flange on the shore. The products are then transferred by pipeline to the bulk storage facility. A steel pipeline of 4“ diameter connects between the shore manifold and the tank farm situated approximately 1000 meters from the shoreline. Over the course of the construction period this is eventually ramped up to 175 ML of Arctic diesel and 57.5 ML of Marine diesel. Milne Port uses a similar procedure with a maximum 48 ML being stored during the construction phase.

The products are transferred by pipeline to the bulk storage facility. A steel pipeline connects between the receiving manifold on the freight dock and the tank farm. Tidal influence on currents and wind force and direction are the dictating environmental factors during bulk transfer.

The transfer operation involves filling the shore based tankage with two types of fuel (Jet A and CP-43 (diesel)). It is expected that once cargo operations are underway, the ship will discharge at a rate of 400 m^3/hour and a 1 ML tank will take approximately 2.5 -3 hours to fill. Accurate reconciliation of

discharge & fill volumes through regular communication between ship & shore personnel is required to ensure the safe transfer of fuel and prevent the overfilling and over pressurization of the fuel tanks that could result in a spill.

To minimize the risk of a spill occurring safe working procedures and best practice guidelines must be adhered to.

During ship to shore discharge of the product, the discharge hose is inspected on a regular basis by the ship crew member who is always present at the ship manifold discharge. Stoppers and absorbents are available in case they are needed. The ship has a Shipboard Oil Pollution Emergency Plan (SOPEP), appropriate response gear on board and the crew is fully trained in its use.

There is a person on watch at the shore manifold at all times during discharge and in direct radio communication with the shore receiving facility. The pipeline is inspected visually and regularly by walking alongside of it. Once a year the pipeline is tested as part of annual maintenance.

All spills within the tank farm zone would be retained within the bermed area. During the unloading of the vessel continuous monitoring takes place. At all times there is a person on watch during discharge and in contact with the vessel.

In the presentation of the spill scenarios in this section, it is implied that the initial spill response actions outlined in Section 5.1 of the Preliminary Oil Pollution Emergency Plan has first and foremost been addressed. The scenarios are designed moreover for the purpose of identifying the appropriate specific actions and therefore the related resources required for a given incident.

Milne Inlet to Mary River Mine Site

During the Construction phase of the project fuel is transported in a 30,000 L fuel tanker to the Mine Site via the Tote Road from Milne Port. Response to spills on the road will be handled as a land spill and will follow the general procedures previously detailed. The main spill control techniques involve the use of two types of barriers: dykes and trenches. Barriers should be placed downgradient (down-slope) from the source of the spill, and as close as possible to the source of the spill. Barriers slow the progression of the spill and also serve as containment to allow recovery of the spill.

The maximum spill volume that could occur from a fuel tanker is 30,000 L of fuel. This would only occur in the event of a complete rupture of the tank which is unlikely. Depending on the volume spilled, the site of the spill as well as available material, a dyke may be built with soil, booms, lumber, snow, etc. A plastic liner should be placed at the foot of and over the dykes to protect the underlying soil or other material and to facilitate recovery of the spill. Dykes should be constructed in such a way as to accumulate a thick layer of free product in a single area (V-shaped or U-shaped).

Trenches are useful in the presence of permeable soil and when the spilled fuel is migrating below the ground surface. A plastic liner should be placed on the down-gradient edge of the trench to protect the underlying soil. Liners should not be placed at the bottom of the trench to allow water to continue flowing underneath the layer of floating oil (if applicable).

The use of large quantities of absorbent materials to recover important volumes of spilled fluids should be avoided. Large volumes of free-product should be recovered, as much as possible, by using vacuums and pumps, and containerized. Mixtures of water and fuel may be processed through an oil-water separator.

Absorbent sheets should be used to soak up residual fuel on water, on the ground (soil and rock), and on vegetation. Peat moss may also be sprinkled on vegetation to absorb films of petroleum products.

The road from Milne Port to Mary River follows Philips Creek (which in turn flows into the the ocean via Milne Port). Philips Creek would be at risk in the event of a spill on the Tote Road and special care must be taken to ensure that it is protected from contamination in the event of a spill.

Mary River Mine Site/Steensby to Rail Camps

During Construction the rail camps will be supplied with fuel via the Tote Road running from either the Mary River Mine Site or Steensby depending on their location along the route. The risks involved and their respective contingencies are nearly identical to those encountered on the Milne to Mary River Mine tote road. Again fuel will be transported in a 30,000L tanker truck along the route. Any spills that occur will be handled in the same was as described above.

Another risk is that all fuel will need to be stored in 1 ML temporary Steel tanks at the rail camps. All of these tanks will need to be supplied and refuelled by truck on a regular basis. It is essential that safe procedures be followed when refuelling the temporary tanks. Spill response kits will remain on site and within easy access at all times. All personnel refuelling the tanks will be trained in proper procedure as well as emergency response procedures. Berms will be built around the tanks to ensure any potential spills are contained. Tanks will also be located as far away as is reasonably practical from water sources.

Ammonium Nitrate Management

During the construction phase of the project the amount of required blasting will increase significantly from 2012 Work. During this stage temporary emulsion plants will be constructed at Steensby and the Mary River Mine Site. From this point forward emulsion will be utilized for the vast majority of blasting. The primary component in emulsion is Ammonium Nitrate (AN). Ammonium nitrate dissociates readily in water to form ammonia, which in its un-ionized form, is toxic to aquatic organisms and fish. Storage on land, away from water sources largely eliminates the risk of ammonia losses to water bodies. Please Refer to Section 6.2 above for a complete overview of safe explosives handling and clean up in the event of a spill.

Operations

The Operations phase of the Mary River Project provides an entirely new set of risks and circumstances then those experienced in the 2012 Work or construction phase. As the operations phase is approached and more information becomes available the Spill and Emergency Response Plan will be updated to address the specific concerns and considerations of operations.

Materials representing the greatest risks in the operations phase include arctic grade diesel fuel, aviation fuel, and ammonium nitrate. The main difference that will need to be addressed in the operations stage is the large scale of the operation and the introduction of the railway.

Fuel Management

As in the construction phase fuel transport is the activity during which a fuel spill is most likely to occur. When fuel is being transported from the ship to the port or by train over land to site the risk and consequences of a spill is greater. As such special care must be undertaken during fuel transportation. The situations in which fuel is most likely to be spilt and their respective mitigation measures are as follows.

Ship to Shore

During operations fuel will be unloaded from ships to the shore at Steensby Port, where it will be stored in two 25 million litre tanks of marine diesel and four 40 million litre tanks of arctic diesel. This will be completed in the same manner as during the construction phase, please see the procedures listed above for more details.

Steensby to Mary River

Fuel will be shipped from the Steensby Port to the Mary River Mine site via train, where it will be stored in three 5.2 ML tanks. The main risk of a significant spill occurring is in the event of a train derailment. In the event of a derailment spills could occur in an aquatic environment, namely Cockburn Lake, or terrestrially anywhere along the route.

In the event, a terrestrial spill response measures will follow procedures listed previously throughout this document. It will fist ensured that personal are safe and out of harm's way and that risks of fires are minimized. Dykes and trenches will be utilized to control and contain the spill; with every method made to keep it away from any nearby water source. Much in the same way described in the construction phase. Once the spill is contained it will be cleaned up using either absorbent materials or pumps/vacuums depending on the size of the spill.

In the event of an aquatic spill measures must taken to protect sensitive and accessible shorelines. The fuel slick is monitored to determine the direction of migration. In the absence of strong winds the oil will likely flow towards the discharge of the lake. Measures will be taken to block and concentrate the oil slick at the lake discharge using booms where it will subsequently be recovered using a portable skimmer, a vacuum, or sorbent materials. In small slowly-flowing rivers, streams, channels, inlets or ditches, inverted weirs (i.e., siphon dams) is used to stop and concentrate moving diesel fuel for collection while allowing water to continue to flow unimpeded. In the case of floating diesel fuel, in a stream, heading for a culvert (i.e., at a road crossing) a culvert block is used to stop and concentrate moving fuel for collection while allowing water to continue to flow unimpeded. In both cases diesel fuel will then be recovered using a portable skimmer or sorbent materials. In the case of spills in larger rivers, with fast moving currents, diversion booming is used to direct the oil slick ashore for recovery. Single or multiple booms (i.e., cascading) may be used for diversion. Typically, the booms are anchored across the river at an angle. The angle will depend on the current velocity. Choosing a section of a river that is both wider and shallower makes boom deployment easier. Diversion booming may also be used to direct an oil slick away from a sensitive area to be protected.

Given the remote and inaccessible nature of much of the route, depending on the severity of the spill, it may be necessary to fly in spill response equipment via helicopter or send another train if the track is not damaged.

Ammonium Nitrate Management

During the operations phase of the project the majority of blasting will occur at the Mary River Mine Site. During this stage a permanent emulsion plants will be constructed at the Mary River Mine Site. The same guidelines applied during the construction phase will be used during construction. Please Refer to Section 6.2 above for a complete overview of safe explosives handling and clean up in the event of a spill.

ANNEX 7

Schedule B of the Nunavut Spill Contingency and Reporting Regulation

SCHEDULE B

(Section 9)

Item No.	*TDGA Class*	*Description of Contaminant*	*Amount Spoiled*
1.	1	Explosives	Any amount
2.	2.1	Compressed gas (flammable)	Any amount of gas from containers with a capacity greater than 100 l.
3.	2.2	Compressed gas (non-corrosive, non flammable)	Any amount of gas from containers with a capacity greater than 100 l.
4.	2.3	Compressed gas (toxic)	Any amount
5.	2.4	Compressed gas (corrosive)	Any amount
6.	3.1, 3.2, 3.3	Flammable liquid	100 l
7.	4.1	Flammable solid	25 kg
8.	4.2	Spontaneously combustible solids	25 kg
9.	4.3	Water reactant solids	25 kg
10.	5.1	Oxidizing substances	50 l or 50 kg
11.	5.2	Organic Peroxides	1 l or 1 kg
12.	6.1	Poisonous substances	5 l or 5 kg
13.	6.2	Infectious substances	Any amount
14.	7	Radioactive	Any amount
15.	8	Corrosive substances	5 l or 5 kg
16.	9.1 (in part)	Miscellaneous products or substances, excluding PCB mixtures	50 l or 50 kg
17.	9.2	Environmentally hazardous	1 l or 1 kg
18.	9.3	Dangerous wastes	5 l or 5 kg
19.	9.1 (in part)	PCB mixtures of 5 or more parts per million	0.5 l or 0.5 kg
20.	None	Other contaminants	100 l or 100 kg

102-7

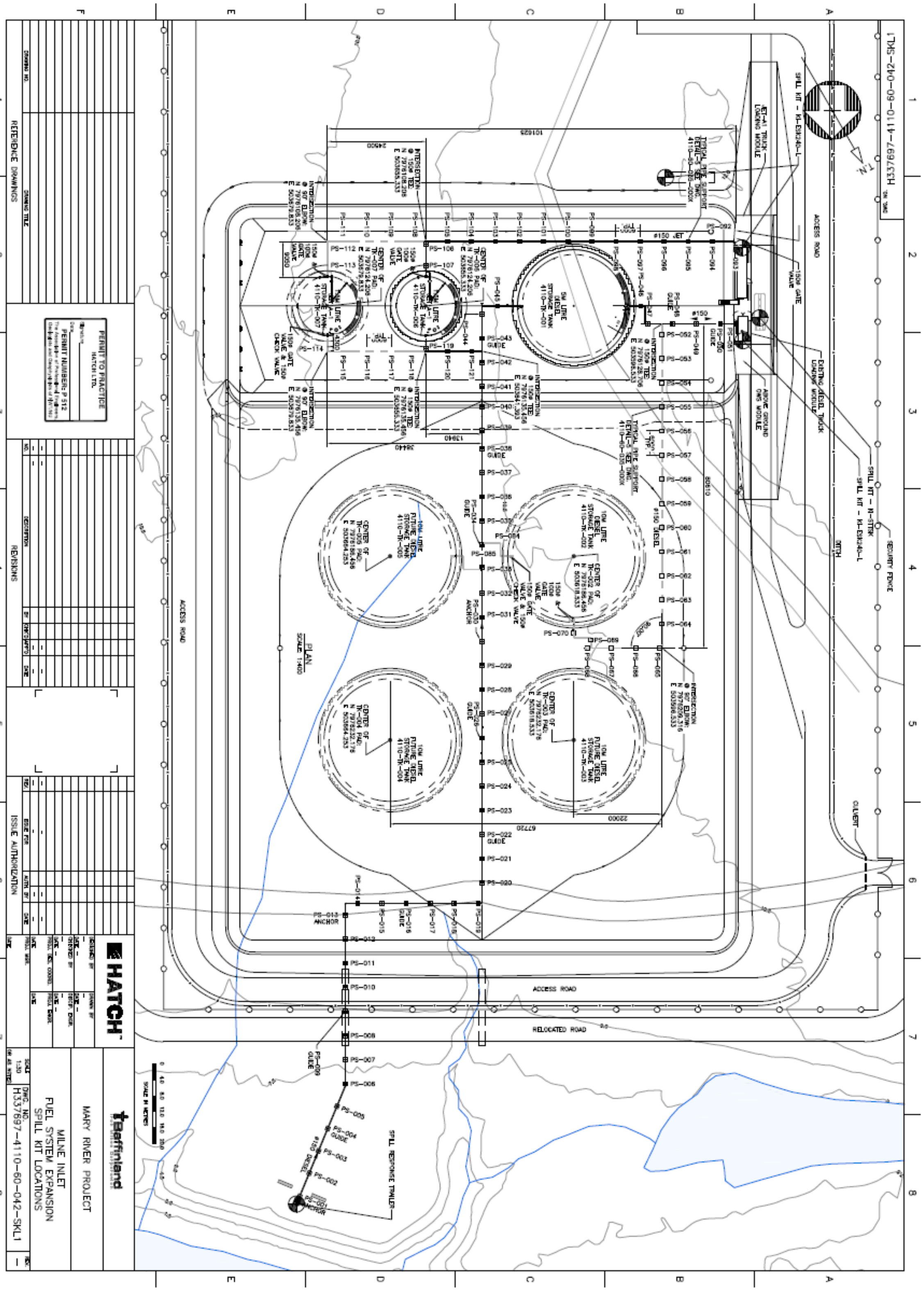
15 July, 1998

ANNEX 8

Spill Response Elements Site Maps

The following drawings provide a site maps that emphasize the spill response elements of the site. The drawings identify spill response equipment, fuel storage areas, water bodies and infrastructure. The various spill response equipment employed corresponds to the following codes:

7000L spill response trailer
350L spill kit - large: KI-ESK360-L
220L spill kit – basic: KI-ESK240-L
20L spill kit - tanker trucks: KI-STTSK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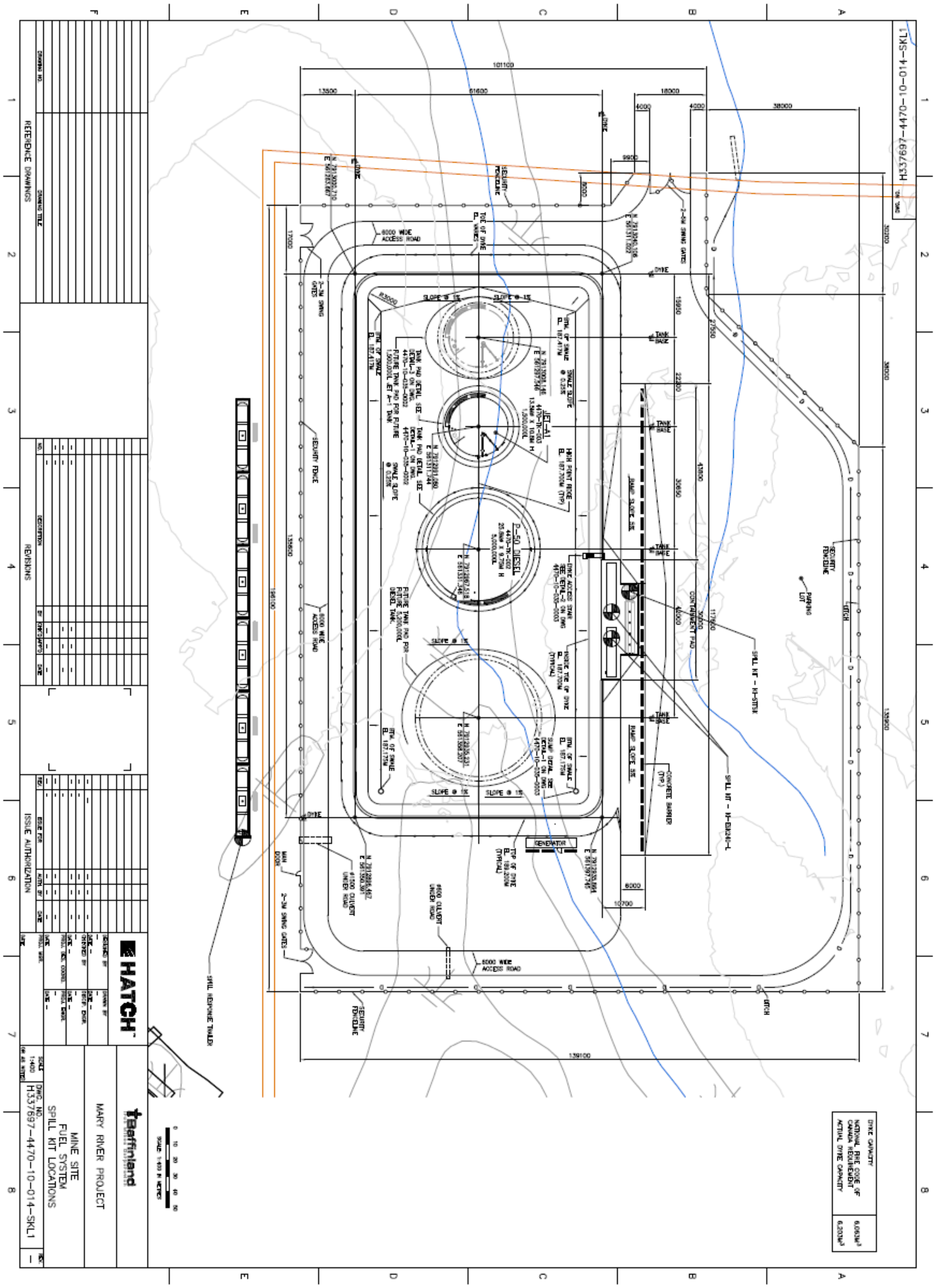
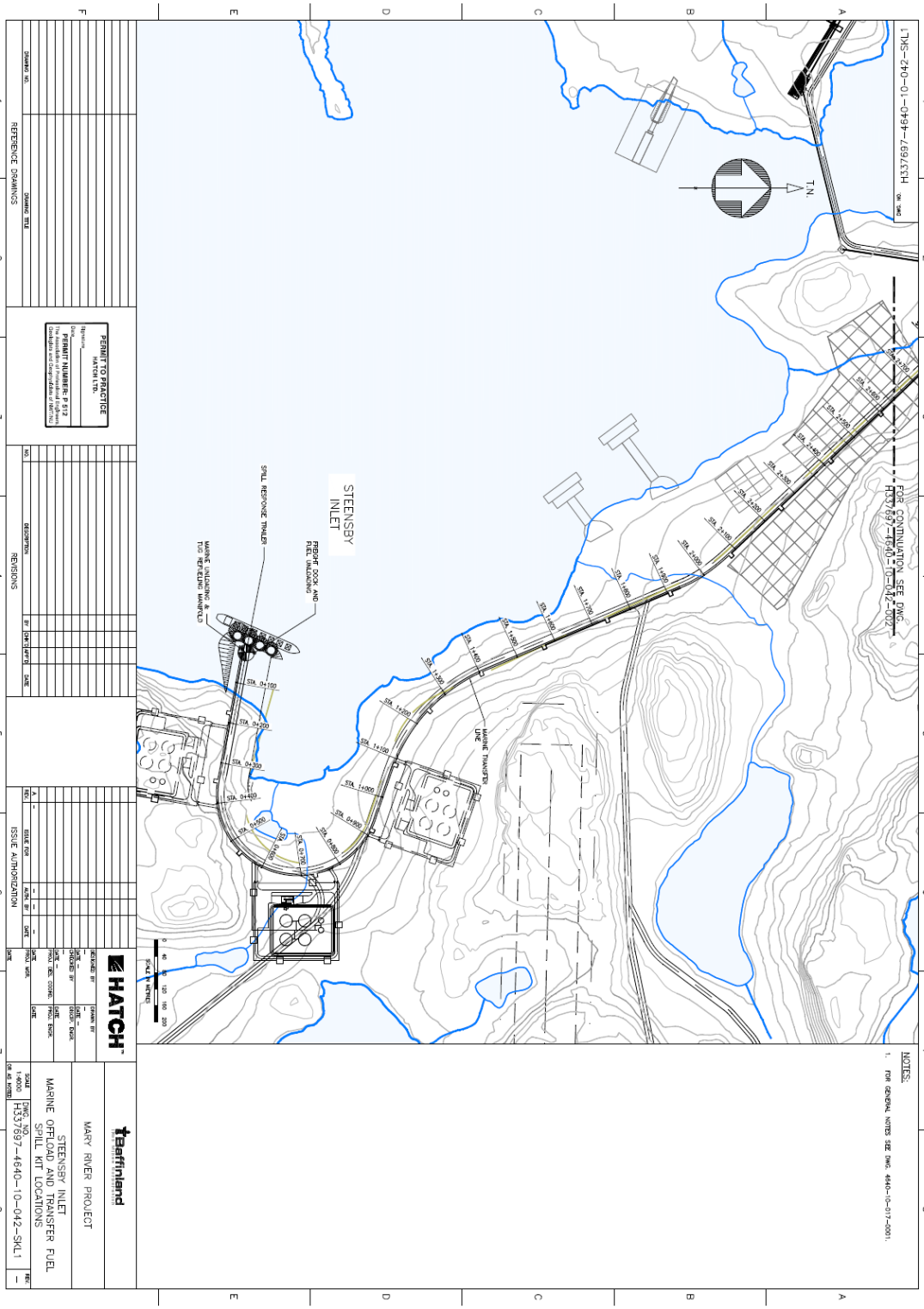
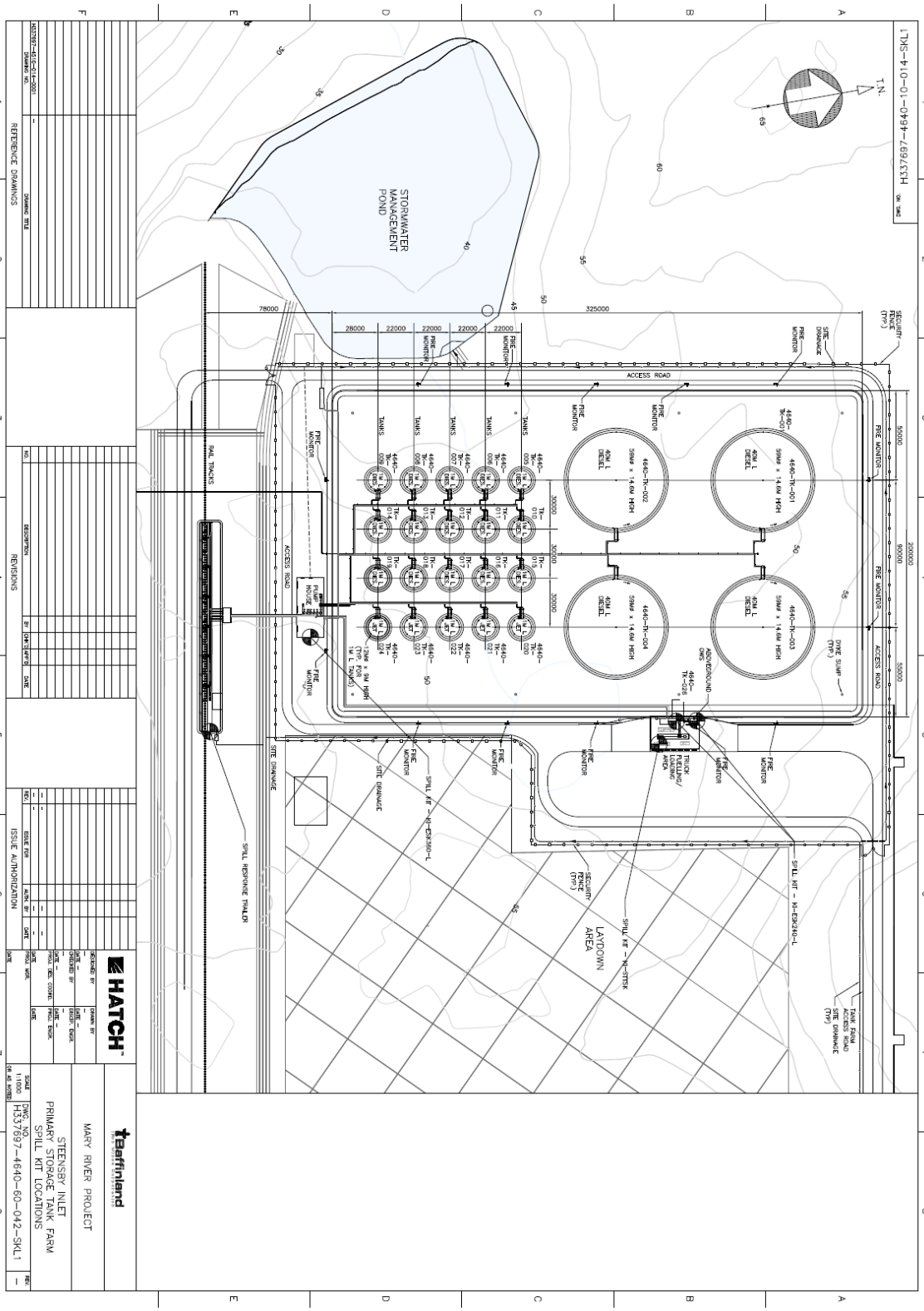
MARY RIVER PROJECT
MILNE INLET
FUEL SYSTEM EXPANSION
SPILL KIT LOCATIONS
HATCH
ACCESS ROAD
RELOCATED ROAD
SPILL RESPONSE TRAILER
SECURITY FENCE
CULVERT
PLAN
REFERENCE DRAWINGS
REVISIONS
ISSUE AUTHORIZATION
PERMIT TO PRACTICE


HATCH
MARY RIVER PROJECT
MINE SITE
FUEL SYSTEM
SPILL KIT LOCATIONS
H337697-4470-10-014-SKL1
REFERENCE DRAWINGS
REVISIONS
ISSUE AUTHORIZATION
SPILL RESPONSE TRAILER
GENERATOR
D-50 DIESEL
JET-A1
SECURITY FENCELINE
6000 WIDE ACCESS ROAD
DYKE CAPACITY


STEENSBY INLET
SPILL RESPONSE TRAILER
FRESHET DOCK AND FUEL UNLOADING
MARINE UNLOADING & TOO RECEIVING MANIFOLD
MARINE TRANSFER LINE
FOR CONTINUATION SEE DWG. H337697-4640-10-042-SKL1
H337697-4640-10-042-SKL1
T.N.
NOTES:
1. FOR GENERAL NOTES SEE DWG. 4640-10-017-0001.
REFERENCE DRAWINGS
PERMIT TO PRACTICE HATCH LTD.
PERMIT NUMBER: P 012
REVISIONS
ISSUE AUTHORIZATION
HATCH
Baffinland
MARY RIVER PROJECT
STEENSBY INLET
MARINE OFFLOAD AND TRANSFER FUEL SPILL KIT LOCATIONS
DWG. NO. H337697-4640-10-042-SKL1


STORMWATER MANAGEMENT POND
ACCESS ROAD
RAIL TRACKS
LAYDOWN AREA
SPILL RESPONSE TRAILER
SITE DRAINAGE
FIRE MONITOR
SECURITY FENCE (TYP.)
TANK FARM ACCESS ROAD
REFERENCE DRAWINGS
REVISIONS
ISSUE AUTHORIZATION
HATCH
Baffinland
MARY RIVER PROJECT
STEENSBY INLET PRIMARY STORAGE TANK FARM SPILL KIT LOCATIONS
DWG. NO. H337697-4640-60-042-SKL1