Baffinland Iron Mines Corporation

Oil Pollution Emergency Plan - Milne Inlet (OPEP)

BAF-PH1-830-P16-0013

Rev 1

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Date: July 20, 2015
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OIL HANDLING FACILITY DECLARATION

Pursuant to paragraph 168(1) (b) of the *Canada Shipping Act, 2001*, Baffinland Iron Mines Corporation declares that:

(a) to comply with the regulations made under paragraph 182(a) of the Canada Shipping Act, 2001, on the detection of an oil pollution incident that arises out of the loading or unloading of oil to or from a ship, the measures as outlined in the Milne Inlet Fuel Storage Facility, Oil pollution Emergency Plan shall be implemented.

(b) ~~in accordance with paragraph 168(1)(a) of the *Canada Shipping Act, 2001*, I have an arrangement with the certified response organization known as *~~

~~(Name of response organization)~~

~~The arrangement is with respect to _____ tonnes of oil~~
~~(Number of tonnes)~~

~~and in respect of _____~~
~~(Geographic location of the oil handling facility)~~

*** NOTE: In accordance with paragraph 168(2) of the *Canada Shipping Act, 2001*, the requirements under paragraph 168(1)(a) and 168(1)(b)(ii) do not apply.**

(c) ~~the persons listed below are authorized to implement the arrangement described in paragraph (b):**~~

**** NOTE: In accordance with paragraph 168(2) of the *Canada Shipping Act, 2001*, the requirements under paragraph 168(1)(b)(iii) do not apply in respect to the arrangement described in paragraph (b).**

(d) the persons listed below are authorized to implement the oil pollution emergency plan required by paragraph 168(1)(d) of the *Canada Shipping Act, 2001*:

Date: April 1, 2015

Baffinland Iron Mines Corporation, Erik Madsen, Vice President, Sustainable Development

Table 1-1: Contact Information of Baffinland Personnel with Authority to Implement the OPEP

Role	Primary	First Back Up	Secondary Back-Up
Emergency Management Team Lead	Dale DeGagne	Dwayne Chyz	Jimmy Puk Richard Langley
Primary Phone:	647.253.0598 x. 4113	647.253.0598 x. 4504	647.253.0598 x 4502
Alternate Phone:		647.253.0598 x. 4626	647.253.0598 x. 4541
Email:	Dale.DeGagne@Baffinland.com	Dwayne.Chyz@Baffinland.com	Jimmy.Puk@Baffinland.com Richard.Langley@Baffinland.com
Incident Commander	Dale Wales Vacant Position	Mine Rescue Captain As Designated Weekly	Darryl Finlay Mario Vottero
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Environmental Superintendent	Allan Knight Trevor Myers	Jim Millard	Lea Willemse Nicolas Kuzyk
Primary Phone:	647.253.0596 x. 6010	647.253.0596 x. 6016	647.253.0598 x. 4130
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Health & Safety Superintendent	Hal Finley Tony Noseworthy	Darryl Finlay Mario Vottero	Glen Hein
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Environmental Co-ordinator	Lea Willemse Nicolas Kuzyk	Allan Knight Trevor Myers	Jim Millard
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PREAMBLE

This Oil Handling Facility, Oil Pollution Emergency Plan (OPEP) for the Milne Inlet Port shall be in effect at the commencement of Port operations in 2015

Formal distribution of the Plan has been made to:

Transport Canada
Box 8550,
344 Edmonton Street (RMW),
Winnipeg, Manitoba, R3C 0P6

Additional copies and updates of this Plan may be obtained from:

Baffinland Iron Mines Corporation

2275 Upper Middle Road East, Suite 300
Oakville, Ontario L6H 0C3
Tel: (416) 364-8820 Fax: (416) 364-0193

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 development & 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 courageous leadership in personally committing to this policy through their actions. The Sustainable Development Policy is communicated to the public, all employees and contractors and it will be reviewed and revised as necessary on a regular basis. These four pillars form the foundation of our corporate responsibility strategy:

1. Health and Safety
2. Environment
3. Investing in our Communities and People
4. 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, where everyone goes home safe everyday of their working life. Why? Because our people are our greatest asset. Nothing is as important as their health and safety. Our motto is “Safety First, Always”.

• 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, awareness and promoting active courageous leadership. We allow our employees 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, waste reduction 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 promoted and undertaken as early as possible to ensure reclamation objectives are met.

3.0 INVESTING IN OUR COMMUNITIES AND PEOPLE

• We respect human rights, the dignity of others and the diversity in our workforce. We honour and respect the unique cultural values and traditions of the Inuit.

• We contribute to the social, cultural and economic development of sustainable communities in the North Baffin Region.

• 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 may impact the environment, employees, contractors, local communities, customers and shareholders.

• We endeavour to 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 safety, health, environmental, socio-economic commitments and set annual targets and objectives.

• We conduct all activities in compliance with the highest applicable legal & regulatory 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
May 2015

HEALTH, SAFETY AND ENVIRONMENT POLICY

This Baffinland Iron Mines Corporation Policy on Health, Safety and Environment is a statement of our commitment to achieving a safe, healthy and environmentally responsible workplace. We will not compromise this policy for the achievement of any other organizational goals.

We implement this Policy through the following commitments:

- Continual improvement of safety, occupational health and environmental performance.
- Meeting or exceeding the requirements of regulations and company policies
- Integrating sustainable development principles into our decision-making processes
- Maintaining an effective Health, Safety and Environmental Management System
- Sharing and adopting improved technologies and best practices to prevent injuries, occupational illnesses and environmental impacts
- Engaging stakeholders through open and transparent communication.
- Efficiently using resources, and practicing responsible minimization, reuse, recycling and disposal of waste.
- Rehabilitation of disturbed lands to a safe, acceptable, and localized state.

Our commitment to provide the leadership and action necessary to accomplish this policy is exemplified by the following principles:

- As evidenced by our motto “Safety First, Always” and our actions Health and safety of personnel and protection of the environment are values not priorities.
- All injuries, occupational illnesses and environmental impacts can be prevented.
- Employee involvement and active contribution through courageous leadership is essential for preventing injuries, occupational illnesses and environmental impacts.
- Working in a manner that is healthy, safe and environmentally sound is a condition of employment.
- All operating exposures can be safeguarded.
- Training employees to work in a manner that is healthy, safe and environmentally sound is essential.
- Prevention of personal injuries, occupational illnesses and environmental impacts is good business.
- Respect for the communities in which we operate is the basis for productive relationships.

We have a responsibility to provide a safe workplace and utilize systems of work to meet this goal. All employees must be clear in understanding the personal responsibilities and accountabilities in relation to the tasks we undertake.

The health and safety of all people working at our operation and responsible management of the environment are core values to Baffinland. In ensuring our overall profitability and business success every Baffinland and business partner employee working at our work sites is required to adhere to this Policy.

Tom Paddon
President and Chief Executive Officer
May 2015

1 General Introduction

The Milne Inlet Fuel Storage Facility, Oil Pollution Emergency Plan (OPEP) was developed to specifically assist in implementing measures to protect the marine environment and minimize impacts from potential spill events. The Plan outlines potential spill scenarios, and provides specific procedures for responding to spills while minimizing potential health and safety hazards, environmental damage, and clean-up costs. The OPEP provides instructions to guide all personnel in emergency spill response situations, defines the roles and responsibilities of management and responders and outlines the measures taken to prevent spills, the related exercise and evaluation programme, and the mechanism for regular updates to the plan.

1.1 Legislative Requirement

The *Canada Shipping Act*, 2001*,* stipulates that operators of designated oil handling facilities must have an on-site oil pollution emergency plan.

The Milne Inlet Fuel Storage Facility, Oil Pollution Emergency Plan takes into account the requirements of the Canada Shipping Act, 2001, part 8, subsections 168. (1), 168. (2) and 168. (3). Although the subsection 168 (2) is applicable, as the Milne inlet site is located North of 60', therefore the subsections 168. (1) (a), 168. (1) (b) (ii), 168. (1) (b) (iii) do not apply.

Relevant regulations are:

- Response Organization and Oil Handling Facility Regulations
- Response Organization Standards (TP12401)
- Vessel Pollution and Dangerous Chemical Regulations, (SOR 2012-69)
- Environmental Response Arrangement Regulations
- Oil Handling Facilities Regulations (SOR/95-405)
  Oil Handling Facilities Standards, TP12402
- Pollutant Discharge Reporting Regulations, 1995 - SOR/95-351
- Guidelines for Reporting Incidents Involving Dangerous Goods and Harmful Substances and/or Marine Pollutants

1.2 Links to Other Baffinland Response Plans

The Milne Inlet Fuel Storage Facility OPEP has been designed specifically to compliment the Baffinland **Emergency Response Plan (ERP),** Baffinland **Spill Contingency Plan (SCP)**, and, **Baffinland's Spill at Sea Response Plan**. The plan is not to be construed as to supersede existing emergency response plans, rather it is conceived to address the specifics of the fuel storage facility, the bulk incoming transfer of fuel and spill scenarios directly relating to this operation at or in the vicinity of Milne Port.

The Baffinland **ERP** identifies potential environmental, health and safety emergencies that could arise during the construction and operation phases of the Mary River Project. The ERP establishes the

framework for responding to these situations and applies to all aspects of the Mary River Project. All Baffinland employees and contractors are required to comply with the requirements of the Emergency Response Plan.

The Baffinland **SCP** identifies potential spills of hazardous materials on land, ice, or fresh water that could arise during the construction and operation phases of the Mary River Project. Credible spill scenarios are identified and protocols for preventing, responding to, and recovering from releases to the environment involving regulated hazardous substances. The Spill Contingency Plan complements Baffinland's Emergency Response Plan.

The **Spill at Sea Response Plan (SSRP)** outlines Baffinland's emergency response procedures for potential spills of fuel at sea along the Northern Shipping Route from vessels interfacing with the Milne Port facility. This includes both ore carriers and fuel tankers.

2 PLANNING STANDARDS

In the preparation of the Milne Inlet OPEP, the standards as outlined in the Oil Handling Facility standards, TP 12402 have been employed.

2.1 FACILITY CATEGORY

Based on the ship to shore maximum pumping rate of less than 149 m^3/hr, the Milne Inlet Facility is classified as a level 1 facility. Spill scenarios have been developed and are outlined in section 8 of this plan. As a scenario addressing a possible 3.5 m^3 spill exists, the minimum size of an oil pollution incident for which a response is described in this OPEP is 3.5 m^3.

2.2 GENERAL PLANNING GUIDELINES

Beyond the requirements of the CSA and the Oil Handling Facilities Standards, Baffinland Iron Mines recognizes the unique nature of the geographical location and the challenges inherent in mounting a response to a pollution incident.

All spill contingencies for Milne Inlet must take into consideration the diverse elements that might define, simplify or even reduce the possibility of taking action. The harsh climate, the remoteness, transportation difficulties (for personnel and goods), limited availability of manpower in case of oil spills and the lack of infrastructure in case of a fire are all elements that can limit the response to take in this type of situation. Air transportation is the only transportation on a regular basis but weather conditions may not be favorable, rendering a quick response difficult.

In the preparation of this plan, existing documents relating to the site specifications (physical, natural and social conditions) have been utilized. In the preparation of the plan and related ERP, SCP,and SSRP, extensive consultations with local authorities have been undertaken, with the goal of a cooperative response as part of an important incident.

To specifically address the CSA and Oil Handling Facilities Standards, spill scenarios have been developed, taking into consideration among various factors the following:

(a) The nature of the oil product in respect of which the scenario is developed;

(b) The types of ships that are unloaded at the facility;

(c) The tides and currents that prevail at the facility;

(d) The meteorological conditions that prevail at the facility;

(e) The surrounding areas of environmental sensitivities that would likely be affected by an oil spill;

(f) The measures that will be implemented to minimize an oil pollution incident;

(g) The time within which an effective response to an oil pollution incident can be carried out.

Several priorities have also been identified among which include:

(a) The safety of the facility's personnel;

(b) The safety of the facility;

(c) The safety of the communities living adjacent to the facility; (hunting camps)

(d) The prevention of fire and explosion;

(e) The minimization of the oil pollution incident;

(f) The notification and reporting of the oil pollution incident;

(g) The environmental impact of the oil pollution incident;

(h) The requirements for cleaning up the oil pollution incident.

2.2.1 Response Time Standards

The operations and response structure at the Milne Inlet facility have been designed so that a rapid response to a spill incident can be carried out. All equipment and resources are strategically placed near the beach front, directly at the port operation site. Responders, workboats and other support equipment are on standby during all port operations. The deployment of equipment and resources required to contain and control the fuel, or where the fuel cannot be contained, to control the quantity of fuel involved in the incident, up to the minimum spill size of 3.5 m^3 as determined in accordance with section 2 of the Oil Handling Facilities Standards, shall be on site and deployed on scene within 1 hour after the discovery of the oil pollution incident, unless deployment would be unsafe.

The equipment and resources required to recover and clean up the fuel involved in the incident, up to the minimum spill size of 3.5 m^3 as determined in accordance with section 2 of the Oil Handling Facilities Standards shall be deployed on scene as soon as practical and effective, within 6 hours of the oil pollution incident.

2.2.2 On-Water Recovery

On water recovery of spilled product shall be initiated immediately upon containment of free floating product. The skimming capacity available at Milne inlet is capable of recovery of several times the required spill volume within the time standards after derating formula are applied.

2.2.3 Dedicated Facility Spill Response Equipment

The Milne Inlet Bulk Fuel Storage Facility has been equipped with appropriate spill response equipment which provides *resident capability* for the response to spills in accordance with the scenarios which have

been developed under this Oil Pollution Emergency Plan. Containment and recovery equipment inventories exceed the facility category planning standards and are appropriate for the potential spill volumes as outlined in the scenarios contained in the OPEP. Full details relating to specifics of the equipment can be found in Appendix D.

3 MILNE INLET STORAGE FACILITY

3.1 GENERAL OVERVIEW AND SITE DESCRIPTION

The Milne Inlet Fuel Storage Facility is situated on the north-eastern coast of Baffin Island (71° 52' 57" North, 80° 53' 51" West), approximately 131 km south-west of Pond Inlet. A site overview plan is presented in Appendix A.

3.2 FUEL STORAGE FACILITIES AND INFRASTRUCTURE

The Milne Inlet Bulk Fuel Storage Facility consists of a steel tank farm, similar to those found elsewhere in the Arctic region. A detailed site plan of the Bulk Fuel Storage Facility is provided in Appendix B. For the fuel sealift to be carried out during 2015 total tankage and capacities shall be as follows:

- 2 steel tanks of 5 ML ea,
- 4 steel tanks @ 12 ML ea. containing diesel, and
- 4 steel tanks of 750,000L each containing Jet-A fuel.

The tank farm located at Milne Port is 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 sump and 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. The secondary containment is designed to a capacity to contain the complete volume of the largest tank, as well as 10% of the volume of all the remaining tanks. The placement and configuration of the tank farm is detailed in the drawings provided in Appendix B of this plan.

The bulk fuel storage facility is connected to a shore receiving manifold by a 6 inch diameter steel pipeline. The pipeline is of welded construction. The pipeline is supported on appropriate stands and blocking. The pipeline is fully pressure tested and inspected each year prior to annual bulk cargo transfer operations.

Lighting is provided at the shore receiving manifold meeting the regulatory requirements of the Vessel Pollution and Dangerous Chemical Regulations, (SOR 2012-69). The bulk fuel facility is also equipped with lighting meeting the standards as set forth in the same regulation.

The bulk fuel tank farm is a “restricted area” as defined under the Marine Transportation Safety Regulation. The tank farm is fence and access to the facility is restricted to personnel authorized by Marine Facility Security Officer.

3.3 Milne Inlet Shoreline and Marine Characteristics

3.3.1 Shoreline Characteristics and Sensitive Zones

A 2007 coastal habitat survey was conducted to document coastal and nearshore habitats in the proposed development area. In that oil spills are a potential development issue, the survey extended several hundred kilometers from the proposed port sites so as to encompass habitats in the far field as well as the near field of the possible port sites.

Milne Inlet is a large fjord system off the western portion of Eclipse Sound. The most prominent coastal characteristic is the steep relief that creates dramatic backdrops for the comparatively small and inconspicuous shore zone. Steep rock cliffs plunge into the inlet at many locations. In other areas, talus slopes of approximately one hundred metres in height overlay narrow coarse sediment beaches. Bedrock controls much of the coastal orientation and morphology along the Milne Inlet shores with accretional beach deposits sandwiched between rock headlands. Extensive coastal rebound following deglaciation has created extensive areas of raised beach deposits 100m or more above present sea level. The raised beaches are unvegetated and form prominent coast-parallel lineations throughout the inlet.

The shoreline characteristics in the immediate Milne Port area are composed of varying percentages of rocky cliffs, beach ridge complexes and alluvial fans with a small percentage (1%) alluvial delta complexes present.

Rock cliffs without beaches occur throughout Milne Inlet. Slopes range from steep (>30º) to ramped. Cliff heights may be several hundred metres. Intertidal zone widths are less than 5m. Biological description shows narrow steep intertidal and nearshore tend to be bare of attached macrobiota.

Beach ridges are accretional features and typically contain well-sorted sediment (often pebble-cobble in Milne Inlet). Isostatic rebound results in these deposits being raised above sea level where they form elict beach ridge complexes. Intertidal zone widths are typically less than 30m. They are widely distributed throughout Milne Inlet and range from localized to extensive. Biological description shows Intertidal generally bare of attached macrobiota, due to sediment mobility. On boulder ridges or on bedrock outcrops, patchy algal assemblages were seen.

Alluvial fans are areas of till and glacial outwash. Backshore slopes are moderate and usually include a tundra vegetation cover. Associated intertidal areas are usually moderate to narrow coarse sediment beaches of boulder, cobble and pebble sand. Bounder ridging tends to be common. Biological description shows intertidal generally bare of attached macrobiota on mobile sediments. Some lower intertidal rockweed type algae associated with boulder ridges.

Baffinland Mines recognizes several sensitivities in the area and for planning purposes the shoreline at the facility and adjacent areas susceptible to impact from a spill have been divided into zones. In addition

to the information described below, a chart showing the geographical zones is presented in Appendix C of this plan.

Besides the Baffinland Camp, there is no permanently settled community or habitation. Some seasonal hunting camps are located in the bay just east of the Milne Facility.

Zone 1: Phillips Creek

Located just to the west of the boundary of the Milne Inlet camp is the outlet of Phillips Creek. This area is characterized as a small creek delta with shallow entrance and mud flats at low tide. In the event of a spill, diversion booming should be considered to minimize the migration of a spill onto the flats and shallow depth area in this zone.

Zone 2: Milne Facility Beach Zone

The Milne Facility Beach Zone encompasses an area of shoreline approximately 1600 meters in length, extending from the Milne Inlet camp western boundary eastwards. The type of shoreline through this zone is primarily sand to pebble/cobble beach and varies through the intertidal zone. This shoreline would be considered as porous, and where possible protective booming at recovery sites should be considered to limit intertidal zone contamination.

Water depths vary in the immediate area in front of the beach zone, however are considerably shallow close to shore. A 30 foot contour is noted at a distance of approximately 200 feet from shore where the depth of water increases very abruptly.

Zone 3: Milne Eastern Beach

At the eastern end of the Milne Beach, a second smaller bay like area extends eastwards over several hundred meters. This beach is also primarily sand to pebble/cobble beach and varies through the intertidal zone. This shoreline would be considered as porous, and where possible, protective booming at recovery sites should be considered to limit contamination. In addition, there are hunter's cabins present along this section of the beach and therefore present an additional sensitivity. Going eastwards, the beach turns in a northerly direction and the topography becomes steeper, characterized by a higher fiord like coastline with limited or no beaches.

Zone 4: Adjacent Areas

Based on the tanker mooring position, the port operations, and the prevailing winds, zones 1 through 3 present the highest probability of impact from spills. The remaining area and shoreline adjacent to the facility is largely characterized by higher relief fiord shorelines, primarily constituted of rock and are considered to be higher energy areas. Most often, response to spills impacting these shores could focus

on monitoring as booming and mechanical recovery may be difficult or impossible. In addition the net environment benefit for attempted restoration of these shores would be detrimental.

3.3.2 Bathymetric and Marine Data

Limited bathymetric and marine data is available at the Milne Inlet site. Chart 7212 covers most of the area; however data within the shallow beach areas is limited.

Marine Data, Milne Inlet

Tidal Corrections:	HW -1h07	LW -0h43 on Resolute (Z+4)
Range of Tide:	1.6m to 2.3m	
Harbour Chart no.	7212	
Approach Chart no.(s):	7566	
Tanker Anchorage Position:	71°53.4'N	080°54.5'W (East of Philips Creek)
Nature of the Bottom	Mud	

The marine environment at Milne Inlet is characterized as a sheltered waters environment. As has been noted at the site, the prevailing winds generally provide sea conditions of onshore waves, varying in height from flat calm to less than 1 meter in average winds of less than 30 km/hr. Bulk transfer procedures established by charterer preclude the transfer of bulk product when conditions become excessive, i.e. wave heights greater than approximately 0.7 M. This enhances the possibility of deploying pollution gear should an incident occur.

3.3.3 Meteorological Data

There is currently no Environment Canada meteorological station at Milne Inlet, the closest being Pond Inlet. Extensive data exists for Pond Inlet, and data has been collected over a shorter period of time at the Milne site.

Baffinland established an on-site meteorological station at Mary River Camp on June 13, 2005. The station has been collecting hourly data since being established, except for an interruption in the winter of 2005.

Two additional meteorological stations were installed by Baffinland in June 2006 at Milne Inlet and Steensby Inlet. These stations have the same sensors as the Mary River station.

The North Baffin region is located within the Northern Arctic Ecozone, as delineated in the National Ecological Framework for Canada (Agriculture and Agri-Food Canada, 2000). Northern Baffin Island has a semi-arid climate with relatively little precipitation. The region experiences near 24-hour darkness with

less than two hours of twilight from approximately November 12th to January 29th. During winter months (December to April), the treeless topography and fine powdery snow produce blowing snow conditions resulting in restricted visibility. Steam fog may occur in areas of open water, but does not persist more than a few miles downwind. Ice fog is infrequent, due to the lack of moisture in the air, but may occur more frequently if settlements become larger and sufficient moisture is added to the air through fuel combustion.

Frost-free conditions are short and occur from late June to late August. There is continuous sunshine from approximately May 5th to August 7th. The months of July and August bring maritime influences and are usually the wettest (snow may still occur). Fog increases at this time due to arrival of moist air from southern Canada.

During September to November, temperature and the number of daylight hours start to decrease, and by mid-October the mean daily temperature is well below 0°C. The highest amount of snowfall typically occurs during this period. A condition called “Arctic white out” often occurs during this time, where diffuse white clouds blend into the white snow-covered landscape, reducing visibility and increasing the likeliness of disorientation. This condition can also occur in April and May.

Marine operations are anticipated from early August through early October and this period of the year is the most favorable for shipping and the type of marine operations that will be carried out on site.

The meteorological factors most affecting spill recovery operations are wind and temperature. The major observations through data collected and baseline data from Pond Inlet show August and September mean monthly temperatures of 6.6 and minus 1.2°C respectively.

Data accumulated indicates that winds from the northeast occur most frequently (nearly 13% of the time), followed by winds from the north-northeast (about 12% of the time). The wind data indicates that “light air” conditions (0.3 to 1.6 m/s) occur most frequently at 23% of the time, followed by “light breeze” conditions (1.6 to 3.4 m/s), which occur 21% of the time. The data indicates that strong breezes (10.8 to 13.9 m/s) occur 6% of the time. Near gale winds (13.9 to 17.2 m/s) occur 2% of the time.

Precipitation is generally not an adverse factor during the operating period although August and September are among the wettest months of the year in this region.

3.3.4 Ice Conditions

Ice conditions at Milne Inlet have been studied in detail and are well documented. A final study and report on ice conditions and ship access to the Milne Inlet port site has been completed by Enfotec Technical Services. The purpose of this work is to update the summary of ice conditions and ship access along the approaches to the Milne Inlet projected port site. The analysis is based on historical ice conditions from 1983 to 2012 derived from ice charts and satellite imagery. Other data sources were used, including climatic data and technical or scientific publications covering sea ice and Arctic navigation.

Year-round conditions along the route to Milne Inlet were assessed, including potential shipping hazards. The average open water season is from August 5th to October 15th, resulting in a shipping window of 71 days. In the channels close to Milne Inlet (Pond Inlet, Milne Inlet, Navy Board Inlet and Eclipse Sound), a typical timeframe has been noted between the first signs of ice formation (October 14) and the consolidation into land fast ice over 30 cm thick (November 18).

By early June, ice begins to decay and clears away completely by the first days of August. At that time, drifting ice with inclusions of old ice can be expected, especially close to the entrance to Pond Inlet and Navy Board Inlet.

The impacts of climate change on Arctic sea ice were also considered in the Enfotech study. The report is in line with the scientific community as it recognizes that there is indeed a trend of decreasing seasonal ice cover over the Arctic. Nonetheless, changes in sea ice also bring additional challenges related to ice movement.

The final study has determined that the average open water season is from August 5th to October 15th (71 days). Bulk fuel transfer operations have been planned to coincide with the open water season accordingly. Ice is not anticipated to be an adverse factor affecting the bulk fuel transfer planned for Milne Inlet for the 2015 season.

4 SITE ACTIVITIES

4.1 BULK OIL TRANSFER, SHIP TO SHORE

Multiple bulk fuel transfers from ship to shore for 2015 are anticipated. It is anticipated that the total volume of the bulk fuel transfers shall be in the order of approximately 35-50 ML and will take place between the months of August through early October. The fuel transfers shall take place by means of either a single or double 4 inch floating hose with an approximate length of approximately 1000 meters deployed between the vessel and the connecting flange on the shore. The products are then transferred through the pipeline to the above mentioned bulk storage facility. A steel pipeline of 6" diameter connects between the shore manifold and the tank farm situated at approximately 465 meters from the shoreline.

The tides are not a major risk factor for this site. Wind force and direction are the dictating environmental factors during bulk transfer and criteria for acceptable conditions for discharge are outlined in cargo transfer procedures.

The ship to shore transfer operation at Milne Inlet is similar to other cargo discharge operations in the North and involves filling the shore tanks with two types of fuel (Jet A and ULSD (diesel)). It is expected that once cargo operations are underway, the ship will discharge at a rate of up to 149 m3/hour depending on the number of hoses used and also final obtainable pumping rate.

The tanks shall take varying times to fill, depending on which tank is filled and also the final pumping rates obtained. Accurate reconciliation of discharge & fill volumes through regular communication between ship & shore personnel is required to ensure the safe transfer of fuel and prevent any overfilling that could result in a spill.

The bulk transfer procedures are fully detailed in the standard operating procedure in Appendix E.

4.2 PORT OPERATIONS

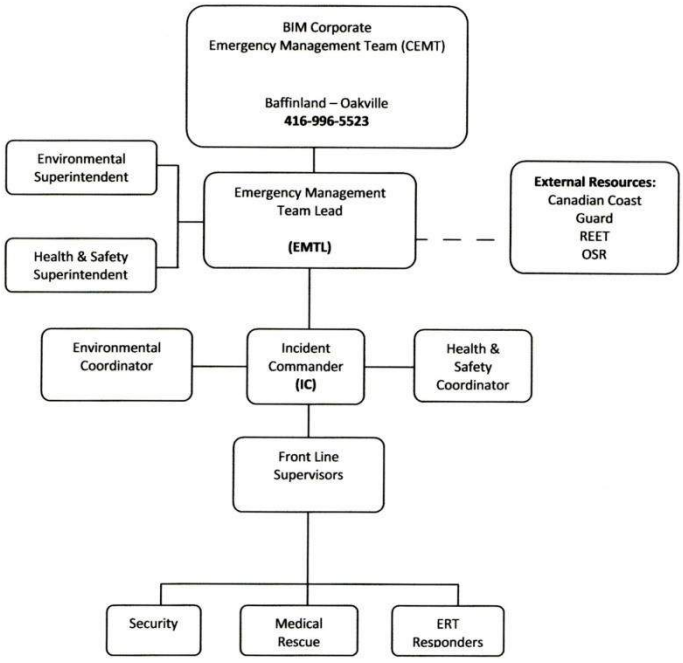
Other than the planned bulk fuel and transfers, no other port operations involving fuel are anticipated at Milne Inlet for the 2015 operating season.

Dry cargo sealift operations are anticipated to occur, however these will be separate from the operations of the bulk fuel facility and are not considered in this Oil Pollution Emergency Plan.

5 GENERAL BAFFINLAND IRON MINES RESPONSE TO EMERGENCIES

In order to effectively manage emergency response, BIM Operations has implemented a detailed emergency response structure that is applicable to all emergencies. This emergency response structure is fully outlined in the ERP and all spill response shall be in conformance with those procedures.

Milne Inlet – Marine Spill Response Organizational Chart



5.1 LEVELS OF SPILL RESPONSE EMERGENCY

Baffinland has adopted a generic classification system that includes three levels of emergencies. Each level of emergency, based on the significance of the event, requires varying degrees of response, effort and support. With emphasis on spills and releases the three response levels are as follows:

Level 1 (Low) – Minor accidental release of a deleterious substance with:

- No threat to public safety; and/or
- Negligible environmental impact to receiving environment.

Level 2 (Medium) – Major accidental release of a deleterious substance with:

- Some threat to public safety; and/or
- Moderate environmental impact to receiving environment

Level 3 (High) – Uncontrolled hazard which:

- Jeopardizes project personnel safety: and/or
- Significant environmental impacts to receiving environment

For spills, the level of emergency response to a given spill incident is based in part on the specific substance released, quantity spilled, the receiving environment that is potentially impacted, and human health risk. The level of response is also based on whether the location of the spill release is within engineered containment. The following matrix provides a working guideline for project personnel with regard to the level of response that is warranted for a specific spill release based on the above mentioned factors.

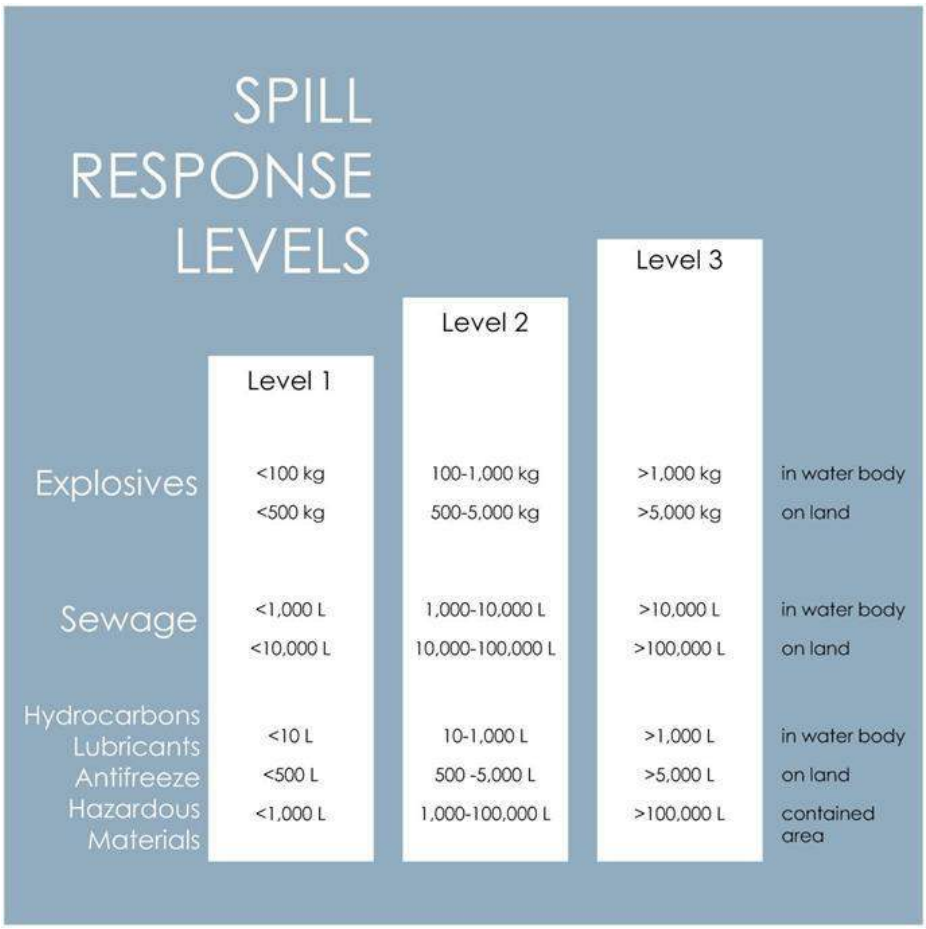


FIGURE 5-1: SPILL RESPONSE LEVELS

5.2 Incident Command Centre

The Incident Command Centre (CC) functions to provide a place for the coordination and direction of response efforts during an emergency. The main conference room in the Mary River site complex (MSC) is the primary CC for incidents occurring at Mary River. The conference room is also used for CC activities at the Milne Port site complex (PSC). Both CCs may be activated during a crisis emergency, or in response to an emergency along the tote road where both MRT respond. In this case, the Mary River CC will be the primary centre unless changed by the direction of the EMTL. An alternative CC can be designated by the EMTL should the primary location be unavailable due to the emergency. For those incidents where command centre must be established in Corporate Office, conference room #3 shall be designated for use.

5.2.1 Command Centre Equipment/Supplies

The CC has all the necessary tools for organizing response to an emergency - dispatching internal/external emergency services, directing strategic deployment of emergency resources and equipment, monitoring response efforts and establishing critical communications with the Baffinland Corporate Office.

The CC contains:

- The most current version of the Emergency Response Plan along with supporting response plans.
- Log book.
- Emergency site maps and current site plans (Appendix C)
- Site resources equipment list.
- Emergency contact information.
- Communications recording forms.
- CC attendance forms.
- 2-way radio communication (base station or handheld).
- Satellite Phone System.
- VOIP phone system.
- Network Connections.

5.3 Notification and Communication

5.3.1 Code 1 Notification

In order for an emergency response to occur, notification has to reach the Mine Rescue Team. This initial notification should occur quickly and provide essential information. Most often, the First Person On-Scene is the individual that provides this information.

An individual involved in, or witnessing, as First Person On-Scene, shall make every effort to quickly initiate the emergency “Code 1” notification procedure as follows:

1. Employ the site radio or call site Security at extension 6047 and announce:

"Code 1, Code 1, Code 1"

Nature of the emergency (Fire/Rescue, Medical, Environmental)

Location of the emergency

Your name

Pause and repeat

- Remain calm and in a safe location
- Stay on channel
- Give all requested information
- Follow instructions given by Security personnel

2. The site security department will initiate their Code 1 protocol, announcing Code 1 on the main radio channels and calling out the MRT and EMT.

5.3.2 COMMUNICATION

Effective communication systems are critical to the success of emergency responses. Personnel involved, from first person on scene to the IC and EMTL rely on the ability to quickly relay accurate information.

During an emergency, the primary communications link between all emergency response personnel is through radio communication. MRT members will be issued radios. Additionally, other individuals involved in emergency response will also carry hand-held radios as part of their regular work requirement.

During an emergency, radio communications should be kept to a minimum. If radio silence is requested on other channels, Security personnel, upon receiving instruction by the EMTL or IC will announce this. This ensures open and free communications among personnel involved in the actual response. For example, if resources have to be requested on any channel other than the designated emergency channel, then this request will be unaffected by other unnecessary conversation.

Additionally, only authorized persons are permitted to release the following information:

- Names of third parties who may have been involved in the incident.
- Identification of fatalities or injured personnel.
- Cause of the incident and liability; and
- Statements that may infer negligence.

During an emergency, other site radio channels may be used to:

- Locate MRT personnel.
- Obtain additional internal resources.
- Emergency notification.

- Evacuation of employees from work areas.
- Maintain communications with aircraft/marine vessels.

During an emergency, telephone communications will be used to:

- Notify internal personnel and resources.
- Notify external personnel and resources.

To supplement radio communications, the site telephone system may be used to alert site personnel during an emergency response. Communications links with the Corporate Emergency Management Team (CEMT) may also be required during some emergency situations. Constant communications links will be established by telephone where offsite assistance is required.

5.4 Equipment and Personal Protection

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.

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. A complete list of spill response equipment is found in Appendix D of this plan.

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 marine support boat are available to aid in spill response and recovery efforts.

6 ROLES AND RESPONSIBILITES

6.1 EMERGENCY MANAGEMENT TEAM LEAD

The Emergency Management Team Lead (EMTL) will be the most senior operations manager present at the site where the emergency is declared. At the Mary River site, the Vice-President Operations, or designate will be the EMTL. At Milne Port, the EMTL will be the most senior operations manager at the site. Where an emergency occurs on the tote road, where both sites direct MRT resources, both command centres shall be established, with control provided by the Mary River EMTL.

Duties during an Emergency

- The EMTL will ensure coordination of MRT support systems from the CC.
- Upon being notified of a Code 1 or a Level II or III emergency by the IC or Security, the EMTL will initiate activities in the CC and assess the situation based on current information from the IC.
- Activate the CC system and escalate according to severity of incident.
- Coordinate all activities in the CC. In the event the EMTL leaves the CC, the EMTL will designate an individual to coordinate the CC, notifying the IC.
- Ensure that the appropriate area manager(s) has been notified.
- Provide internal notification as applicable based on the level of emergency.
- Notify the Corporate Emergency Management Team (CEMT) representative for level II or III emergencies.
- Provide instruction to ensure that appropriate External Resources are notified.
- Receive information from the IC and ensure appropriate resources are made available.
- Ensure a Log Keeper is present in the CC at all times to maintain a log of all events, actions and outcomes.

Duties Post Emergency

- Notify site personnel and CEMT of the “all clear”.
- Ensure the coordination and establishment of an emergency debriefing session.
- Review CC incident log and post response incident report.
- Post incident debrief with IC.
- Provide necessary information to Corporate Affairs for a media statement release if required.
- Complete a report on the events surrounding the incident.
- Coordinate collection of all incident notes, reports, statements and log of events.
- Ensure the responsible department completes an investigation into the event.

6.2 INCIDENT COMMANDER

The Emergency Response Team (ERT) Trainer is the site lead administrator for the MRT, responsible for ensuring the necessary emergency response equipment and adequate level of training for ERT members. The ERT Trainer directs the Mine Rescue Team (MRT) at the scene but reports to the EMTL at the CC. In the absence of the ERT Trainer, the Mine Rescue Captain will be designated as the IC. The following duties are performed by the IC at an emergency scene:

Duties during an Emergency

- Upon being notified of an emergency, the IC will:
- Immediately report to the Emergency Response Building and brief team members.
- Report to the scene of the emergency.
- Take charge of the scene.
- Evaluate the details of the emergency as presented by the first person on-scene. Assess the immediate situation, confirm the level of emergency and notify the Emergency Management Team Lead (EMTL) via radio.
- Maintain contact with the EMTL and provide support in coordination of the response.
- Request internal/external resources to the EMTL as required.
- Advise MRT on aspects of internal/external support as they are received.
- Obtain results of muster station head counts and direct the MRT accordingly to ensure full evacuation.

Duties Post Emergency

- Account for all MRT members.
- Announce the 'all clear' to the EMTL when the emergency has ended.
- Inform external resources that the emergency has ended (if external resources were mobilized during the emergency).
- Lead the emergency debriefing session.
- Ensure that all ERT equipment is returned to original order and/or replaced to ensure future rapid response.
- Develop a written log of events indicating instructions given, action taken and outcomes achieved.
- Provide assistance with ongoing investigation.
- Prepare a written report on response activities.

6.3 Health and Safety Coordinator

Duties during an Emergency

- Respond to the scene and make direct contact with the IC
- Establish perimeters around the area of the emergency and direct appropriate resource personnel responsible for traffic flow
- Assist with identifying and assessment of potential hazards of the MRT response and notify the IC
- Carries out field safety duties as assigned by the IC, including surveillance of activities such as general field activities, entries into "hot" zones, identification of health safety equipment needs, etc.
- Ensure appropriate personal protective equipment for involved non MRT personnel
- Note pertinent information that may be relative to the investigation.
- Maintain a log record of first responders entering and exiting the “hot zone” and time in the zone. All logged information will be given to the IC.

Duties Post Emergency

- Secure the area with red "DANGER" tape and sufficient tags. Post guards if necessary.
- Participate in post-emergency debriefing.
- Assist in the accident/incident investigation report.

6.4 Environmental Coordinator

In the event of an environmental incident involving accidental release of a hazardous substance, the Environmental Coordinator shall liaise with IC to direct environmental response efforts once the scene has been assessed by the IC and all medical and/or fire emergencies are under control.

Duties during an Emergency

- Proceed to the scene of the incident as directed by the EMTL or IC
- Coordinate internal resources during spill clean-up.
- Request additional resources through the IC as necessary.
- Maintain a log of events, actions, and outcomes.

Duties Post Emergency

- Secure the area with red "DANGER" tape and sufficient tags. Post guards if necessary.
- Participate in post-emergency debriefing.
- Assist in the accident/incident investigation report.

6.5 SECURITY

Security personnel or their designate are key in an emergency response in that they will receive an initial notification of an emergency and provide first communications to essential personnel.

Duties during an Emergency

- Receive initial emergency call and document vital information used to plan response. All logged information will be given to the IC.
- Provide appropriate notification of the MRT, IC, EMTL and medical response personnel.
- If evacuation is necessary, notify all PSC or MSC personnel of emergency evacuation.
- Assist in controlling access to the emergency area.
- Maintain open radio communication (via radio or telephone intercom system).
- Keep a written record of events throughout incident.
- Assist in the coordination of support and internal services as directed by the EMTL and IC.
- Document all actions, decisions and communications.

Duties Post Emergency

- Relay notification of 'all clear" order when directed by IC
- Provide a summary of all documentation to the IC and EMTL.
- Maintain Security of the scene as directed by the IC or EMTL.
- Direct all off-site inquiries regarding the emergency to the EMTL or designate.
- Participate in a debriefing session for the emergency response.

6.6 EMERGENCY MANAGEMENT TEAM

Duties during an Emergency

- Upon notification of a Level II or III emergency report to the CC.
- Work closely with the EMTL to determine appropriate response strategy for their respective work area.
- Provide supplies and resources as requested by the EMTL.
- Contact departmental resources via radio as required during the emergency response.
- Confirm that effective evacuation of the work area occurred.
- Confirm that the shift supervisor has contacted the IC.

Duties Post Emergency

- Participate in an emergency debriefing session.
- Review recommendations from the accident/incident investigation.

- Ensures follow up on remedial action to prevent or mitigate possibility of reoccurrence of emergency.

6.7 Environment Superintendent

Duties during Emergency

- For Level II and III emergencies report to the CC.
- At the direction of the EMTL, notify the required external agencies.
- Provide additional supplies and resources as requested by the EMTL
- Contact departmental resources via radio as required during the emergency response.
- Document all actions and decisions.

Duties Post-Emergency

- Participate in post-emergency debriefing.
- Assist in the accident/incident investigation process.
- Complete Government and Stakeholder Agencies notification process.

6.8 Health and Safety Superintendent

Duties during Emergency

- For Level II and III emergencies report to the CC.
- At the order of the EMTL, notify the required external agencies.
- Provide additional supplies and resources as requested by the EMTL
- Contact departmental resources via radio as required during the emergency response.
- Document all actions and decisions.

Duties Post-Emergency

- Participate in post-emergency debriefing.
- Assist in the accident/incident investigation process.
- Complete Government Agencies notification process.

6.9 Front – Line Supervisors

Duties during an Emergency

- Pre-investigate alarms if in work structure without harm to self, activate “Code 1” if necessary
- Ensure evacuation or stand down of their work area.
- Assist to ensure accountability of evacuees at muster station.

- Report to supervisor and identify self and location, acting as a direct resource to the EMT as requested.
- Ensure restricted access allowing only authorized personnel.
- Direct the isolation, de-energizing and lock-out of systems if required.

Duties Post Emergency

- Confirm that work area is safe to return to after an "all clear" has been called by the IC.
- Ensure that area of incident is secure until all investigations are completed.
- Participate in an emergency debriefing session.
- Ensure that the incident investigation is completed.

6.10 Medical Personnel

Medical personnel will consist of the physician assistant and/or emergency medical technician provided by the contracted medical services provider. Responsibilities in the event of an emergency include:

Duties during an Emergency

- Respond to all Code 1's as directed by the IC.
- Responsible for all decisions of medical-related situations on site.
- Act as team leader to the MRT during medical emergencies.
- Assess, administer and delegate emergency medical care.
- Advise the IC of the number and condition of ill/injured personnel.
- Advise the EMTL of off-site resources that may be required, contact their Medical Director for direction, and if agreed contact these off-site resources (eg. Medi-vac, Iqaluit hospital, etc.)
- Maintain a log of events, actions and outcomes.

Duties Post-Emergency

- Participate in an emergency debriefing session.

6.11 Muster Station Coordinator

During an evacuation of any area that is designated to evacuate the senior Human Resources department member will assume the role of Muster Station Coordinator role. This position will be responsible for:

Duties during Emergency

- Provide direction (traffic control) for workers and visitors to find the muster station
- Direct supervisors in the muster station to document the names of employees reporting to them and located in the muster station

- Documents the names of workers and visitors with no supervisor in the muster station
- Relay missing person's name, room number, or work area to IC.
- Log time of events at muster station.

Duties Post-Emergency

- Notify evacuees once the "all clear" has been called to return to work or accommodations.

6.12 EMPLOYEES

Employees perform an integral part of emergency response because often times they are the first to witness an incident and provide initial reporting that an emergency has occurred.

Any person involved in, or witnessing an incident should follow the emergency notification procedure and immediately initiate a required emergency response.

- As first person on the scene and after notifying that an incident has occurred, attempt to provide as much information as possible to assist in the initial response (e.g. type of incident, number of people injured and location).
- Assess and attempt to control the scene only without causing self-harm or harm to others.
- Upon hearing a site fire alarm, proceed to the designated muster area and await instruction from security personnel.
- Cooperate with instruction and assist only when requested.

7 GENERAL SPILL PROCEDURES

The response to spills begins immediately when the spill has been detected. In all cases immediately upon detection of a spill, all transfer operations are to be shut down and not restarted in any manner that would interfere with the immediate, effective and sustained response to the oil pollution incident.

This plan clearly outlines the notification procedure and the roles and responsibilities of the management and spill response team. All emergency telephone numbers are clearly listed and the persons are contacted as needed and according to the priority of the incident. The contact list is included in Table-1-1.

The response team, following a spill, must ensure that personnel safety is their first priority. First and foremost evaluate the risks as quickly as possible to guarantee that appropriate measures are taken to prevent or reduce the risk of injury to personnel, to avoid fire or explosion, to protect property and to minimize the damage to the environment. It is important to contain the oil slick or to start cleaning up as quickly as possible to stop the spill from contaminating a greater area.

As outlined in section 3.2 of this plan, two products are received at the facility. Both products, JET A1 and ULTRA LOW SULPHUR DIESEL (ULSD) are classified as non-persistent combustible hydrocarbons and will behave in a similar fashion if spilled.

The response to a spill of any of these products shall be carried out in the same fashion. Full details of the properties and hazards associated with these products are found on the Material Safety Data Sheets (MSDS) in Appendix H at the end of this plan.

The products are of relative low viscosity, are clear to yellow in color and will float readily when spilled. It should be anticipated that any spillage will rapidly spread when spilled and a high rate of evaporation will occur. Wind and tidal current will be the most important factor in promoting the spread of the product on the water surface.

When responding to spills, all procedures and safety methods in handling these products must be observed. The following specific measures must be followed with distillate spilled on water or on land:

Take personal protective safety measures. Personal protective equipment must be worn at all times during response operations.

Close all electrical sources.

Take all appropriate measures to ensure personnel safety and the safety of the facility.

Request help to control personnel access, vehicles and close the area. Never enter inside and/or within the radius of the contaminated area. Have a fire extinguisher close by. If a fire starts extinguish the fire only if it is safe for you and that you were trained to do so without exposing yourself to unnecessary risks.

Through the marine spill training initiative, all spill response personnel will be fully briefed on the procedures to be followed to report a spill and initiate spill response. The first person to notice a spill will take 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 Notify the Front Line Supervisor, who will initiate the spill response operations;
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.

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

Cease Transfer Operations - In all cases immediately upon detection of a spill, all transfer operations are to be shut down and not restarted in any manner that would interfere with the immediate, effective and sustained response to the oil pollution incident.

Source Control - Reduce or stop the flow of product without endangering anyone. This may involve very simple actions such as closing shore valves, sealing a puncture hole with almost anything handy (e.g., a rag, a piece of wood, tape, etc.), raising a leaky or discharging hose at a level higher than the product level inside the tank.

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). Deployment of floating booms to contain a marine spill should be carried out by the spill response team as soon as safe and practical.

Protection - Evaluate the potential dangers of the spill in order to protect sensitive ecosystems and natural resources. Block or divert the spilled material away from sensitive areas where possible.

Clean up the Spill – Recover and containerize as much free product as possible. Recover contaminated soil, and water. 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, 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 in section 7.3 of this plan.

Specific spill response techniques, operations, equipment and materials are part of the comprehensive scenarios as outlined in section 8 of this plan.

7.1 HEALTH AND SAFETY

Baffinland Iron Mines Corporation and its senior management are committed to ensuring the health, safety and welfare of its employees, contractors and visitors. As a consequence of this, Baffinland Iron Mines requires all personnel to regard accident prevention and working safely as a collective individual responsibility.

Baffinland Iron Mines Corporation conducts all site activities in accordance with all applicable Federal and Territorial health and safety regulations. The following applicable health and safety regulations apply to the activities described in this Oil Pollution Emergency Plan:

Northwest Territories, Nunavut Worker's Compensation Act - Provides the territorial legislation covering the health and safety of workers in Nunavut

Mine Health and Safety Act and Regulations (Nunavut) - Provides specific health and safety guidelines for mines operating in Nunavut. Section 2(1) - Duties and Responsibilities (the Owner)

Canada Labour Code Part II – Provides Federal regulations for the health and safety of workers involved in shipping and marine port operations

Baffinland Iron Mines requires and provides WHMIS training for all employees and contractors at the Milne Inlet and Mary River sites. Mines Health & Safety Act & Regulations : Part VI Regs. Training 6.03

It is also a requirement for supervisory personnel to hold level 1 or level 2 certification as required by the Mine Health and Safety Act. Mines Health & safety Act & Regulations : Part V Regs. Supervision

Comprehensive general training is provided to spill responders throughout the site in relation to inland spills. In addition, specific training with relation to safety during response to marine spills is provided to all responders through Baffinland's marine spill training program. All responders who are involved in marine operations shall participate in the training as outlined in section 9 of this Oil Pollution Emergency Plan.

7.1.1 PERSONAL PROTECTIVE EQUIPMENT (PPE) – REQUIREMENTS

For all responders, personal protective equipment requirements shall be as follows:

Milne Inlet Site Support Services: (non-water operations, no contact with spilled product)

- Hard Hat
- CSA approved work boots
- Safety glasses
- Leather work gloves
- Hi-Viz Jacket or Vest

Milne Inlet Site Support Services: (non-water operations, possible contact with spilled product)

- Hard Hat
- CSA approved work boots
- Safety glasses or goggles
- Hi-Viz Jacket or vests (if not wearing rain wear)
- PVC rain suit
- Nitrile work gloves

Workboat and shoreline responders: (beach or on-water operations, possible contact with spilled product)

- Hard Hat
- CSA approved work boots
- Safety glasses or goggles
- PVC rain suit
- Nitrile work gloves
- Approved personal flotation device
- Workboat operator in exposure suit
- Workers working near the sides of the workboat wearing dry suits
- Stand by rescue team in dry suits with a response craft

7.2 Coordination with Canadian Coast Guard and other Governmental agencies

7.2.1 Canadian Coast Guard

The response to spills at the Milne Inlet site shall be managed in coordination with the Canadian Coast Guard who is the lead response agency north of 60°.

The *Central & Arctic Regional Response Plan (2008)* and the *Baffin Region, Nunavut Area Plan* outline the Canadian Coast Guard's response capability for the Baffin region. This plan is a component 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 the procedures by which Central & Arctic Region will prepare for, assess, respond to and document actions taken in response to pollution incidents in this Region. This capability and the information contained in the Coast Guard plans are considered a valuable resource in the planning and response to spills at the Milne Inlet Bulk Fuel Storage Facility.

7.2.2 Environment Canada – National Environmental Emergencies Centre

The Canadian Coast Guard (lead agency) with primary jurisdiction for the spill oversees and monitors response and recovery efforts by the responsible party and further, may request that Environment Canada

provide scientific and technical advice to inform response actions that will reduce the environmental impact of the spill. Additionally, Environment Canada has legislative responsibility to address pollution incidents that impact federally managed resources such as fish and wildlife under the Fisheries Act and the Migratory Birds Convention Act, as well as hazardous substances regulated by the Environmental Emergency Regulations. Environment Canada may issue directions under its legislative mandate if the environment is not being adequately protected and, when warranted take over the lead agency role.

In the event of a polluting incident that requires Environment Canada's involvement, the National Environmental Emergencies Centre (NEEC) is Environment Canada's focal point for the provision of scientific advice, such as weather forecast, contaminant dispersion and trajectory modeling, fate and behavior of hazardous substances, the establishment of clean-up priorities and techniques, as well as the protection of sensitive ecosystems and wildlife such as migratory birds and fish. Environment Canada's Emergency officers have Hazardous Materials (HAZMAT) expertise which enables response in the event of spills involving hazardous materials.

7.2.3 Other Governmental Agencies

At all times, the response to spill incidents shall be coordinated with the various agencies as listed in Figure 5-1.

7.3 Reporting Requirements

Three individual reporting requirements are applicable in the case of all spills that occur at the Bulk Fuel Storage Facility. Procedures for each are outlined herewith:

7.3.1 Canadian Coast Guard Reporting Requirements

All spills of a marine nature will be reported to the Canadian Coast Guard (Central and Arctic region) 1-800-265-0237 (24-hour). The fax number for transmission of the written report is (519) 337-2498.

Reporting of marine spills shall be in accordance with Transport Canada Guideline TP- 9834E, "Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and /or Marine Pollutants". Detailed harmful substances report requirements are outlined in Appendix A-2 of the guideline, a copy of which is included in Appendix I of this plan.

7.3.2 Reporting to Transport Canada

The Vessel Pollution and Dangerous Chemical Regulations, (SOR 2012-69) require that any spills be reported to the nearest office of Transport Canada as follows:

Jaideep Johar
Manager, Technical services
Transport Canada, Marine Safety.
Prairie and Northern Region

Marine Safety, Tel: 204 984 8618
Cell: 204 880 0754,Email:joharj@tc.gc.ca

Craig D. Miller
Manager, Marine Safety (PNR)
Transport Canada
Box 8550, 344 Edmonton Street, Winnipeg, MB, R3C 0P6
Email: craig.miller@tc.gc.ca
Telephone (204) 984-0397 / Facsimile, (204) 984-8417

Reporting of marine spills shall be in accordance with Transport Canada Guideline TP- 9834E, "Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and /or Marine Pollutants". Detailed harmful substances report requirements are outlined in Appendix A-2 of the guideline, a copy of which is included in Appendix I of this plan.

7.3.3 Government of Nunavut Reporting Requirements

Quantities of hazardous substances spilled that require reporting are listed in Schedule B of the Nunavut Spill Contingency and Reporting Regulation. After the initial field emergency response to the spill event, a spill report is filled out and reported to the 24-hour Spill Report Line:

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 (QIA) 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 Environmental Superintendent on behalf of the Operations Manager to prepare the proper reports and transmit them to regulatory authorities. The Environmental Superintendent will determine on a spill by spill basis whom in addition to those above, should be contacted.

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 notify the subcontractor that a spill report must be made under its responsibility.

7.4 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.
- 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 administered in such a way as 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 that live oiled wildlife are dealt with humanely, capture and handling of wildlife shall only be done by trained 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 Canadian Wildlife Services (CWS) will be consulted to determine the most humane treatment strategy to be implemented for live oiled wildlife, whether to rehabilitate or euthanize.

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. 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 7-1.

TABLE 7-1: 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

7.5 TREATMENT AND DISPOSAL

Plastic ore sacks, steel drums, or other appropriate containers as approved by the Environmental Supervisor 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 Baffinland's landfarm at Milne Port (hydrocarbon based spills, sewage spills). Contaminated soil resulting from the spill of other hazardous chemicals will be treated as a hazardous waste and shipped to a licensed facility for treatment and disposal (refer to: Waste Management Plan). Temporary storage of contaminated materials is within lined berms. Used sorbent material is burned in the site incinerators as per incinerator standard operating procedures.

8 SPILL SCENARIOS AND RESPONSE STRATEGIES

Baffinland Iron Mines plans for spills response at the Milne Inlet Bulk Fuel Facility using an analysis of possible spill scenarios. The potential incident analysis is based on real projected operations, and potential quantities spilled are based on pumping rates and estimated times to halt pumping operations.

In the development of the scenarios the following constant factors have been applied:

- The type of ship that is employed for the bulk fuel delivery is a conventional double hulled, multi-compartment petroleum tanker, between 120 to 135 meters in length. The tanker is anchored at a safe distance from the Milne Inlet beach head and approximately 1000 meters of floating hose is deployed between ship and shore.
- As outlined in section 3.2 of this plan, two products are received at the facility. Both products, JET A1 and ULTRA LOW SULPHUR DIESEL (ULSD) are classified as non-persistent combustible hydrocarbons and will behave in a similar fashion if spilled. The response to a spill of either of these products shall be carried out in the same fashion. Full details of the properties and hazards associated with these products are found on the Material Safety Data Sheets (MSDS) in Appendix H at the end of this plan.
- All products are of relative low viscosity, are clear to yellow in color and will float readily when spilled. It should be anticipated that any spillage will rapidly spread when spilled and a high rate of evaporation will occur. Wind and tidal current will be the most important factor in promoting the spread of the product on the water surface.
- Where environmental sensitivities are mentioned in the scenarios, these relate to the sensitivity zones as outlined in Appendix C of this plan.
- Local topography plays an important part in wind direction and force, but it is generally noted at the Milne site that the most common wind direction is from the east to north east. Average wind speeds at the Milne site for this period between 15 and 20 km/hr have been observed. Considering this prevailing wind it is most often probable that any spillage will move towards the zone 1 area of Phillips Creek.
- As is indicated in the plan, upon discovery of spillage of any sort pumping operations are ceased. General response time limits should be observed for each action as follows:

    - *Deployment of containment boom*: 0-1 hr following the spillage event.
    - *Deployment of skimming equipment*: 0-6 hours following the spillage event

During ship to shore discharge of the product, the floating hose is inspected on a regular basis by boat. 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 vessel. Furthermore, there is a pressure alarm installed on the pipeline during discharge to validate the system. Any leak or malfunction and resulting drop in line pressure would trigger the alarm. In addition a visual gauge is installed at the manifold and regular pressure monitoring is carried

out by the manifold watchman. The pipeline is inspected visually and regularly by walking alongside of it. Once a year the pipeline is tested as part of annual maintenance (pressure test).

All spills within the tank farm zone would be retained within the bermed area. During the filling of the tanks (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 7 above have 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.

Detailed scenarios are as follows:

8.1 During Ship to Shore Transfer

Source of discharge	Potential loss*	Appropriate actions	Resources required
Coupling or hose break / malfunction at the ship's manifold	20 – 600 litres	1: Deploy containment boom as required to control migration of spill. Consideration of protection booming of beach front, protective booming of hunter's camps to east of manifold, and Phillips Creek west of manifold depending on wind direction, tides and marine conditions present. Typical deployment lengths of 50 meters are anticipated for this task. (Multiple lengths should be used when required) 2: Deploy skimmer and recover spill 3: Final recovery of spill using sorbents if necessary 4: Monitor any free floating oil that is unable to be contained 5: Notifications of local authorities	Boat – Baffinland near shore workboat - 3 responders Boom – 100 meters and accessories, additional booms if necessary to provide shoreline protection Shore crew to deploy from container – 3 responders
Coupling leaking or hose rupture along length of	20 – 3500 litres	1: Deploy containment boom to control migration of spill.	

hose between ship and shore manifold		Consideration of protection booming of beach front, protective booming of hunter's camps to east of manifold, and Phillips Creek west of manifold depending on wind direction, tides and marine conditions present. Typical deployment lengths of 50 meters are anticipated for this task. (Multiple lengths should be used when required) 2: Deploy skimmer and recover spill 3: Final recovery of spill using sorbents if necessary 4: Monitor any free floating oil that is unable to be contained 5: Notifications of local authorities	Boat – Baffinland near shore workboat - 3 responders Boom – 100 meters and accessories, additional booms if necessary to provide shoreline protection Shore crew to deploy from container – 3 responders
Leak at shore manifold connection	20 - 600 litres	1: Deploy containment boom to control migration of spill. Typical deployment lengths of 50 meters are anticipated for this task. (Multiple lengths should be used when required) 2: Deploy skimmer and recover spill 3: Final recovery of spill using sorbents if necessary 4: Monitor any free floating oil that is unable to be contained 5: Notifications of local authorities	Same marine response, shore based response deploy berms and sorbents 3 additional shore responders Milne inlet site services group

8.2 PIPELINE OR ALONG SHORE BASED HOSE LENGTH

Source of discharge	Potential loss*	Appropriate actions	Resources required
Failure of flange or coupling Vehicle Accident involving pipeline or shore based hose length	20-3500 litres	***Land spill only:*** 1: Immediately install portable berms under leaking or damaged line where possible. 2: If portable berms are not feasible, contain and recover oil spill using dykes or trenches 3: Prevent the oil from reaching natural drainage paths leading to the ocean. 4: Collect free-product for temporary storage. Excavate contaminated soil, store and manage appropriately ***Marine response if necessary***: 1: Deploy containment boom to control migration of spill. Consideration of protection booming of beach front, protective booming of hunter's camps to east of manifold, and Phillips Creek west of manifold depending on wind direction, tides and marine conditions present. Typical deployment lengths of 50 meters are anticipated for this task. (Multiple lengths should be used when required) 2: Deploy skimmer and recover spill 3: Final recovery of spill using sorbents if necessary 4: Monitor any free floating oil that is unable to be contained 5: Notifications of local authorities	

8.3 TANK FARM

The tank farm located at Milne Port is 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 sump and 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. The secondary containment is designed to a capacity to contain the complete volume of the largest tank, as well as 10% of the volume of all the remaining tanks. The placement and configuration of the tank farm is detailed in the drawings provided in Appendix B of this plan.

Source of discharge	Potential loss*	Appropriate actions	Resources required
Leaking Tank or piping/valves	20-500 litres	Isolate and patch accordingly, berm or portable berms	Patch kits/ portable berms Response by Milne Inlet site services Recover free products with sorbents Berm designed with fuel recovery to sump and engineered oil water separator

*** Potential loss estimated based on pumping rate and anticipated response time to shut down pumping operations**

8.4 RESPONSE STRATEGIES – LARGE SPILLS

For the purposes of this plan, spills less than 3.5 m^3 are to be handled by Milne Inlet response operations. Milne Inlet personnel shall deploy the resident on-site equipment as outlined in the plan.

If the spill is larger than 3.5 m^3 and depending on the specific circumstances, the On-Site Coordinator shall determine if it is necessary to increase the response capability by requesting 3rd party assistance.

9 PREVENTIVE MEASURES

It is Baffinland Iron Mines policy to prevent any accidental spillage and all prior efforts are made to minimize the risk of incidents and impact to the environment. Baffinland constantly updates the facility, has adequate safety equipment at the site and provides comprehensive training to its employees, contractors and visitors with the goal of avoiding spills and to minimize their impact if they should occur.

Furthermore, Baffinland Mines has established standard operating procedure in relation to the bulk fuel transfer – (Appendix E), that provides safeguards and immediate alarm in the event of failures during the operation.

9.1 TRAINING - GENERAL

Baffinland Iron Mines ensures that personnel involved during a response receive training for their own safety, public safety, and that they have the required skills to minimize the impact of a spill on the environment.

The personnel directly linked to spill response operations will receive training to familiarize themselves with the environmental emergency plan. These personnel will also reexamine the manual of the Environmental Emergency Plan on a yearly basis according to their duties and responsibilities. All training is recorded in the training register and kept up to date in the Oil Pollution Emergency Plan binder.

The personnel directly linked to spill response operations, contract employees and the other responders identified in the environmental emergency plan should take part in the yearly training program. It shall be ensured that training is carried out to ensure adequate numbers of responders at all levels are available on both work shifts.

All workboat operators and crews shall possess a Pleasure Craft Operator Competency Card.

9.1.1 TRAINING CONTENT

Spill training shall be provided on site prior to transfer operations for all personnel to be involved in the management and response to possible spills.

Baffinland Iron Mines on site Incident Commander shall possess spill management training to a level commensurate to the duties required of the position.

Responder training is to be of a combined theoretical presentation (classroom) and also of a hands on nature (equipment deployment exercise).

The major components of this training program shall include:

Classroom Training:

- Introduction and overview of marine spill response
- Review of Baffinland general spill response plan and integration of same to marine response
- Review of Marine Oil Pollution Emergency Plan elements
- Short review of oil spill behavior and operational parameters / limitations for marine spill response operations
- Spill assessment
- Basic safety for spill responders to marine oil spills, presentation of video – small craft safety practices
- Basic oil boom deployment, presentation of video and booming techniques / guidelines
- Marine and shoreline recovery operations

Hands on Training and Deployments:

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

9.1.2 Short Notice Training

In the event of a large spill the personnel requirements may exceed those that have received the specific responder training as outlined in section 9.1.1 above. Due to the remoteness of the site, volunteers are not anticipated. Milne Inlet site services personnel shall be employed as additional responders.

Although all site services personnel possess WHMIS training additional short notice training shall be carried out for these new responders on an as needed basis. Certain modules of the responder training shall be delivered on site to these personnel selected specifically from the training outlined in section 9.1.1 above. The Incident Commander shall determine which modules are pertinent to each group of additional responders and shall be responsible for assuring adequate training for each group.

9.2 Exercises

Following the annual delivery of the spill training as outlined in section 7.1 a comprehensive spill exercise shall be undertaken. The exercise is structured to test the readiness of management, responders and to practice and validate the logistics of the deployment of spill gear. The exercise content shall be different from year to year so that it can validate the various elements of the plan and the response over a three year period. Some of the factors that shall be evaluated include but are not limited to:

- Activation of the emergency plan

- Management response
- Site safety
- Communications
- Equipment deployment to a specific scenario
- Reporting and co-ordination with outside agencies
- Exercise coordination with Canadian Coast Guard
- Exercise coordination with ship

9.3 Spill Prevention Measures

9.3.1 Bulk Fuel Facility:

Normal operation procedures of Baffinland Iron Mines include many inspections which are performed regularly and kept on records. Any discrepancies noted are documented and investigated. Corrective measures are then applied.

9.3.2 Bulk Fuel Transfer:

Several preventive measures are in place to minimize risk of spills during bulk fuel transfer including:

- The bulk fuel storage facility, pipeline and all related equipment and infrastructures are inspected prior to the bulk cargo transfer and the inspection methods are documented as a standard operating procedure
- Complete bulk cargo transfer procedures have been established, a copy of which is found in Appendix E of this OPEP
- As required by the applicable legislation the ship has a comprehensive Shipboard Oil Pollution Emergency Plan (SOPEP) and a copy of this plan has been reviewed by Baffinland Mines
- In addition to the legislative requirements, the charterer has implemented a shipboard spill response training program and performs routine exercises in spill response operations
- The ship carries a compliment of spill response equipment as listed in Appendix F of the OPEP and this equipment is ready at the ship's rail at all times for deployment during cargo operations
- Baffinland Mines oil spill response equipment is on the beach, ready for immediate deployment at all times during cargo operations
- The workboats and trained responders are available at all times during cargo operations for spill equipment deployment
- Standard transfer procedures include inspections every four (4) hours by workboat of the floating hose for leaks or defects
- During transfer operations the shore manifold is manned at all times
- A low pressure alarm is installed at the shore manifold which is highly sensitive to differences in pressure during pumping. Any loss in the system will cause a drop in manifold pressure and results in an audible alarm which is immediately reported by the manifold personnel
- The tank farm is monitored at all times by Baffinland personnel during the transfer
- The pipeline is inspected hourly on foot during the transfer operation

9.4 Response Equipment Auditing

As part of the annual exercise program, a scenario based deployment of spill gear is carried out. Prior to the exercise all gear is inspected, its condition is evaluated and any defects or missing equipment is replaced. The equipment audit is documented in the training register in Appendix G.

9.5 Oil Pollution Response Plan Updates

The Oil Pollution Emergency Plan (OPEP) will be scrutinized at least once a year to take into consideration any amendments of the legislation, new characteristics of the site, the equipment on site, new policies of the company, environmental issues and also new staff and particulars of team members. Furthermore following an exercise or an incident, the OPEP will be evaluated and modified accordingly.

Even if there is no change to be brought to the OPEP it will be updated at least once a year. The corrected version of the plan will then be sent to the responsible person on site to ensure that the team at the site always has an updated version of the plan in case their intervention is needed.

9.5.1 Update Registry

The Oil Pollution Emergency Plan (OPEP) shall be updated, reprinted and redistributed when changes are made as noted above. The plan carries the latest version identified by date as indicated in the footer of each page of the plan. If plan amendments result in a reprinting, all old versions of the plan shall be recalled and destroyed accordingly.

9.5.2 Plan distribution

In addition to distribution within Baffinland Iron Mines, all modified versions of the plan shall be submitted to Transport Canada accordingly.

9.5.3 Contact Lists

9.5.3.1 Internal Contacts

Position	Name	Phone*
President & Chief Executive Officer	Tom Paddon	5038 416-200-2387
Vice-President, Operations	Michael Anderson	6030 416-526-0004
Chief Financial Officer	Stephanie Anderson	5001 416-200-6744
Vice-President and Project Director	Ronald Hampton	5018 416-402-8644
Vice-President, Sustainable Development Health, Safety & Environment	Erik Madsen	5031 416-996-5523
Vice-President, Technical Services	Richard (Dick) Matthews	5033 647-938-8147
Vice-President, Corporate Affairs	Greg Missal	5035 905-399-7070

Vice-President, Human Resources	Murray Odesse	5037 416-427-6907
Executive Vice President	Michael Zurowski	5054 416-456-1698
Mine Manager	Tony Woodfine	6045 416-970-6983
Mine Superintendent	Josh Manning	6043 647-472-9842
Site Services Manager	Bikash Paul	6015 416-432-8825
Port & Logistics Manager	Dale DeGagne	4113 416-809-9315
Logistics Superintendent	Mike Sullivan Mervin Markling	6009 289-834-0930 416-629-5629
Maintenance Manager	Dwayne Chyz	4505 204-228-1383
Materials Handling Superintendent	Mark Dumont Shawn Parry	6059 289-834-0744
HR Superintendent	Beatrix Berdan Brenda Roberts	6027
Health and Safety Manager	Glen Hein	5020 416-571-3934
Health and Safety Superintendent	Hal Finley Tony Noseworthy	6006 289-795-9749 647 227 7122
Environment Manager	Jim Millard	6016 902-403-1337
Environment Superintendent	Allan Knight Trevor Myers	6010
Health and Safety Coordinator	Darryl Finlay / Mario Vottero Brian Larson / Tige Collins	4122 (Port) / 6052 (Mine)
Medic – Mine	Richard Chartrand Claudine Daigle	6008
Medic - Milne	Steve Koppang Wayne Cummings	4107

* To reach an extension dial 416-364-8820 followed by the extension

9.5.3.2 EXTERNAL CONTACTS

Y – Required	N – Not Required						M – More information required to determine reporting – refer to notes	
	Serious Injury	**Fatality**	**Fire**	**SAR**	**Dangerous Occurrence**	**Spill – Reportable**	**Spill - Ocean**	**Telephone/Fax Numbers**
Workplace Safety and Compensation Commission (WSCC)								
24 – hour phone line	Y	Y	Y*	N	Y	N	N	(800) 661-0792 (24hr)
Mines Inspector								(867) 979-8527
Chief Mines Inspector								(867) 669-4412
Royal Canadian Mounted Police								
Iqaluit – Headquarters	N	Y	Y	Y	N	M[1]	M	(867) 975-4409
Arctic Bay								(867) 439-0123
Clyde River								(867) 924-0123
Hall Beach								(867) 928-0123
Pond Inlet								(867) 899-0123
Igloolik								(867) 934-0123
Spill Reporting								
Qikiqtani Inuit Association (QIA)	Y	Y	Y	Y	M	Y	Y	(867) 975-8422
AANDC Water Resources Officer	N	N	N	N	N	Y	Y	(867) 975-4555
AANDC-Field Operations								(867) 975-4289 Cell (867) 222-8462
DFO-Iqaluit	N	N	N	N	N	Y*	Y	(613) 925-2865 Ext. 131
Environment Canada - Iqaluit								(867) 975-4644
GN- DOE								(867) 975-5907
Nunavut Emergency Services						M[1]	M	1-800-693-1666
Canadian Coast Guard (Arctic region)							Y	1-800-265-0237 (24-hr)
Medical Services								
Medical Director – Advanced Medical Solutions (Dr. Rahul Khosla)	Y	Y	N	N	N	N	N	(867)-445-7225
VP Medical Operations – Kara Livy	M	M						(867)-446-2000
Qikiqtani General Hospital – Iqaluit Emergency Room	Y[2]							(867) 975-8600 ext 1539

Y – Required	N – Not Required						M – More information required to determine reporting – refer to notes	
	Serious Injury	Fatality	Fire	SAR	Dangerous Occurrence	Spill – Reportable	Spill - Ocean	Telephone/Fax Numbers
Pond Inlet Health Clinic								(867) 899-7500 (867) 899-7538 (fax)
Iqaluit								(867) 975-4830 (867) 975-4830 (fax)
Igloolik								(867) 934-2100 (867) 934-2149 (fax)
Hall Beach								(867) 928-8827 (867) 928-8847 (fax)
Arctic Bay								(867) 439-8816 (867)439-8315 (fax)
Clyde River								(867) 924-6377 (867) 924-6244 (fax)
Transport Canada								
National 24 hour number – Duty officer Canadian Transportation Emergency Centre								(613) 996-6666 (24hr) (613) 954-5101 (fax) (613) 996-9439 (fax)
Search and Rescue								
Nunavut Emergency Services								1 800 693-1666
RCMP								(867) 979-1111
Joint Rescue Coordination Centre (CFB Trenton)								1 800 267-7270 (24hr) (613) 965-3870

1. 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. 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

2. In the event of an injury requiring Baffinland provided evacuation to Government of Nunavut (GN) Health Services or GN provided Medevac (air ambulance medical evacuation) the on-site medical professional shall contact the Emergency Department at the Qikitqtani General Hospital in Iqaluit. The protocols provided in Appendix D and E shall be used in communicating with the GN.

APPENDIX A

Milne Inlet Site Overview

H349000-2000-00-015-0021

MILNE INLET

AANDC NUNAVUT LEASE 47H/16-1-2

MOORING BUOY

SHIPLOADER

ORE DOCK

SEALIFT BARGE LANDING AREA

RAMP TO BEACH

LAYDOWN AREA

FUEL TANK FARM

ORE STOCKPILE SETTLING PONDS

EFFLUENT DISCHARGE LOCATION
N 7976341
E 503639

HAZARDOUS WASTE BERM

LAYDOWN AREA

EXISTING HTO CABIN

ORE STOCK PILE

FUTURE AIRSTRIP

SERVICES AREA PAD
SITE FACILITIES, INCLUDING:

- MAINTENANCE/WAREHOUSE BUILDING
- OILY WATER TREATMENT PLANT
- WELDING SHOP BUILDING
- WORKSHOP OFFICE BUILDING
- TOROMONT MAINTENANCE BUILDING

POWER GENERATORS

INCINERATOR HAZARDOUS WASTE BERM

POLISHING WASTE STABILIZATION POND

ORE STOCKPILE

EXISTING HAZARDOUS WASTE BERM

CAMP INFRASTRUCTURE PAD
SITE FACILITIES, INCLUDING:

- ACCOMMODATION COMPLEX
- EMERGENCY RESPONSE OFFICE
- EMERGENCY RESPONSE GARAGE
- SEWAGE TREATMENT PLANT
- POTABLE WATERTREATMENT PLANT
- WASTE MANAGEMENT FACILITY

MATRIX CAMP

TRAILER CAMP TO BE REMOVED 2015

LAND FARM

ROCK QUARRY N0.1 BOUNDARY

PHILLIPS CREEK

POTABLE WATER SUPPLY

CONCRETE BATCH PLANT , CRUSHER AND STOCKPILE

FUTURE POLISHING WASTE STABILIZATION POND

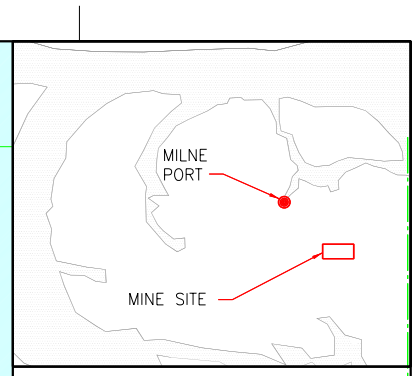
TOTE ROAD

EXTENT OF QUARRY Q1

PERMITTED OPEN BURN PIT AREA

KM2 PLANNED BORROW AREAS

KEYPLAN



FOR INFORMATION

NOTES:

1. TOPOGRAPHY PROVIDED BY TERRAPOINT CANADA INC.
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METRES.
3. AS-CONSTRUCTED INFORMATION PROVIDED BY GENIVAR IN 2008.

0 50 100 150 200 250
SCALE IN METRES

LEGEND:

- WATER
- QUARRY
- COMMERCIAL LEASE
- AANDC LEASE 47H/16-1-2
- RIVER/STREAM/DRAINAGE
- ROAD
- PROJECT DEVELOPMENT AREA
- PLANNED BORROW AREAS

REV.	ISSUE FOR	AUTH. BY		DATE
B	ISSUE FOR USE	C.L.	T.M.	2014/10/31
A	ISSUE FOR USE	C.L.	A.G.	2014/06/19

ISSUE AUTHORIZATION

HATCH™

DESIGNED BY C. LEISTNER DATE 2014-10-20	DRAWN BY J. BAJAGIC DATE 2014-10-20
CHECKED BY S. POTTER DATE 2014-10-20	DISCIP. ENGR. A. GRZEGORCZYK DATE 2014-10-20
PROJ. DES. COORD. T. THERTELL DATE 2014-10-20	PROJ. ENGR. J. CLELAND DATE 2014-06-19
PROJ. MGR. J. CLELAND DATE 2014-06-19	

Baffinland

MARY RIVER PROJECT

MILNE PORT
INFRASTRUCTURE FOOTPRINT
WORK PLAN 2015

SCALE 1:5000 OR AS NOTED

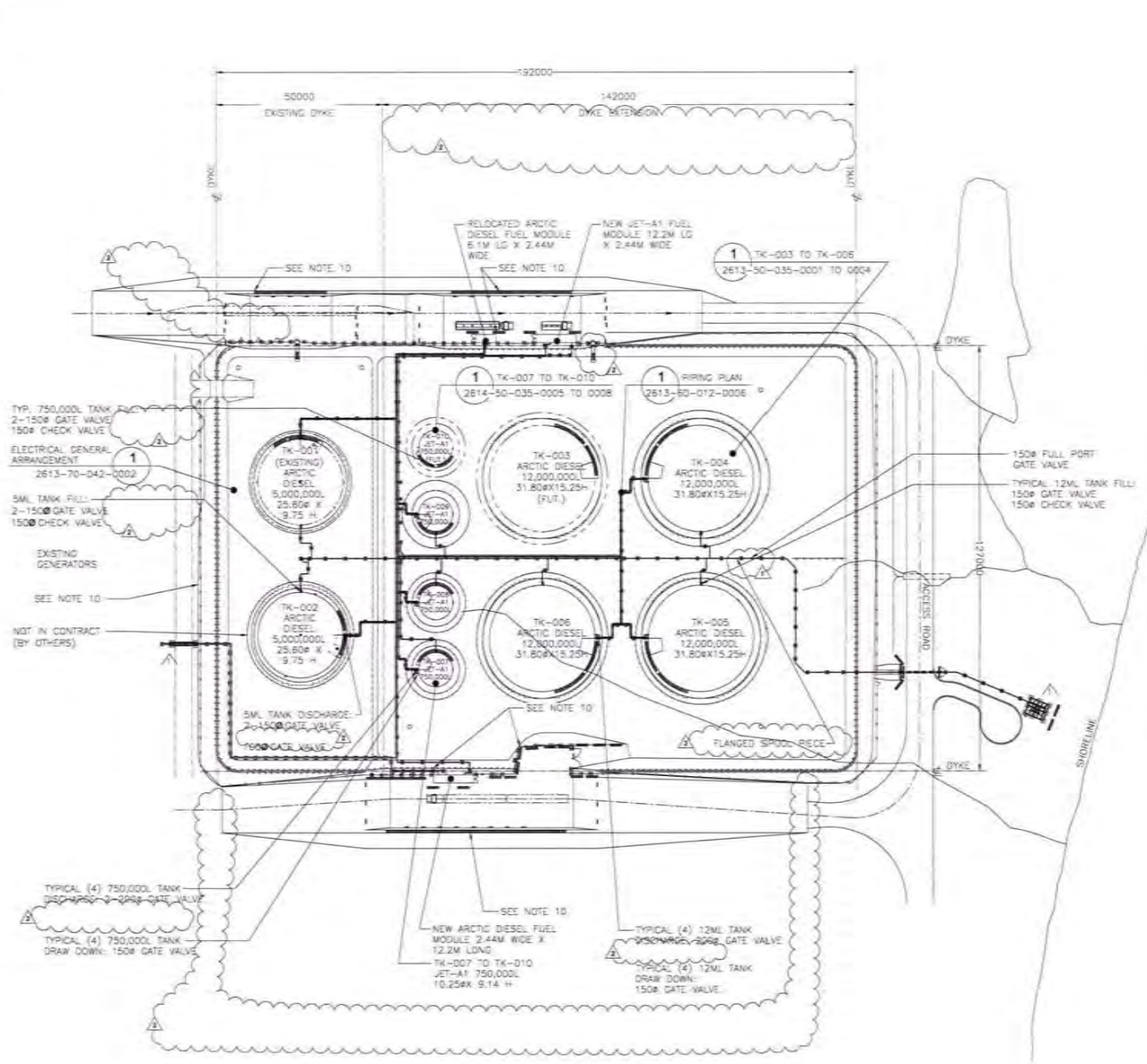
DWG. NO. H349000-2000-00-015-0021

REV. B

APPENDIX B

Bulk Fuel Storage Facility Layouts (2015)

DWG NO H349000-2613-10-014-0001



NOTES:

1. ALL WORK MUST CONFORM TO THE REQUIREMENTS OF THE MOST RECENT EDITION OF THE FOLLOWING CODES, ACTS AND STANDARDS:
   - 1.1. APPLICABLE FEDERAL, PROVINCIAL AND TERRITORIAL CODE
   - 1.2. NATIONAL BUILDING CODE OF CANADA (2010).
   - 1.3. NATIONAL FIRE CODE OF CANADA (2010).
   - 1.4. CANADIAN ELECTRICAL CODE (2009).
   - 1.5. CCME ENVIRONMENTAL CODE OF PRACTICE FOR ABOVEGROUND STORAGE TANK SYSTEMS CONTAINING PETROLEUM PRODUCTS.
   - 1.6. API 650, 11TH EDITION, 2008, WELDED STEEL TANKS FOR OIL STORAGE INCLUDING ADDENDUMS 1 AND 2.
   - 1.7. API 653, 4TH EDITION, 2008, TANK INSPECTION, REPAIR, ALTERATION AND RECONSTRUCTION.
   - 1.8. NFPA 30, 2008 EDITION, FLAMMABLE AND COMBUSTIBLE LIQUIDS CODE.
   - 1.9. ANSI/ASME B31.3-2010, PROCESS PIPING.
   - 1.10. API 1104 2005 AND CSA W47.1-09, CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL.
   - 1.11. CSA W59-03 (R2008) – WELDED STEEL CONSTRUCTION (METAL ARC WELDING).
   - 1.12. CANADIAN ENVIRONMENTAL PROTECTION ACT 1999, (2008 UPDATE), STORAGE TANK SYSTEM FOR PETROLEUM PRODUCTS AND ALLIED PETROLEUM PRODUCTS REGULATIONS.
   - 1.13. CSA W178.2-08, CERTIFICATION OF WELDING INSPECTORS.
   - 1.14. OCCUPATIONAL HEALTH AND SAFETY.
   - 1.15. ENVIRONMENTAL PROTECTION ACT.
   - 1.16. API 2000 VENTING ATMOSPHERIC AND LOW PRESSURE STORAGE TANKS.
   - 1.17. API RECOMMENDED PRACTICE 2003 – PROTECTION AGAINST IGNITIONS ARISING OUT OF STATIC, LIGHTNING AND STAY CURRENTS.
   - 1.18. API STANDARD 2610 – DESIGN, CONSTRUCTION, OPERATION, MAINTENANCE AND INSPECTION OF TERMINAL & TANK FACILITIES.
   - 1.19. API MANUAL OF PETROLEUM MEASUREMENT STANDARDS.
   - 1.20. ASME SECTION VIII – NON FIRED PRESSURE VESSEL.
   - 1.21. MEASUREMENT CANADA.
2. COORDINATES TO NAD-83 6 DEGREE UTM, ZONE 17.
3. ALL SURFACE DRAINAGE WILL BE SELF CONTAINED, COLLECTED AND DISCHARGED AT A LOCATION TO BE APPROVED BY THE LOCAL AUTHORITY.
4. THE WORK SHALL MEET OR EXCEED THE REQUIREMENTS OF THE SPECIFIED STANDARDS, CODES AND REFERENCE DOCUMENTS.
5. EXAMINE SITE OF WORK AND INVESTIGATE ALL MATTERS RELATING TO THE NATURE OF THE WORK TO BE UNDERTAKING. BEFORE COMMENCING WITH THE WORK OBTAIN ALL REQUIRED PERMITS.
6. DO NOT BURY RUBBISH AND WASTE MATERIALS ON SITE.
7. DIVERT SURFACE DRAINAGE WATER AWAY FROM EXCAVATION.
8. PROVIDE TEMPORARY DRAINAGE AND PUMPING AS NECESSARY TO KEEP EXCAVATIONS AND SITE FREE FROM WATER FROM WHATEVER SOURCE UNTIL BACKFILL OPERATIONS ARE COMPLETED.
9. DO NOT PUMP WATER CONTAINING SUSPENDED MATERIALS INTO WATERWAYS.
10. NOT CONSTRUCTED (FUTURE WORK) AS INDICATED. 2

REFERENCE DRAWINGS	
DRAWING NO.	DRAWING TITLE
H349000-2000-00-014-0001	MILNE PORT – SITE LAYOUT

THIS AS-BUILT DOCUMENT HAS BEEN PREPARED BASED ON INFORMATION PROVIDED BY THIRD PARTIES. HATCH HAS NOT VERIFIED THE ACCURACY OR COMPLETENESS OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR, AND DISCLAIMS, ANY LIABILITY IN CONNECTION WITH, ANY ERRORS OR OMISSIONS THAT MAY BE INCORPORATED HEREIN AS A RESULT.

REVISIONS						
NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE	
2	AS BUILT	JC			2015-01-13	
1	MARINE MANIFOLD REVISED, GENSET FUEL PIPING REVISED	BR	DS	FB	13-07-10	

AS BUILT
REVISED AS MARKED. ALL OTHER DETAILS CONSTRUCTED WITHIN ACCEPTABLE TOLERANCES.

ISSUE AUTHORIZATION				
REV.	ISSUE FOR:	AUTH. BY	DATE	
2	AS BUILT	JC	2015-01-13	
1	REISSUED FOR CONSTRUCTION	DS	FB	13-01-10
0	ISSUED FOR CONSTRUCTION	DS	FB	13-02-20

HATCH

DESIGNED BY: D. STEPHENSON DATE 13-02-20	DRAWN BY: M. PETERSON DATE 13-02-20
CHECKED BY: D. STEPHENSON DATE 13-07-10	DISCIP. ENGR.: F. BUTTS DATE 13-07-10
PROJ. DES. COORD.: T. THERTELL DATE 13-07-10	PROJ. ENGR.: J. CLELAND DATE 13-07-10
PROJ. MGR.: S. PERRY DATE 13-07-10	

Baffinland

MARY RIVER PROJECT

MILNE PORT – SITE PREPARATION
BULK FUEL STORAGE
OVERALL PLAN

SCALE	DWG. NO.	REV
1:750 OR AS NOTED	H349000-2613-10-014-0001	2

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

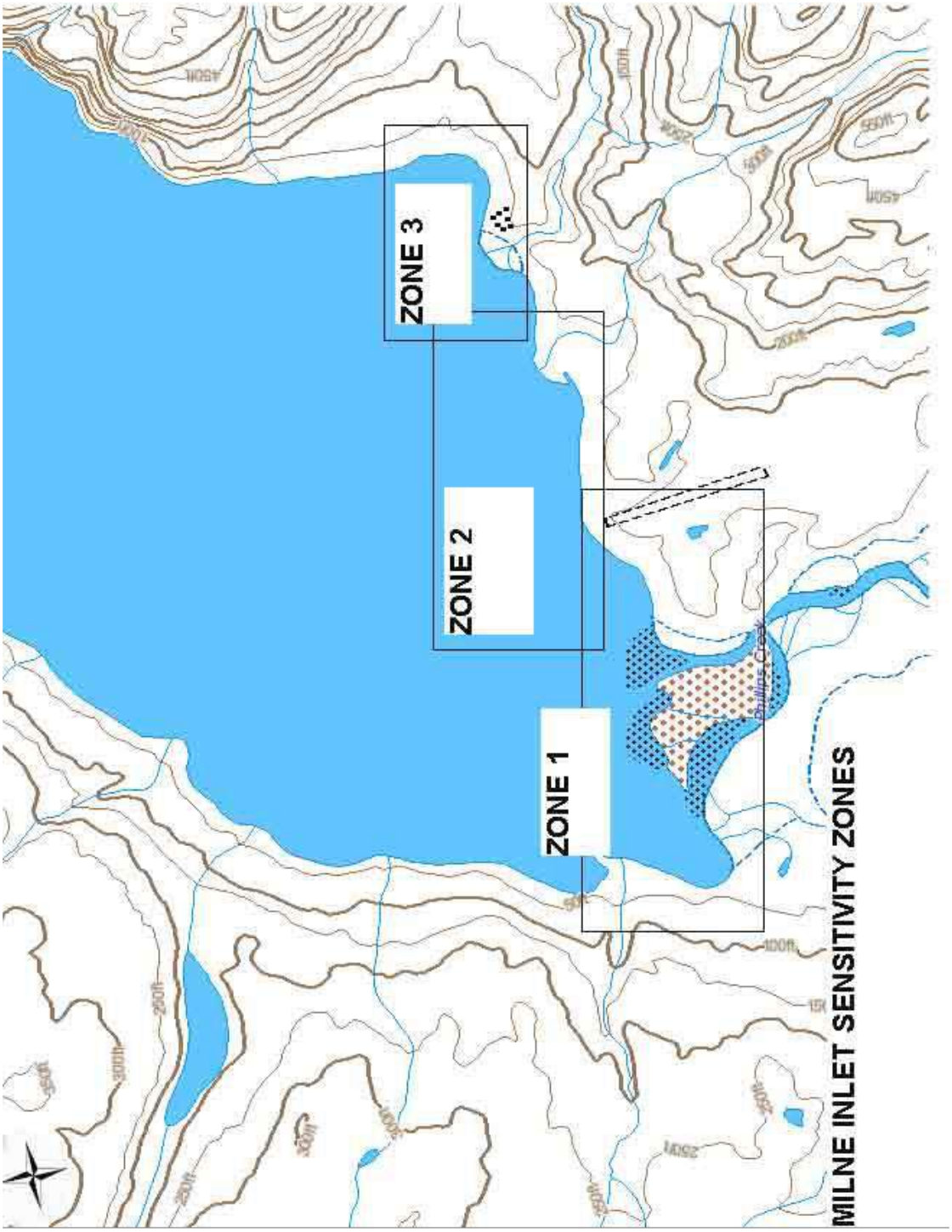
$FILES
$DATES
$USERNAME$ $TIMES

APPENDIX C

Shoreline Characterization and Sensitive Zones

Appendix C

MILNE INLET SHORELINE CHARACTERIZATION AND SENSITIVES ZONES



APPENDIX D

Resident Spill Response Equipment

APPENDIX D – RESIDENT SPILL RESPONSE EQUIPMENT

Error! Reference source not found. details BIMC's spill response capability. These resources are stored in a response ready state and can be mobilised in 1 hour. The IC is responsible for mobilising these resources.

Table D-1 : Resident Spill Response Equipment at Milne Port

Resource	Quantity	Details/Image
Helicopter	2	Single engine 
Dornier Aeroplane	1	Fixed wing aircraft 
Containment Boom kits	3	3 x 100m x 24" wide in towable lengths long Anchor kits x 4 Towing bridles x 4 
Spill Response Unit	8	Includes; • 300 sorbent Pads • 8-8' Socks • 8-4' Socks • Plug N Dike 10 lb container • 12 large pillows • small pillows • 2 plug patties (instant leak stop) • 2 neoprene drain • covers • telescopic shovel • 25 lb Bag granular/peat • 2 pr. Nitrile gloves • 2 Tyvek poly-coated suits • 1 roll (20) disposal bags • 1 roll of barrier tape • Castors available

		Capacity 546 litres / 120 gallons.
Overpack spill kit	4	Includes; • 100 Sorbent pads • 6 small pillows • 2 large pillows • 5 – 8’ socks • 5 – 10’ socks • 2 – 4’ socks • Sorbent granular bag - 25lb • Plug patties • Goggles • Gloves • Tyvek suits 
Multizorb Granular	500	12 kg bags
Transfer Pump	1	Custom pump skid for emergency fuel transfer from one tank to another
Transfer Pump Hose	8	2” x 8 m
Arctic mini berm - small	12	0.5m x 0.5m x 0.15m
Arctic mini berm	12	1m x 1m x 0.15m
Insta Berm	2	3m x 3m x 0.4m
Sorbent sheets	300	
Workboat	1	• Aluminium Hull • Outboard • Towing post 
Drum Skimmer and diesel power pack	1	7.5 tonnes per hour 
Vacuum Truck	1	13,500 L capacity
Steel Drums	20	200 Litre Capacity
Rakes	12	For beach cleaning
Perforated Shovels	12	
Pitch Fork	12	
Personal Flotation Devices	12	
Sand Stock pile	10 ton	for berming or making sand bags
Wildlife Protection Kit	1	Includes; • Pyrotechnics (shell crackers, screamers, propane cannons for shore based spills. • Visual scare tactics (helicopters, emergency response vessels) • Broadcast Sounds • Netting

Spill Response Vessels (2 charter tug boats and two line boats at Milne Port)	• Ability to cover a range of 100nm • Enclosed wheel house • Onboard accommodation • Onboard crane • Large deck space for working areas and equipment storage • Ability to maintain a low speed of 1 to 2 kts	Based at Milne Port	

APPENDIX E

Bulk Cargo Transfer Procedures

Baffinland Iron Mines Corporation

Fuel Tanker Offload to Shore Tanks- Milne Inlet

BAF-PH1-310-PRO-0011

Rev 1

Prepared By: Deon Pope
Department: Port and Logistics
Title: Port and Logistics - Superintendent
Date: June 1, 2015
Signature:

Approved By: Dale DeGagne
Department: Port and Logistics
Title: Port and Logistics - Manager
Date: June 1, 2015
Signature:

DOCUMENT REVISION RECORD

Issue Date MM/DD/YY	Revision	Prepared By	Approved By	Issue Purpose
11/03/14	0	DP	DG	Use
01/06/15	1	DP	DG	Use

TABLE OF CONTENTS

1 PURPOSE

To establish a comprehensive standard to ensure all shore preparations, emergency preparedness, equipment and personnel are in place to co-ordinate between Baffinland, the Vessel and Vessel Captain, to offload fuel from ocean going tanker to the Milne Inlet bulk tank farm. This procedure contains all steps involved from vessel mooring, loading hose placement, hose-tank connection, communications, fuel transfer, fuel line monitoring, and hose disconnection to ensure clear instructions are in place to prevent potential incidents from occurring. Environmental and safety measures are addressed throughout the process.

2 SCOPE

This procedure applies to all Baffinland employees, contractors and their employees, alliance partners and visitors during the preparations, offloading operations and completion of bulk fuel offload.

3 REQUIREMENTS

3.1 DOCUMENTS/PERMITS

3.1.1 VESSEL CONTRACTOR REQUIRED DOCUMENTS

Declaration of Readiness
Bulk Oil Loading/Offloading Sequence Checklist
Bulk Oil Check Sheet “A”
Bulk Oil Check Sheet “B”
Oil Pollution Prevention Regulations and Sequence Check Sheet
Hose Hydrostatic Test Certifications
Arctic Waters Transfer/Discharge Certificates
Pre-delivery Spill Equipment Verification Checklist

3.1.2 INTERNAL REQUIRED DOCUMENTS

Assigned Roles and Responsibilities Schedule (Appendix A)
Pre-Transfer Equipment Checklist (Appendix B)
Baffinland Bulk Fuel Offloading Sequence Checklist (Appendix D)
Tanker certifications/registrations

3.2 EQUIPMENT

As the tank fuelling procedure may require long periods of monitoring, all personnel will be dressed in appropriate clothing for the weather conditions. Appropriate PPE will be worn as per Baffinlands PPE requirements.

General equipment requirements should be assessed well in advance of the fuel offload to rectify any deficiencies. Verification should be documented on the Pre-transfer Equipment Requirements Checklist. (Appendix B). Equipment requirements, in addition to verifying all preparedness and procedural steps, can be documented internally on the Bulk Fuel Off-Loading Sequence Checklist (Appendix D).

4 ROLES AND RESPONSIBILITES

While it is the responsibility of the Vessel and Vessel Captain to pump the fuel from the ship to the tank with vessel contractor equipment and manpower, the role and Baffinland as the Shore Terminal Operator is to ensure that all advance preparations and contingency resources are in place for the operation, and that communications with the Vessel and Vessel Captain are clear and understood for the entire fueling process. The major roles involved and numbers of individuals per shift required for the operation are outlined below:

FUELING PREPARATION AND OFFLOAD OPERATION	
Title and Number of Individuals	**Responsibility**
Vessel Captain or designate	Per Vessel Contractor Bulk Fuel Offloading/Transfer Procedures
Baffinland Shore Representative/Site Manager	To ensure all shore preparations have been completed in advance of arrival of tanker and fuel transfer, proper documentation is sent to Vessel Contractor, volume and transfer procedures are agreed upon, and the necessary assistance is provided throughout the offload process including supervision of shore crews and any stand-by and contingency personnel as needed
Loading Supervisor	Overall operation of offloading. As tanker is being discharged, regular inspections will be conducted, as well as performing volume calculations with tanker at regular intervals.
Pump Operator	Operates, monitors pressures and maintains pump during loading operations,
Tank Farm Helpers	Assist tank farm crew as required. Move hoses as required.
Hose Monitors	To conduct inspections of the entire length of hose and all couplings before and during the fuel transfer process
Vessel Operators crew	Per Vessel Contractor Bulk Fuel Offloading/Transfer Procedures

Stand-By Positions	
Title and Number of Individuals	**Responsibility**
Flag Persons – Traffic Control	If required flag persons will be deployed to ensure any vehicular/mobile equipment traffic is controlled
Site Emergency Response Team	Available for emergency response. Also in the event of a wildlife emergency requiring intervention, designated response team member will be available.
Medic/PA	On-standby to handle medical emergencies
Heavy Duty Equipment Operator	As required in the event of emergency

Roles and responsibilities will be assigned in advance of the fuel transfer and documented on the Assigned Roles and Responsibilities Schedule (Appendix A). Multiple schedules may be required to ensure all shifts are covered during the entire loading period and take into account contractor and Baffinland site shift changes that may occur over the transfer period.

5 DEFINITIONS

N/A

6 PROTOCOL

6.1 SHIP ARRIVAL

Upon arrival at Milne Inlet, tanker will be moored by stern of vessel. Two stern lines will be ran from vessel and attached to existing shore restraints. Actual mooring is to be verified with the Tanker Captain upon arrival with the Baffinland Shore Representative or designate. All Transport Canada Regulations are to be followed. Stern mooring will allow vessel to deploy the shortest possible amount of hose for discharge, as it will negate the requirement for extra lengths to accommodate vessel swing.

6.2 PRE-TRANSFER MEETING AND COMMUNICATIONS

6.2.1 AGREED FUEL TRANSFER VOLUME

Vessel Contractor, Vessel Captain and Baffinland Shore Representative will agree on the volume of product to be transferred.

6.2.2 COMMUNICATIONS

Baffinland, the Vessel Contractor and Vessel Captain will meet to review the roles, responsibilities and pumping procedures. Warning signals and safety procedures are to be agreed upon by both parties.

Radio communication will be discussed and coordinated as to what channel is to be used, and air horn signals will be agreed upon. All workers participating in the back loading process will be presented with a quick reference sheet for emergency communications.

The horn signal system includes a signal for emergency stop transfer:

1. **Emergency stop transfer- Constant ringing of the general alarm or series of short blasts by the whistle, sounding of horn or siren.**

As a precaution, in the event of radio communication failure, Baffinland personnel will be instructed in the use of and follow the Vessel Contractor's manual air horn signals. Each shift that is involved with the fuel transfer process will be trained in radio communication, air horn communication and all emergency communications with the Vessel Contractor before going on shift. Refer to Appendix C for a summary of emergency communications to be utilized during the loading process.

6.2.3 Standard Communications Signals

The Vessel Contractor and supervisor of a transfer operation on board a vessel must ensure that the communication signals for the transfer operation include:

- Standby to start transfer,
- Start transfer,
- Slow down transfer,
- Stand by to stop transfer,
- Stop transfer,
- Emergency stop of transfer, and
- Emergency shutdown of transfer.

6.2.4 Personnel Safety

Pre-shift meetings will be held for all personnel to review the Standard Operating Procedure relevant to the operation.

6.2.5 Delay, Cancel or Emergency Shut-Down Conditions

Conditions that will prevent or shut down fuelling should be agreed to between the Vessel Contractor, Vessel Captain and the Baffinland Shore Representative. They are as follows:

- There is an electrical storm
- Fire occurs
- Leakage occurs which cannot be stopped
- Product spill (system failure, tank overflow, etc.)
- Conditions develop which jeopardize the mooring of the ship. This includes yarding and other vessel movements that could result in binding or pinching of the fuel hose.
- Other possible issues of human safety or serious environmental concern

6.2.6 Site Emergency Response Roles – Rapid Response System

The Vessel Contractor and Baffinland will determine in advance Site Emergency Response Team roles in the event of spill, fire or other emergency.

Prior to starting the pumping process a Site Emergency Response Team (ERT) will be identified. They must be readily available 24 hours a day while the fuel is being pumped into the tank. The communications channel must remain open and the use of "Code 1" three times will be implemented in the event of an uncontrolled fire or large spill.

There will be 24-hour medical coverage in case of any injuries.

6.3 Pre-Transfer Fuel and Tank Verification

Prior to any pumping, the tanker must be dipped (Ullage) and volumes to be loaded calculated and verified for the entire product quantity by both Vessel Contractor and Baffinland Shore Representative/Management.

The temperature of the product is measured and recorded.

The Vessel Contractor and Vessel Captain will also regularly gauge/check the tanker compartments being filled on a regular basis during the transfer operation.

The length and volume of the hose from the ship to the shore manifold is to be agreed upon by both parties and the volume (litres) contained therein calculated.

6.4 Transfer Hose Placement

The Transfer fuel hose route will be as follows:

- The fuel offload hose will be ran from the ship to the shore manifold located inside the manifold building.
- Hose will be ran in such a manner to eliminate heavy lifting and possible damage to the hose from excessive pulling strain.
- Baffinland representative will walk and inspect the transfer hose route between the tank farm and shoreline. Vessel Contractor will monitor portion of hose that runs from shoreline to the ship.
- Baffinland personnel will clear, the agreed transfer hose route, of any sharp objects that would chafe the hose. The hose shall follow a clear and unobstructed path.
- Baffinland and Vessel Contractor personal will inspect the pressure-tested and/or certified fuel transfer hose as per their procedures. Each hose is marked with the annual inspection date of testing to 1.5 times the pressure rating of the hose, or documentation of same testing will be provided for each section of hose to be used in the fuel transfer.

- All hose couplings will be locked/ wired shut by Baffinland and Vessel Contractor personnel and Baffinland will wrap the hose couplings that run from the shoreline to the tank farm with oil absorbent pads. Cam-locks may be utilized in conjunction with the above. Drip trays will be placed under couplings for extra protection. Caches of sorbent spill pads will be placed strategically along the hose line for quick access.

6.5 Grounding for Management of Static Electricity

The Bulk Fuel Tanks are grounded as per engineered drawings.

The fuel transfer hoses are integrally grounded.

Pumping Procedures include identified means to eliminate static to ensure the safety of the process.

6.6 Transfer Area Preparedness

Required signage and exclusion of specific activities within the fuel transfer area, in accordance with the Bulk Fuel Procedures, will be adhered to.

“Hot work” (welding or cutting) is not permitted anywhere in the area of transfer.

Red flag(s) signifying “Transfer Operation in Progress” will be displayed where transfer operation may intersect with other activities.

“No smoking or open fire” signs will be posted in the vicinity of the hoses and tank farm.

Fire extinguishers will be strategically placed and the ERT Equipment will be positioned in a location easily accessible for deployment.

Appropriately stocked and easily accessible spill response kits will be strategically placed along the hose length within the operations area.

The spill response kits are stored in Sea-cans, which are located at the beach and ready to be deployed in case of a spill on the water. The can contains the following:

- Spill containment booms
- sorbent pads
- skimmer
- bladders
- pump intake and discharge hoses
- first aid kits
- containment berms
- life buoy rings
- Zodiac boat.

A vacuum truck is also available for spills close to shore

Heavy equipment, tarps, shovels, pumps and suction hoses are readily available on site.

Boat operators and boom deployment personnel will be identified and be in readiness in case of a spill on the water.

Fully equipped boats will be made ready with full fuel tanks, ropes, oars, pike poles and any additional required safety gear.

Any special local requirements will be discussed and agreed upon by Vessel Contractor, Vessel Captain and the Baffinland shore representative.

6.7 Shore Tank Preparedness

Baffinland representative will prepare the tank farm to ensure it is compatible with the Vessel Contractor hose fittings.

Baffinland Shore Representatives will ensure that connections including pig catcher are attached and locked upon installation. Low pressure warning system will be tested and set to 75 psi.

All valves are to be closed, locked, blind flanged (electric valves will have breakers locked off) except the discharge line valve, that will remain closed and locked, until such time as Vessel Contractor and the Baffinland Shore Representative sign the Baffinland Declaration of Readiness.

6.8 Fuel Transfer

The Vessel Contractor and Baffinland Management will review and sign Oil Pollution Prevention Regulations and Sequence Check Sheet prior to commencement.

If both parties are satisfied that pumping can begin, the valve at the tank is unlocked and opened by the Baffinland designate, who remains at the tank and monitors pump and tank discharge. Baffinland Designate shall be in contact by radio with the Tanker loading personal and the Hose Line Monitors and are responsible to shut off the supply valve and pump if a leak develops.

Discharge will begin at a slow rate to allow checks to be completed along the length of the hose and at the pump for leaks, and to reduce build-up of static electricity

The Pump gauge is monitored until conditions indicate positive pressure such that transfer speed can be increased.

Rate of flow should remain constant to prevent surges.

Designated Baffinland representatives will walk and monitor the line for leaks and blisters or any other irregularity.

The Vessel Contractor workboat crew will inspect the portion of hose from the shoreline to the tanker upon commencement of pumping and regularly throughout loading operation.

6.9 Hose Monitoring

The monitors will not be able to leave their post without someone relieving them. (Coffee, snacks and a warm refuge will be available).

During the night shift, if required, personnel will be supplied flashlights, and light plants will be placed in strategic locations to illuminate the work area.

Workers should be familiar with their surroundings and perform an inspection of the whole area prior to nightfall to ensure tripping hazards are removed.

Bear kits will be provided for all hose monitor teams with air horns, pepper spray and non-flare bear bangers. In the event of a wildlife emergency a Code One Wildlife Alert must be called and the Wildlife Response Team will respond.

In the event of a Nuisance Bear requiring intervention, a licensed, pre-designated standby Bear Response Team member will be deployed and stationed in and around the fuel discharge area.

6.10 Cease transfer Operations

In all cases immediately upon detection of a spill, all transfer operations are to be shut down and not restarted in any manner that would interfere with the immediate, effective and sustained response to the oil pollution incident.

6.11 Fuel Transfer Completion and Hose Disconnection

Volume calculations by tanker crew will be performed on a regular basis and passed on to Baffinland Shore representative for comparison / reconciliation with the product pumped out of the ship and what has been received into the shore tank.

Notice will be given to the tanker officers that loading is nearing completion and that pump should be slowed down. After completion of required quantity to be offloaded pumping will stop; valves will be closed on the tank and documented on the checklist.

The fuel pump will be put in reverse to empty the line/relieve pressure as per pumping procedure.

A pig will then be run through the line from the tanker to the shore tank to sweep the line clean of fuel. The pig will be recovered at the shore manifold fitting.

Drip trays will be placed under couplings as they are disconnected to catch any leakage.

All hoses will be capped and rolled up.

Any minor spills will be immediately cleaned up, soiled material will be disposed of appropriately and equipment put away.

Baffinland and Vessel Contractor will sound all barge tanks and take temperature readings, and will perform volume calculations.

Amount of product transferred will be verified by both parties and all necessary paperwork will be completed.

Vessel lines removed and ship departs.

7 REFERENCES AND RECORDS

N/A

APPENDIX A

Assigned Roles and Responsibilities Schedule

Baffinland

Position	ASSIGNED ROLES AND RESPONSIBILITIES SCHEDULE			
	Date:			
	Shift #: Start: End:		Shift #: Start: End:	
	Name	Baffinland/ Contractor	Name	Baffinland/ Contractor
Baffinland Shore Representative/ Site Manager				
Loading Supervisor				
Pump Operator				
Tank Farm Helpers				
Hose Monitors				
Vessel Operators Crew (if stationed on shore)				
Flag Persons- Traffic Control				
Site Emergency Response Team				
Medic/Physician's Assistant				
Heavy Duty Equipment Operator				
Wildlife Response Team Member				
Other				

APPENDIX B

Pre-Fuel Transfer Equipment Requirement Checklist

Baffinland

PRE-FUEL TRANSFER EQUIPMENT REQUIREMENT CHECKLIST

For Offload Date: _____

	EQUIPMENT REQUIREMENTS	Checked	Date	Signature
General Personnel Equipment Requirements	PPE, plus PFD's as needed for work			
	Radios – 1 per person			
	Airhorns			
	Bear Kits – I per Team			
	Flashlights, spare batteries			
Vessel and Crew Require-ments	Mustang Floater Suits or PFD's			
	Small Vessel Safety Equipment			
	Pylons			
Transfer Area Preparedness Equipment	Night Lighting			
	Fire Extinguishers			
	Caches of Absorbent Pads/Sheets along fuel line			
	Drip trays under hose connections			
	Signage – "No Smoking" and "No Hot Work"			
	Sorbent Boom			
	Sorbent Pads			
Spill Response Equipment	Skimmer, bladder, Insta-berm			
	PPE for Spill Responders			
	Heavy Equipment prepared to mobilize			
	Tarps			
	Shovels			
	Pumps			
	Welding equipment			
	Suction hoses			
	Vacuum Truck			

Comments_____

APPENDIX C

Emergency Communications Signals

Baffinland

EMERGENCY COMMUNICATIONS SIGNALS				
	FLAG SIGNALS BY DAY OR NIGHT		AIR HORN/SHIP'S HORN	RADIO CH. ____72___
	WHITE FLAG	RED FLAG		
STAND BY TO START	Moved up and down vertically	-	-	"STAND BY TO START"
START TRANSFER	Moved in circular motions	-	-	"START TRANSFER"
SLOW DOWN	Moved left to right horizontally	-	-	"SLOW DOWN"
STAND BY TO STOP	-	Held stationary	-	"STAND BY TO STOP"
STOP TRANSFER	-	Moved left to right horizontally	-	"STOP TRANSFER"
EMERGENCY STOP	-	MOVED IN CIRCULAR MOTIONS VERTICALLY	1 LONG BLAST	"STOP TRANSFER, STOP TRANSFER"
EMERGENCY START	-	-	2 short blasts	"START TRANSFER, START TRANSFER"

ALL SIGNALS SHALL BE ANSWERED (RETURNED) TO MEAN, "SIGNAL UNDERSTOOD AND CARRIED OUT"

APPENDIX D

Bulk Fuel Off-Loading Sequence Checklist

Baffinland

BULK FUEL OFF-LOADING SEQUENCE CHECKLIST

Date of Transfer Start: **Start Time:**

Date of Transfer Stop: **Stop Time:**

PRIOR TO FUEL TRANSFER		YES	NO	N/A	INITIAL	COMMENTS
Tanker Preparation	Skirted-boom deployed around Barge? (if deemed required)					
	Aluminium boat / Zodiac and applicable required gear present?					
	Tanker dips (gauging) verified?					
	Any contamination present?					
Tanker Dips / Tank Prep	Temperature of product measured?					
	Bulk Fuel Tank gauged?					
	Fill level calculated as per gauge?					
	Verification of transfer hoses (inspected and certified)?					
	Hose couplings wired/locked shut?					
	Hose couplings wrapped in absorbent pads?					
Hose, Couplings and Flanges	Drip trays placed under couplings?					
	Spill kits/corncob particulate present along transfer hose line?					
	Spill kits/corncob particulate present at Bulk Fuel Tank?					
	Cam-locks in place on all flanges?					
	Inspect flange bolts to verify line markings that bolts are tight?					
	"Nozzle clearly identified on tank?					
Nozzles and Valves	Hose attached to tank at Nozzle?					
	All valves closed? Locked? Blinded?					
	In-fill line valve closed and locked? (until Declaration of Readiness signed)					

General Area	"No smoking or open flames" Signage present?					
	Red Flags "Transfer Operation in Progress" present?					
	Verification that no hot works is taking place nearby?					
	Fire extinguishers present?					
	Fire Caddy present?					
	Bear kits available?					
	Vacuum Truck available/functioning?					
	Spill Equipment located near beach?					
	Tripping Hazards removed (preparation for nightshift operations)					
AFTER FUEL TRANSFER		**YES**	**NO**	**N/A**	**INITIAL**	**COMMENTS**
	Tanker dips (gauging) verified?					
	Bulk Fuel Tank gauged?					
	Valves closed and locked?					
	Hose lines emptied?					
	Drip trays under couplings prior to disconnection?					
	Hoses capped and roiled up?					
	Any spills?					
	Sound barge tanks?					
	Gauge bulk fuel tank?					
	Temperature of fuel?					

REQUIRED PAPERWORK		YES	NO	N/A	INITIAL	COMMENTS
	Declaration of Readiness					
	Bulk Oil Loading/Offloading Sequence Checklist					
	Bulk Oil Check Sheet "A"					
	Bulk Oil Check Sheet "B"					
	Oil Pollution Prevention Regulations and Sequence Check Sheet					
	Hose hydrostatic test verifications?					
	Any fuel transfer agreements ie: volume?					
	Assigned Roles and Responsibilities Schedule					
	Pre-Fuel Transfer Equipment Requirement Checklist					
	Final volume signoff?					

APPENDIX F

Spill Response Equipment Onboard Ship

POLLUTION CONTROL EQUIPMENT ONBOARD TANKERS - 2015

Pollution	Drums	Yellow Salvage drums 95 gallons	Each	2		2	Pollution Container	
Pollution	Boom	Oil absorbent boom	Each	5		5	Pollution Container	
Pollution	Boom	Oil absorbent pads	Each	5		5	Pollution Container	
Pollution	Boom	Oil containment boom	Each	1		1	Port side reel	1200ft
Pollution	Absorbent	Oil absorbent 15 kilo bags	Each	22		22	Pollution Container	
Pollution	Skimmer	Pedco Mini Oil Skimmer	Each	1		1	Pollution Container	
Pollution	Recovery Pump	Honda model WT 20X	Each	1		1	Pollution Container	
Pollution	Suction hose	2 inch tank wagon X 25 feet	Each	1		1	Pollution Container	
Pollution	Discharge hose	2 inch lay flat X 25 feet	Each	1		1	Pollution Container	

APPENDIX G

Training Register and Exercise Documentation

Appendix G1

Milne Inlet Marine Spill Response Training and Exercise 2014 - Shift 1

Milne Inlet Marine Spill Response Training and Exercise 2014 - Shift 1

Training and Deployment Exercise Report:

Date:	**August 2nd- 3rd**
Location:	Milne Inlet, Nunavut
Participants:	Per attached Training Rosters

Training Objective:

Marine Spill Response Training, Milne Inlet August 2nd and 3rd:

The Marine Spill response training at Milne Inlet provides specific training that provides ERT responders at BIM skills that are needed to safely and effectively respond to marine spills that may occur. The Mary River Project Emergency Response Plan (ERP), Spill Contingency Plan (SCP) and Milne Inlet Oil Pollution Emergency Plan (OPEP) Incident Command structure are also reviewed and roles and responsibilities of the emergency management team are discussed.

During the practical deployment exercises, the responders are provided with the opportunity to learn and then practice skills responding to marine spills using the Milne Inlet resident spill response gear. Particular emphasis is placed on small craft safety and operation.

All findings related to the training shall be considered by management at appropriate revisions to the OPEP, ERP and SCP and shall be considered at the next plan revision.

The important principles in the development of this training are:

- Management support of the training activity, at all levels
- Setting clear and measurable objectives for the training and related deployments
- The objective of training and deployments is to improve, rather than impress
- Limit the amount of activities, participants and locations to keep training manageable
- Effective evaluation of the training is as important as conducting the training and deployment successfully
- Planning and conducting training successfully is an important accomplishment, meeting the objectives of protection of health, safety and environment of the company

Additional Objectives:

Important revisions to the site wide ERP and SCP structure were also adopted for the 2014 OPEP. For this reason, additional time was allotted to the review of the roles and responsibilities of the Baffinland Response Management Structure. A full discussion of roles and responsibilities ensures that all key responders understand these roles and are able to coordinate an effective response to a spill incident of all magnitudes.

Course Agenda:

1: Classroom Training by Spill response Specialist – Todd Mitchell, Navenco Marine Inc.

Presentations of classroom modules and materials – Modules 1 -7:

Lesson #	Title	Time allotted (Mins.)
1	Briefing and Introduction	15
2	Milne Inlet Marine Oil Pollution emergency Plan	30
3	Marine Spill Behavior	30
4	Safety for responders to spills	30
5	Marine Safety – small craft	45
6	Booming and boom deployment	60
7	Oil recovery / skimming operations	30
	Total Classroom time allotment	6 hrs

2: Equipment Familiarization and Instruction in Field

Lesson #	Title	Time allotted (Mins.)
8	Hands on review of equipment	30
9	Hands on oil boom instruction – rigging	30
10	Hands on skimmer instruction –operation	30
11	Hands on workboat instruction	30
	Total hands on allotment - Instruction	2 hrs

3: Deployment Exercise

Lesson #	Title	Time allotted (Mins.)
12	Additional equipment instruction in the field and deployment exercise – Deploy workboat, boom deployment and skimmer operation at beach	6 hours

August 2nd, 2014

Classroom Training:

Classroom training was held on August 2nd at the Milne Inlet PSC. Training commenced at 08:00. Various attendees present, (roster attached) .

The series of classroom modules were presented. Many of the key response management personnel were present so a detailed review and discussion of each of the emergency management roles was possible. The structure as indicated in the OPEP was validated and each of the roles were confirmed to be well defined and understood.

Modules 1 through 7 were presented as per agenda. Classroom training was completed at around 15:00.

Practical lessons and deployment exercise:

Practical session was begun on the afternoon of August 2nd at approximately 1500 hrs. The spill response equipment had already been staged at the beach area, close to the marine lay down launch ramp.

The group moved to the beach area and assembled at the boom containers. The contents of container #2 were partially removed to provide two sections of boom, one anchor kit and towing equipment for instruction. Instruction on correct method of connecting booms, tow bars was given. Detailed explanation of the anchor kits, including anchor, tow ropes, trip lines and float was made.

The two remaining boom containers required repositioning to correctly orient the access doors. Verification of the contents of those kits was deferred to the following morning as repositioning was to be made first.

The trainees then proceeded with the instructor to the Spill Equipment Sea Container which was positioned just west of the launch ramp. The contents of two spill kits were verified and the contents were

removed. Instruction on the use of sorbents (hydrophobic and universal) was delivered. Plugging materials in the kits were also covered.

The Elastec drum skimmer which is stored at the beach in the sea container was reviewed next. A deployment of the skimmer was deferred to the following day.

August 3rd, 2014

A Job Hazard Assessment (JHA) was performed prior to commencement of any field work.

The trainees assembled at the PSC training room at 08:00 again on August 3rd. An hour of instruction on ropes and knots was delivered, with all trainees practicing the tying of a bowline knot. Each student had the opportunity to perform the knot successfully and practice same.

After a short break, the trainees boarded the site bus and returned to the beach. The workboat was brought to the launch area and a review of the workboat and safety ensued. The pre-launch inspection covering vessel/ motor integrity and mandated safety equipment was performed by the responders, the workboat was prepared and launched accordingly.

The trainees were divided into groups providing 4 separate workboat crews. Each crew was allowed sufficient time to run the boat in the inlet and practice operating the vessel. Each crew then deployed 100 meters of containment boom and anchored the boom successfully in position. The crews were instructed to reposition the boom by using the anchor trip line in order to practice the concepts that were presented in the classroom segment of the boom deployment instruction. At the end of each crew's practice, the anchors and booms were completely retrieved so that the next crew could engage in a complete deployment practice of their own. During the deployments, any obvious safety issues observed were addressed with the crews immediately so that preceding crews were not at risk.

During the deployments, the instructor provided a demonstration of the correct method of coiling and stowing ropes. The trainees practiced coiling and preparation of various ropes while stowing the gear after the exercise.

After the boom deployments, the Elastec drum skimmer was then removed from the container and explained to the trainees. Correct method of hook up, operation and use following identified health, safety and environmental guidelines was demonstrated. The unit was deployed at the beach, run, tested and finally recovered and stowed.

Debrief:

Following the deployment exercise a debrief was held at the PSC training room. All of the trainees were present.

The purpose of the debrief is to provide a forum for all participants to fully discuss the operation, outcome of the training, deployment exercise and to gather observations that can lead to improvements in the overall response mechanism in the future.

Each of the participants were invited to provide comments reflecting their day's experience.

Several observations and suggestions for future improvement were raised:

- It was noted that the teams at the beach worked extremely efficiently and in a very coordinated fashion. There was ample time to effect 4 separate boom deployments and each crew had the time to operate and become familiar with the workboat.
- During the deployments, it became evident that the workboat antenna (whip type) interfered severely with the boom deployment. The antenna needs to be removed and replaced with a lower profile antenna so that ropes and rigging may be passed from one side of the boat to the other.
- The workboat propeller was slightly damaged and no spares were available. There should be adequate spare propellers available, especially in view of the shallow beach zone and the probability of hitting bottom.
- It was pointed out that the boat operators should not attempt to involve themselves in deck tasks, rather he should focus on boat operation only.
- During the deployments, the workboat crews each set 100 meters of boom with an anchor. They were then instructed to reposition the boom by using the trip line. Some of the crews attempted to completely retrieve the anchor rather than simply use the trip line to reposition accordingly. The correct procedure was reviewed and then discussed again in the debrief.
- It was explained to the trainees that the workboat should always approach the boom and anchor marker float from downwind so as to be able to maintain control of the vessel into the wind. This will ensure the crew can collect the anchor marker float for towing and repositioning the boom without becoming entangled in the boom or its rigging.

Training/Exercise coordinator's further comments and recommendations:

- *Equipment pre-staging*: In order to ensure the most effective and rapid response, the locations for pre-staging of the 3 X 100 meter boom boxes were identified. Equipment was placed at the appropriate location for bulk fuel transfer. Due to the construction of the ore dock, it was determined that the optimal position for the boom boxes for 2014 would be close to the cargo lay down launch area.

  Pre-staging of additional boxes closer to the shore manifold is precluded in the interest of not creating any unnecessary disturbance or damage to the beach intertidal zone. Should a spill occur, the OHF would request immediate booming assistance from the ship while immediately transferring one (or more as required) container(s) along the beach to the affected area by means of a loader. This transfer can be made without delay and would not affect the OHF's ability to meet the time standards as outlined in the OHF guidelines.

- Workboat staging: It was determined that the workboat will be stored on its trailer, close to the launch at the cargo lay down area. It was agreed that a clear launch pathway for the workboat be maintained at the site at all times during bulk fuel transfer activities. A zodiac is also available during bulk fuel transfer as a rescue and secondary vessel.

- Anchors and rigging: Three anchor kits were identified in the equipment stockpile. Additional rigging and anchors will be added to the inventory prior to bulk fuel transfer as follows:

  4 – additional anchor kits including: (includes 1 spare)

  - Danforth anchor, 40 lbs
  - 100 foot polypropylene anchor line with snap hook
  - 6- feet 3/8" galvanized chain
  - 100 foot marker line polypropylene with snap hook
  - 1 inflatable marker float for trip line

Additional equipment:

- 2 spare inflatable floats
- 6 X 100 foot anchor lines (2 per box) as spares or for lengthening accordingly
- 3 towing paravanes with tow bridles

- Safety and PPE Gear:

  A more complete inventory of PPE for cold weather (Mustang suits), additional Personal Flotation Devices (PFD's) and items to complete the Transport Canada Mandated safety gear for small vessels has been ordered and will be available prior to bulk fuel transfer.

- Equipment Readiness: Prior to commencement of bulk fuel transfer all pollution control equipment should be ready for instant deployment prior to the start of hose operations.

  i) Containers opened and equipment clear

  ii) Anchors should be rigged and ready for deployment with 100 ft of anchor line and 100 ft of trip line and an inflatable buoy connected to the trip line. (depending upon water depth). It was concluded that at least one anchor kit be pre-rigged and on board the workboat at all times.

  iii) The boom at each deployment box should be made ready with a 100 foot towline and tow bridle attached at each end

  iv) 1 rigged anchor should be stowed in the workboat ready for use. Spare tow lines should be available on the workboat

- Beach zone deployment: During the training several points were raised and in previous exercises various "lessons learned" in regards to the deployment from the Milne beach zone were noted:

  i) Due to the very shallow water encountered at the beach, sufficient length of tow line is necessary to allow the workboat to remain in deeper water while deploying the boom

  ii) Hip waders or similar may be required of all beach deployment personnel

  iii) All workboat operators should be aware of the shallow water encountered at the beach and ensure that the engine is adequately tilted while operating in the shallow water

  iv) When significant waves are present at the beach, the workboat should avoid " beaching" as re-launching can be difficult, especially on a falling tide

  v) Attention must be given to operations on a falling tide to avoid "stranding" the workboat in the shallow beach zone

  vi) The cold and wet conditions require the use of floater suits by the workboat crew. Beach responders should also have floater suits available, although they may opt for other PPE should warmer weather warrant. At all times, life jackets must be worn if working on water.

Summary:

The spill training and deployment exercise, Shift 1 for 2014, met all the specific goals that were identified. Responders that are required to fulfill the pollution response roles as outlined in the OHF "OPEP" were trained in sufficient numbers. The responders also participated in physical deployments and received adequate instruction as to be able to competently deploy the facility's level 1 spill gear in the event of a spill or potential spill.

In this instructor's opinion the deployment during the exercise and instruction was of excellent value to all who participated. All trainees carried out their duties in a professional manner and showed good co-ordination throughout the exercise. The operation was accomplished safely, and in a timely fashion.

Todd Mitchell
Navenco Marine Inc.

RESIDENT OIL SPILL RESPONSE EQUIPMENT MILNE INLET BULK HANDLING FACILITY – EQUIPMENT AUDIT – August 2, 2014

Quantity	Description	Inspected	Quantities	Inspection comments
1	Oil containment boom 1000 ft – Aquaguard "Liteflex" 24	Yes	3 X 100 M	All boom found to be as new, unused and fully operational
4	Anchor kits for anchoring boom in place	Yes	7 kits complete	Anchor kits found to be as new, unused and fully operational.
4	Towing bridle for oil boom	Yes	4	
3	Towing paravanes C/W bridles	Yes	3	One in each boom container
8	Spill response unit – X Large Land	Yes	8	Various locations on site
4	Overpack spill kit	Yes	4	Various locations on site
6	48" x 36" x 6" Arctic mini berm for under fittings	Yes	3	Assigned in various site locations, available when required within time standards
2	Insta berm 10' x 10' x 15" Arctic	Yes	2	
50	Bales assorted sorbents	Yes	50	
1	Aluminium workboat with outboard engine, equipped with towing post and related equipment for boom deployment	Yes	1	Verified workboat, all safety equipment onboard as delivered.

1	Drum skimmer and diesel driven power pack, suitable for recovery of distillates – Capacity 7.5 tonnes per hour	No	1	Fully functional and response ready
1	Vacuum truck, 3000 gallon capacity	Yes	1	Functional and response ready
20	45 gallon steel drums	Yes	20	
1	Sand, 15 tons	Yes	15T	

DATE INSPECTED: August 2, 2014

Per:
Todd Mitchell – Spill Response Specialist

Baffinland Iron Mines Corporation

Milne Inlet Marine Spill Response Training and Spill Response Exercise 2014 (Shift 1)

Observations, Recommendations and Corrective Action

Ref	Observation	Recommendation	Corrective Action	Scheduled Completion Date	Accountable	Consultant's Comments and OPEP Considerations
1.	Additional propellers for the workboat should be available	Order several spares for inventory prior to bulk fuel transfer	Ordered and will be on site prior to fuel transfer	August 6, 2014	D. Pope	
2.	VHF antenna was an obstruction in the workboat during boom deployments	Remove and replace with a more suitable antenna. Alternatively, a handheld VHF could substitute for the permanently mounted antenna.	Replace antenna, VHF portables are available for the ERT.	August 15, 2014	D. Pope	
3.	It was noted that additional hydraulic hose from skimmer to powerpack would eliminate the need to reposition the powerpack over the rough stone at the beach. This would not only enhance safety of the crew but would also remove a potential ignition source further from the spill zone.	Purchase additional hydraulic hoses to double working distance between hydraulic powerpack and skimmer head	Additional hose to be purchased as soon as possible.	On site prior to bulk fuel transfer	Deon Pope	

Baffinland

Attendance Form

DAY 1

Course Name: Marine Spill Response training	Date: Aug 2 2014
Instructor's Name: Todd Mitchell Company:	Course Duration:
Signature:	
Room / Location: PSC T.R	
Language of Delivery: Inuktitut ___ English ✓ Both(translation) ___	

	Name	M/F	Company	Dept.	Site	Home Community	Initials
1	Jocelyn Lafond	F	BIM	T.R	M	SASK.	JL
2	MARC Robidas	M	B.M	Maintenance	Milne	Timmins Ont	MR
3	JOSEPH DRESCOM	M	BEM	S.S.	M.	KELOWNA	J.D.
4	Wayne Ross	M	BIM	M.H.	Milne	Tweed, ON.	W.R.
5	STEPHEN PERRY	M	BIM	M.H.	MILNE	FERNIE BC.	
6	[illegible]	F	Bim	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	F	Bim	[illegible]	[illegible]	[illegible]	[illegible]
8	Stephen Thorlacius	M	BIM	S.S	Milne	Iqaluit	S.T
9	Jamie McMath	M	OIL	SS	Milne	Comox BC	JMM
10	Jeff Bush	M	Bim	S.S	Milne	Cornwall Ont	JB
11	ADAM Bowerman	M	BIM	MAINT	M	OWEN SOUND	AB
12	Andrew Vermeer	M	BDM	ENV.	M	GUELPH	AV
13	Ben Wiedenham	M	BDM	HS	M	Guelph	BW
14	Mike Sullivan	M	BIM	P+L	M	ARNPrior	MS
15	Dalton Heard	M	Bim	P&L	MR	Ottawa	DH
16	Richard Church	M	Bim	H+S	MR	GRIFFITH, IN	RC
17	DEON Popey	M	BIM	P&L	M	GANDER, NL	DP
18	Mario Vettese	M	BIM	H&S	PSC	Kahnawake, QC	MV
19	Bill Bowden	M	BIM	ENV	Milne	London, ON	BB
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Baffinland

Attendance Form

DAY 2

Course Name: Spill Response training (Marine)	Date: Aug 3rd 2014
Instructor's Name: Todd Mitchell Company:	Course Duration:
Signature:	
Room / Location: PSC . TR	
Language of Delivery: Inuktitut ___ English ✓ Both(translation) ___	

	Name	M / F	Company	Dept.	Site	Home Community	Initials
1	STEPHEN PERRY	M	BIM	M.H.	D	FERNIE BC	SP
2	ADAM SILVERMAN	M	BIM	MAINT	PSC	OWEN SOUND ON	
3	Jocelyn LaFord	F	BIM	Training	PSC	Saskatchewan	JL
4	Joe Drzscal	M	BIM	S.S.	Mine	Kirkland	J.D
5	Bill Bowden	M	BIM	Env	Mine	London	
6	Ben Watterson	M	BIM	HS	Mary	Quebec	BW
7	DEON Poppe	M	BIM	P&L	M	Gander	
8	MIKE Sullivan	M	BIM	P&L	M	Arnprior	
9	Dalton Head	M	BIM	P&L	MR	Ottawa	
10	Marcio Vettero	M	BIM	Safety	M	Kahnawake ON	
11	Wayne Ross	M	BIM	MH	Mine	Tweed, ON	WR
12	Callie Rice	F	BIM	Env	Mine	Mount Forest, ON	CR
13	Stephen Thordarson	M	BIM	SS	PSC	Iqaluit NU	
14	Jeff Bush	M	BIM	SS	Mine	Cornwall ont	JLB
15	LEA WILLEMSE	F	BIM	ENV.	MINE	ST. JOHN'S	LW
16	Mark Robichaud	M	BIM	maintenance	Mine	Timmins Ont	MR
17	RICHARD CHERRY	M	BIM	HAS EOT	Mine	GRIFFITH, IN	
18	Jamie McMath	M	QIL	SS	Mine	Comox BC	JM
19	Andrew Turner	M	BIM	ENV.	MR	Guelph, ON	AT
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Job Hazard Analysis Form

PROJECT/TASK: Milne Inlet Marine Spill Response Training		CONTRACTOR: Baffinland				JOB No.:			
SUPERVISOR: Bill Bowden		LOCATION: Milne Inlet				DATE: Aug 2,3 2014			
JOB STEP Break the job into steps. Listing work which may be hazardous.	**HAZARDS** List the hazard or type of harm identified with each step.	**Inherent**			**CONTROL MEASURE** List the necessary control measures to be followed to eliminate/reduce the identified hazards.	**Residual**			**ACTION** Person who will ensure this happens
		Consequence	Likelihood	Risk Ranking		Consequence	Likelihood	Risk Ranking	
• Ensure working radio communication and obtain a vehicle.	Improper radio communication can lead to unclear instructions and possible incidents	2	2	4	Proper radio connection in imperative to clearly understand situations and complete jobs safely. Ensure all proper PPE is worn and all people driving the vehicle should have light	1	1	2	All spill training crews
	Vehicular operations and fast moving vehicles	3	1	4	vehicle training and be comfortable with driving.	2	1	3	All spill training crews
• Launch the work boat	Being struck by the trailer or vehicle	2	1	3	Only boat crews are allowed to be in the vicinity of the boat launch	1	1	2	Workboat crew
• Working from a boat in rough weather	Rough weather can produce conditions that promote injuries or falling overboard	2	1	3	Workboat crew should wear mustang suits and be aware of weather conditions and be in control of the boat	2	1	3	Workboat crew
• Opening, examining and taking out the spill booms and anchors from the marine spill kits	Pinch points associated with the containers and booms.	1	3	4	The spill booms should be fed out carefully from the spill boom containers to avoid worker injury. The workboat should not be used to initially take the boom out.	1	1	2	All spill training crews
	Heavy lifting may be required and awkward loads are present.	2	2	4	Proper lifting techniques should always be used and loads too heavy for lifting should never be attempted	2	1	3	All spill training crews
	Rope tangling resulting in slips trips and falls	1	2	3	Situational awareness and observing your surroundings should be common practice	1	1	2	All spill training crews

	Uneven ground and large aggregate	1	2	3	Situational awareness and observing your surroundings should be common practice	1	1	2	All spill training crews
• Secure the free end of the spill boom and hand a anchor set to the workboat	The anchor, buoy and ropes can be awkaward to handle	1	1	2	Care should be taken when working in the water around the boat (PFD required). The anchor set should be transferred by two people	1	1	2	All spill training crews
• Secure the other end of the spill boom to the anchor point on shore.	Tripping hazards can occur from anchor lines	1	1	2	Situational awareness and observing your surroundings should be common practice	1	1	2	Beach crew
• Deploy the boom, anchor the workboat end of boom to simulate oil containment	Working in rough water conditions	4	2	6	Workers must pay special attention to keep the workboat balanced	4	1	5	Workboat crew
	Deploying the anchor while still attached to the spill boom	4	2	6	Two workers are required to safely deploy the anchor from the work boat. The effort should be coordinated to avoid being pinched between the anchor and the boat. The boat driver must keep the boat stable and be aware of his surroundings as the boom is deployed and anchored	4	1	5	Workboat crew
	Entanglement in the anchor and trip lines while deploying the boom	4	2	6	Workers must be aware of the location of the anchor and trip lines when deploying the anchor to avoid being pulled overboard	4	1	5	Workboat crew
	Possibility of workers going overboard during the exercise	4	2	4	All work will cease and rescue efforts by the rescue boat will take priority.	4	1	5	Workboat crew
• Setting up the hydraulic skimmer	Hazards associated with working with hydraulic hoses and pressure and rotating drums.	2	2	4	Workers involved in the operation of the hydraulic skimmer should be trained and have practice assembling, running and dissembling the hydraulic skimmer unit.	2	1	3	Beach crew

	Hydraulic fluid and oil can pose an environmental hazard.	1	3	4	Secondary containment and spill pads should be used.	1	3	4	Beach crew
• Moving the hydraulic skimmer and generator and placing the skimmer in the water	The oil skimmer and generator can be awkward and heavy to move	2	2	4	Proper lifting techniques and situational awareness should be used. Two workers or more should be used to move the items. Proper PPE should be worn.	2	2	4	Beach crew
• At exercise completion disassemble the hydraulic skimmer	Skimmer disassembly hazards are the same as skimmer assembly hazards	2	2	4	Exercise the same precautions as when assembling skimmer. The skimmer and power unit should be shut off before disconnecting hydraulic hoses. Neatly return hoses to storage area and stay vigilante for hydraulic fluid and hydrocarbons leaking.	2	2	4	Beach crew
• Pull the boom anchor from the ocean floor and retrieve the boom	Boat running over the anchor line	1	1	2	The workboat should approach the buoy from the downwind side for a controlled recovery. Once the anchor trip line has been retrieved, use the momentum of the boat to free the anchor from the seabed.	1	1	2	Workboat crew
	Entanglement in the anchor and trip lines	4	2	6	Workers must be aware of the anchor and trip lines when retrieving the anchor to prevent line entanglement with themselves.	4	2	6	Workboat crew
• Return the spill boom to the boom containers	Pinch points and awkward lifting	1	2	3	Workers should be extra aware of where their body extremities are. Proper lifting techniques should always be used and loads too heavy for lifting should never be attempted	1	1	2	Beach crew
• Return the work boat to the trailer	Being hit by truck or trailer	2	1	3	The work boat crew should only be in the vicinity and care should be taken to properly land the boat on the trailer.	2	1	3	Workboat crew

Job Hazard Analysis Attendees:

	Name	Signature	Date
Written by:	Bill Bowden		
Reviewed by:	Andrew Vermeer		Aug 3/2014
Reviewed by:	Dalton Head		Aug 3, 2014.
Reviewed by:	Jeff Bush		Aug 03/14
Reviewed by:	Jocelyn Lafond		aug 03/14
Reviewed by:	Deon Pape		Aug 3/14
Reviewed by:	Lea Willemse	L. Willemse	Aug 3/14.
Reviewed by:	Mark Robidoux		"
Reviewed by:	Ben Wadamson	B. Wadamson	"
Reviewed by:	Hann Bowlman		"
Reviewed by:	Stephen Horlacius		" "
Reviewed by:	Callee Rice	CMR	Aug 3/14
Reviewed by:	STEPHEN PERRY		"
Reviewed by:	Wayne Ross	Wayne Ross	Aug 3/14
Reviewed by:	Todd Mitchell		Aug 3/14
Reviewed by:	Mike Sullivan		Aug 3/14
Reviewed by:			Aug 3/14
Reviewed by:			Aug 3/14
Reviewed by:	RICHARD CHURCH		Aug 3/14
Reviewed by:			

Score	TABLE OF CONSEQUENCE		
	Peopte	Plant	Environment
5 – Very High/ Catastrophic	Multiple Fatalities.	Greater than $10 Mllllon Loss	Catastrophe, destruction of sensitive envlronment, worldwide attention. Likely EPA prosecution. More than 30 days delay.
4 – Htgh/ Major	Fatality or Permanent Disabilities.	$1 Million to $10 Mllllon Loss	Disaster, high levels of media attention, high cost of clean up. Offsite environmental harm; more than 10 days delay.
3 – Moderate	Major Injuries – Incapacitations or requiring time of work.	$100 Thousand to $1 Million Loss	Major spills, onsite release, substantial environmental nuisance, more than 1day delay. (Leads to an additional resources call out i.e. SES).
2 – Low/ Minor	Significant Injuries – Medical Treatments, non-permanent injury.	$10 Thousand to $100 Thousand Loss	Significant spills. (Leads to a call out of Site Emergency Response Group).
1 – Very Low/ tnsignificant	Minor Injuries – First Aid Treatments (cuts/bruises).	Less than $10 Thousand Loss	Low environmental impact. Minor Spills less than 80 Llitres.

Score	LIKELIHOOD
5 – Almost Certain	The event is expected to occur in most circumstances. Likely to occur frequently - More than 1 per year.
4 – Likely/ Probable	The event will probably occur in most circumstances. Likely to occur several times – 1 per year.
3 – Moderate/ Occasional	The event should occur at some time. Likely to occur some time – 1 per 5 years.
2 – Remote/ Unlikely	The event could occur at some time. Unllkely but possible. 1 per 10 years.
1 – Rare/ Very Unlikety	The event may occur only in exceptional circumstances. Assumed it may not be experienced. 1 per 100 years.

Risk Rating = Consequence + Likelihood

Consequence	Rtsk Rattng				
5	6	7	8	9	10
4	5	6	7	8	9
3	4	5	6	7	8
2	3	4	5	6	7
1	2	3	4	5	6
	1	2	3	4	5
	Ltkelthood				

Risk Rating – Definitions

Risk Rating	Definitions	*Action Required*
8 - 10	Intolerable	Task not to start till the risk is elimlnated or reduced. Bring to the immediate attention of management. Formal assessment required. MUST reduce the risk as a matter of priority.
7	High	Bring to the immediate attention of management. Task not to start till the risk is eliminated or reduced. Further Assessment required. MUST reduce the risk as a matter of priority.
6	Significant Risk	Bring to the attention of supervision. Review risks and ensure that they are reduced to as low as reasonably practicable. To be dealt with as soon as possible, preferably before the task commences. Introduce some form of hardware to control risk.
5	Moderate Risk	Needs to be controlled but not necessarily Immediately, an action plan to control the risk should be drawn up. Review effectiveness of controls. Ensure responsibilities for control are specified.
2-4	Low Risk	If practical reduce the risk. Ensure personnel are competent to do the task. Manage by routing procedure. Monitor for change

A JHA considers a variety of activities/tasks involved in a job scope and analyses the key hazards (sources of harm) and their consequences (types of harm) eg. Sources of harm – lifting a heavy pipe - manual handling. Types of harm – Back stratn.

Main Points – On how to write a JHA.	*Hierarchy of Hazard Management – Control Measures*
1. Define the task – what is to be done. 2. Review previous JHA if any – have we done it before? 3. Identify the steps – what is to be done. 4. Identify the hazards of each step. 5. Identify who or what could be harmed. 6. Give the task a risk rating – Consequence + Frequency 7. Develop solutions to eliminate or control hazards in each step. 8. Review the risk rating after the control system has been implemented. 9. If risk rating unacceptable review the solutions till risk rating acceptable. 10. Agree who will implement the control system. 11. Document the JHA and discuss with the relevant personnel.	These steps outline what should be planned for when deciding what control measures are to be put in place. Whenever possible the highest step should be used first and then progress down the list. 1. Eliminate the hazard. 2. Substitution. 3. Reducing the frequency of a hazardous task. 4. Enclosing the hazard. 5. Additional procedures. 6. Additional supervision. 7. Additional training. 8. Instructions / Information. 9. Some personal protective equipment.

Appendix G2

Milne Inlet Marine Spill Response Training and Exercise 2014 - Shift 2

Milne Inlet Marine Spill Response Training and Exercise 2014 - Shift 2

Training and Deployment Exercise Report:

Date:	**August 16th and 17th**
Location:	Milne Inlet, Nunavut
Participants:	Per attached Training Rosters

Training Objective:

Marine Spill Response Training, Milne Inlet August 16th and 17th:

The Marine Spill response training at Milne Inlet provides specific training that provides ERT responders at BIM skills that are needed to safely and effectively respond to marine spills that may occur. The Mary River Project Emergency Response Plan (ERP), Spill Contingency Plan (SCP) and Milne Inlet Oil Pollution Emergency Plan (OPEP) Incident Command structure are also reviewed and roles and responsibilities of the emergency management team are discussed.

During the practical deployment exercises, the responders are provided with the opportunity to learn and then practice skills responding to marine spills using the Milne Inlet resident spill response gear. Particular emphasis is placed on small craft safety and operation.

All findings related to the training shall be considered by management at appropriate revisions to the OPEP, ERP and SCP and shall be considered at the next plan revision.

The important principles in the development of this training are:

- Management support of the training activity, at all levels
- Setting clear and measurable objectives for the training and related deployments
- The objective of training and deployments is to improve, rather than impress
- Limit the amount of activities, participants and locations to keep training manageable
- Effective evaluation of the training is as important as conducting the training and deployment successfully
- Planning and conducting training successfully is an important accomplishment, meeting the objectives of protection of health, safety and environment of the company

Additional Objectives:

Important revisions to the site wide ERP and SCP structure were also adopted for the 2014 OPEP. For this reason, additional time was allotted to the review of the roles and responsibilities of the Baffinland Response Management Structure. A full discussion of roles and responsibilities ensures that all key responders understand these roles and are able to coordinate an effective response to a spill incident of all magnitudes.

Course Agenda:

1: Classroom Training by Spill response Specialist – Todd Mitchell, Navenco Marine Inc.

Presentations of classroom modules and materials – Modules 1 -7:

Lesson #	Title	Time allotted (Mins.)
1	Briefing and Introduction	15
2	Milne Inlet Marine Oil Pollution emergency Plan	30
3	Marine Spill Behavior	30
4	Safety for responders to spills	30
5	Marine Safety – small craft	45
6	Booming and boom deployment	60
7	Oil recovery / skimming operations	30
	Total Classroom time allotment	6 hrs

2: Equipment Familiarization and Instruction in Field

Lesson #	Title	Time allotted (Mins.)
8	Hands on review of equipment	30
9	Hands on oil boom instruction – rigging	30
10	Hands on skimmer instruction –operation	30
11	Hands on workboat instruction	30
	Total hands on allotment - Instruction	2 hrs

3: Deployment Exercise

Lesson #	Title	Time allotted (Mins.)
12	Additional equipment instruction in the field and deployment exercise – Deploy workboat, boom deployment and skimmer operation at beach	6 hours

August 16th, 2014

Classroom Training:

Classroom training was held on August 16th at the Milne Inlet PSC. Training commenced at 08:00. Various attendees present, (roster attached) .

The series of classroom modules were presented. Many of the key response management personnel were present so a detailed review and discussion of each of the emergency management roles was possible. The structure as indicated in the OPEP was validated and each of the roles were confirmed to be well defined and understood.

Modules 1 through 7 were presented as per agenda. In addition to the regular modules, an hour of instruction on ropes and knots was delivered, with all trainees practicing the tying of a bowline knot. Each student had the opportunity to perform the knot successfully and practice same.

Classroom training was completed at around 15:00.

Practical lessons and deployment exercise:

Practical session was begun on the afternoon of August 16th at approximately 1500 hrs. The spill response equipment had already been staged at the beach area, close to the marine lay down launch ramp.

The group moved to the beach area and assembled at the boom containers. The contents of container #2 were partially removed to provide a section of boom, one anchor kit and towing equipment for instruction. Instruction on correct method of connecting booms, tow bars was given. Detailed explanation of the anchor kits, including anchor, tow ropes, trip lines and float was made.

The towing paravanes and additional anchor kits had arrived at site. An inventory of the new equipment was verified and a tow paravane was aligned at the end of the boom to test fit the hole alignment of the

connectors. The alignment was found to be incorrect, so arrangements were made to re-drill all three paravanes the next morning.

Instruction as to the correct method of coiling ropes was given to the trainees, and they then recoiled all of the new ropes in the correct manner and prepared them for storage in the boom containers and sea container.

The trainees then proceeded with the instructor to the Spill Equipment Sea Container which was positioned just west of the launch ramp. The contents of two spill kits were verified and the contents were removed. Instruction on the use of sorbents (hydrophobic and universal) was delivered. Plugging materials in the kits were also covered.

The Elastec drum skimmer which is stored at the beach in the sea container was reviewed next. The skimmer was removed from the container in order to review the components. The deployment of the skimmer was deferred to the following day.

August 17th, 2014

The trainees assembled at the PSC training room at 08:00 again on August 17th.

A review of the days objectives and a short refresher on correct boom deployment sequence, methods and techniques was presented by the instructor.

A Job Hazard Assessment (JHA) was then performed prior to commencement of any field work.

After a short break, the trainees boarded the site bus and returned to the beach. The workboat was brought to the launch area and a review of the workboat and safety ensued. The pre-launch inspection covering vessel/ motor integrity and mandated safety equipment was performed by the responders, the workboat was prepared and launched accordingly. It was discovered that the first aid and safety gear stored in the front of the workboat had been flooded and was wet. Some of the contents had been damaged and will require replacement.

The trainees were divided into groups providing 4 separate workboat crews. Each crew was allowed sufficient time to run the boat in the inlet and practice operating the vessel. Each crew then deployed 100 meters of containment boom and anchored the boom successfully in position. The crews were instructed to reposition the boom by using the anchor trip line in order to practice the concepts that were presented in the classroom segment of the boom deployment instruction. At the end of each crew's practice, the anchors and booms were completely retrieved so that the next crew could engage in a complete deployment practice of their own. During the deployments, any obvious safety issues observed were addressed with the crews immediately so that preceding crews were not at risk.

After the boom deployments, the Elastec drum skimmer was then removed from the container and explained to the trainees. Correct method of hook up, operation and use following identified health, safety and environmental guidelines was demonstrated. The unit was deployed at the beach, run, tested and finally recovered and stowed.

Debrief:

Following the deployment exercise a debrief was held at the PSC training room. All of the trainees were present.

The purpose of the debrief is to provide a forum for all participants to fully discuss the operation, outcome of the training, deployment exercise and to gather observations that can lead to improvements in the overall response mechanism in the future.

Each of the participants were invited to provide comments reflecting their day's experience.

Several observations and suggestions for future improvement were raised:

- It was noted that the teams at the beach worked extremely efficiently and in a very coordinated fashion. There was ample time to effect 4 separate boom deployments and each crew had the time to operate and become familiar with the workboat.
- The trainees all demonstrated an excellent understanding of the theoretical information presented in the classroom. This was evident in that each team deployed the booms in exactly the manner as instructed in the presentations.
- During the deployments, VHF radio communications to the workboat were not successful. BIM radios were used.
- The workboat propeller was slightly damaged and spares that had been ordered were still not received. There should be adequate spare propellers available, especially in view of the shallow beach zone and the probability of hitting bottom.
- During the deployments, the workboat crews each set 100 meters of boom with an anchor. They were then instructed to reposition the boom by using the trip line. All of the crews employed the correct method of using the trip lines only to reposition the boom.
- All of the crews approached the boom and anchor marker float from downwind so as to be able to maintain control of the vessel into the wind. This ensures the crew can collect the anchor marker float for towing and repositioning the boom without becoming entangled in the boom or its rigging.
- Many of the lessons learned from the previous deployment on August 2-3rd were implemented in this training and the overall operation was improved significantly as a result.

Training/Exercise coordinator's further comments and recommendations:

- *Equipment pre-staging*: In order to ensure the most effective and rapid response, the locations for pre-staging of the 3 X 100 meter boom boxes were identified. Equipment was placed at the appropriate location for bulk fuel transfer. Due to the construction of the ore dock, it was determined that the optimal position for the boom boxes for 2014 would be close to the cargo lay down launch area.

  Pre-staging of additional boxes closer to the shore manifold is precluded in the interest of not creating any unnecessary disturbance or damage to the beach intertidal zone. Should a spill occur, the OHF would request immediate booming assistance from the ship while immediately transferring one (or more as required) container(s) along the beach to the affected area by means of a loader. This transfer can be made without delay and would not affect the OHF's ability to meet the time standards as outlined in the OHF guidelines.

- Workboat staging: It was determined that the workboat will be stored on its trailer, close to the launch at the cargo lay down area. It was agreed that a clear launch pathway for the workboat be maintained at the site at all times during bulk fuel transfer activities. It is imperative to have a zodiac available during bulk fuel transfer as a rescue and secondary vessel.

- Anchors and rigging: Three anchor kits were identified in the equipment stockpile. Additional rigging and anchors have now been added to the inventory as follows:

  4 – additional anchor kits including: (includes 1 spare)

  - Danforth anchor, 40 lbs
  - 100 foot polypropylene anchor line with snap hook
  - 6- feet 3/8" galvanized chain
  - 100 foot marker line polypropylene with snap hook
  - 1 inflatable marker float for trip line

  Additional equipment:

  - 2 spare inflatable floats
  - 6 X 100 foot anchor lines (2 per box) as spares or for lengthening accordingly
  - 3 towing paravanes with tow bridles

- Safety and PPE Gear:

  A more complete inventory of PPE for cold weather (Mustang suits), additional Personal Flotation Devices (PFD's) and items to complete the Transport Canada Mandated safety gear for small vessels have now been received and is stored in the sea container.

- Equipment Readiness: Prior to commencement of bulk fuel transfer all pollution control equipment should be ready for instant deployment prior to the start of hose operations.

  i) Containers opened and equipment clear

  ii) Anchors should be rigged and ready for deployment with 100 ft of anchor line and 100 ft of trip line and an inflatable buoy connected to the trip line. (depending upon water depth). It was concluded that at least one anchor kit be pre-rigged and on board the workboat at all times.

  iii) The boom at each deployment box should be made ready with a 100 foot towline and tow bridle attached at each end

  iv) 1 rigged anchor should be stowed in the workboat ready for use. Spare tow lines should be available on the workboat

- Beach zone deployment: In this and previous exercises various "lessons learned" in regards to the deployment from the Milne beach zone were noted:

  i) Due to the very shallow water encountered at the beach, sufficient length of tow line is necessary to allow the workboat to remain in deeper water while deploying the boom

  ii) Hip waders or similar may be required of all beach deployment personnel

  iii) All workboat operators should be aware of the shallow water encountered at the beach and ensure that the engine is adequately tilted while operating in the shallow water. The engine should be tilted down as soon as in deep water so as to maximize thrust while towing booms.

iv) When significant waves are present at the beach, the workboat should avoid " beaching" as re-launching can be difficult, especially on a falling tide

v) Attention must be given to operations on a falling tide to avoid "stranding" the workboat in the shallow beach zone

vi) The cold and wet conditions require the use of floater suits by the workboat crew. Beach responders should also have floater suits available, although they may opt for other PPE should warmer weather warrant. At all times, life jackets must be worn if working on water.

Summary:

The spill training and deployment exercise, Shift 2 for 2014, met all the specific goals that were identified. Responders that are required to fulfill the pollution response roles as outlined in the OHF "OPEP" were trained in sufficient numbers. The responders also participated in physical deployments and received adequate instruction as to be able to competently deploy the facility's level 1 spill gear in the event of a spill or potential spill.

In this instructor's opinion the deployment during the exercise and instruction was of excellent value to all who participated. All trainees carried out their duties in a professional manner and showed good co-ordination throughout the exercise. The operation was accomplished safely, and in a timely fashion.

Todd Mitchell
Navenco Marine Inc.

RESIDENT OIL SPILL RESPONSE EQUIPMENT MILNE INLET BULK HANDLING FACILITY – EQUIPMENT AUDIT – August 17, 2014

Quantity	Description	Inspected	Quantities	Inspection comments
1	Oil containment boom 1000 ft – Aquaguard "Liteflex" 24	Yes	3 X 100 M	All boom found to be as new, unused and fully operational
4	Anchor kits for anchoring boom in place	Yes	7 kits complete	Anchor kits found to be as new, unused and fully operational.
4	Towing bridle for oil boom	Yes	4	
3	Towing paravanes C/W bridles	Yes	3	One in each boom container
8	Spill response unit – X Large Land	Yes	8	Various locations on site
4	Overpack spill kit	Yes	4	Various locations on site
6	48" x 36" x 6" Arctic mini berm for under fittings	Yes	3	Assigned in various site locations, available when required within time standards
2	Insta berm 10' x 10' x 15" Arctic	Yes	2	
50	Bales assorted sorbents	Yes	50	
1	Aluminium workboat with outboard engine, equipped with towing post and related equipment for boom deployment	Yes	1	Verified workboat, all safety equipment onboard as delivered.

1	Drum skimmer and diesel driven power pack, suitable for recovery of distillates – Capacity 7.5 tonnes per hour	No	1	Fully functional and response ready
1	Vacuum truck, 3000 gallon capacity	Yes	1	Functional and response ready
20	45 gallon steel drums	Yes	20	
1	Sand, 15 tons	Yes	15T	

DATE INSPECTED: August 17, 2014

Per:
Todd Mitchell – Spill Response Specialist

Baffinland Iron Mines Corporation

Milne Inlet Marine Spill Response Training and Spill Response Exercise 2014 (Shift 2)

Observations, Recommendations and Corrective Action

Ref	Observation	Recommendation	Corrective Action	Scheduled Completion Date	Accountable	Consultant's Comments and OPEP Considerations
1.	Additional propellers for the workboat should be available	Order several spares for inventory prior to bulk fuel transfer	Ordered and will be on site prior to fuel transfer	August 31, 2014	D. Pope	Still not received on site as of August 18th.
2.	VHF antenna was an obstruction in the workboat during boom deployments. Radio also was not transmitting	Remove and replace with a more suitable antenna. Alternatively, a handheld VHF could substitute for the permanently mounted antenna. Verify reason for malfunction.	Replace antenna, VHF portables are available for the ERT.	August 31, 2014	D. Pope	
3.	It was noted that additional hydraulic hose from skimmer to powerpack would eliminate the need to reposition the powerpack over the rough stone at the beach. This would not only enhance safety of the crew but would also remove a potential ignition source further from the spill zone.	Purchase additional hydraulic hoses to double working distance between hydraulic powerpack and skimmer head	Additional hose to be purchased as soon as possible.	On site prior to bulk fuel transfer	Deon Pope	

Job Hazard Analysis Form

PROJECT/TASK: Milne Inlet Marine Spill Response Training		CONTRACTOR: Baffinland				JOB No.:			
SUPERVISOR: Bill Bowden		LOCATION: Milne Inlet				DATE: Aug 2-3 2014			
JOB STEP Break the job into steps. Listing work which may be hazardous.	HAZARDS List the hazard or type of harm identified with each step.	Inherent			CONTROL MEASURE List the necessary control measures to be followed to eliminate/reduce the identified hazards.	Residual			ACTION Person who will ensure this happens
		Consequence	Likelihood	Risk Ranking		Consequence	Likelihood	Risk Ranking	
• Ensure working radio communication and obtain a vehicle.	Improper radio communication can lead to unclear instructions and possible incidents	2	2	4	Proper radio connection in imperative to clearly understand situations and complete jobs safely.	1	1	2	All spill training crews
	Vehicular operations and fast moving vehicles	3	1	4	Ensure all proper PPE is worn and all people driving the vehicle should have light vehicle training and be comfortable with driving.	2	1	3	All spill training crews
• Launch the work boat	Being struck by the trailer or vehicle	2	1	3	Only boat crews are allowed to be in the vicinity of the boat launch	1	1	2	Workboat crew
• Working from a boat in rough weather	Rough weather can produce conditions that promote injuries or falling overboard	2	1	3	Workboat crew should wear mustang suits and be aware of weather conditions and be in control of the boat.	2	1	3	Workboat crew
• Opening, examining and taking out the spill booms and anchors from the marine spill kits	Pinch points associated with the containers and booms.	1	3	4	The spill booms should be fed out carefully from the spill boom containers to avoid worker injury. The workboat should not be used to initially take the boom out.	1	1	2	All spill training crews
	Heavy lifting may be required and awkward loads are present.	2	2	4	Proper lifting techniques should always be used and loads too heavy for lifting should never be attempted	2	1	3	All spill training crews
	Rope tangling resulting in slips trips and falls	1	2	3	Situational awareness and observing your surroundings should be common practice	1	1	2	All spill training crews

	Uneven ground and large aggregate	1	2	3	Situational awareness and observing your surroundings should be common practice	1	1	2	All spill training crews
• Secure the free end of the spill boom and hand a anchor set to the workboat	The anchor, buoy and ropes can be awkaward to handle	1	1	2	Care should be taken when working in the water around the boat (PFD required). The anchor set should be transferred by two people	1	1	2	All spill training crews
• Secure the other end of the spill boom to the anchor point on shore.	Tripping hazards can occur from anchor lines	1	1	2	Situational awareness and observing your surroundings should be common practice	1	1	2	Beach crew
• Deploy the boom, anchor the workboat end of boom to simulate oil containment	Working in rough water conditions	4	2	6	Workers must pay special attention to keep the workboat balanced	4	1	5	Workboat crew
	Deploying the anchor while still attached to the spill boom	4	2	6	Two workers are required to safely deploy the anchor from the work boat. The effort should be coordinated to avoid being pinched between the anchor and the boat. The boat driver must keep the boat stable and be aware of his surroundings as the boom is deployed and anchored	4	1	5	Workboat crew
	Entanglement in the anchor and trip lines while deploying the boom	4	2	6	Workers must be aware of the location of the anchor and trip lines when deploying the anchor to avoid being pulled overboard	4	1	5	Workboat crew
	Possibility of workers going overboard during the exercise	4	2	4	All work will cease and rescue efforts by the rescue boat will take priority. A rescue workboat will be stationed ready to launch at immediate notice for rescue.	4	1	5	Workboat crew
• Setting up the hydraulic skimmer	Hazards associated with working with hydraulic hoses and pressure and rotating drums.	2	2	4	Workers involved in the operation of the hydraulic skimmer should be trained and have practice assembling, running and dissembling the hydraulic skimmer unit.	2	1	3	Beach crew

	Hydraulic fluid and oil can pose an environmental hazard.	1	3	4	Secondary containment and spill pads should be used.	1	3	4	Beach crew
• Moving the hydraulic skimmer and generator and placing the skimmer in the water	The oil skimmer and generator can be awkward and heavy to move	2	2	4	Proper lifting techniques and situational awareness should be used. Two workers or more should be used to move the items. Proper PPE should be worn.	2	2	4	Beach crew
• At exercise completion disassemble the hydraulic skimmer	Skimmer disassembly hazards are the same as skimmer assembly hazards	2	2	4	Exercise the same precautions as when assembling skimmer. The skimmer and power unit should be shut off before disconnecting hydraulic hoses. Neatly return hoses to storage area and stay vigilante for hydraulic fluid and hydrocarbons leaking.	2	2	4	Beach crew
• Pull the boom anchor from the ocean floor and retrieve the boom	Boat running over the anchor line	1	1	2	The workboat should approach the buoy from the downwind side for a controlled recovery. Once the anchor trip line has been retrieved, use the momentum of the boat to free the anchor from the seabed.	1	1	2	Workboat crew
	Entanglement in the anchor and trip lines	4	2	6	Workers must be aware of the anchor and trip lines when retrieving the anchor to prevent line entanglement with themselves.	4	2	6	Workboat crew
• Return the spill boom to the boom containers	Pinch points and awkward lifting	1	2	3	Workers should be extra aware of where their body extremities are. Proper lifting techniques should always be used and loads too heavy for lifting should never be attempted	1	1	2	Beach crew
• Return the work boat to the trailer	Being hit by truck or trailer	2	1	3	The work boat crew should only be in the vicinity and care should be taken to properly land the boat on the trailer.	2	1	3	Workboat crew

Job Hazard Analysis Attendees:

	Name	Signature	Date
Written by:	Bill Bowden		AUG 17/14
Reviewed by:	Kyle Lingard		AUG 17/14
Reviewed by:	MIKE NEWMAN		AUG 17/14
Reviewed by:	Joël Guillemette		AUG/17/2014
Reviewed by:	Joe Bloomfield		AUG 17/2014
Reviewed by:	Kelly O'Hara		08/17/14.
Reviewed by:	NICK KNAZYK		AUG 17/14.
Reviewed by:	LYLE Hemmerling		AUG 17/14.

Reviewed by:	Nayaten Kilpanik		8/17/14
Reviewed by:	TERRY M SESSOME		8/17/14
Reviewed by:	DANIEL DUBRAY		8/17/14
Reviewed by:	Jonathan Alexander		8/17/2014
Reviewed by:	Dustin Kunkel		8/17/2014
Reviewed by:	Jeremy McMillan		8/17/2014
Reviewed by:	DALE WALES		8/17/14
Reviewed by:			
Reviewed by:			
Reviewed by:			
Reviewed by:			
Reviewed by:			
Reviewed by:			
Reviewed by:			
Reviewed by:			
Reviewed by:			

Score	TABLE OF CONSEQUENCE		
	People	Plant	Environment
5 – Very High/ Catastrophic	Multiple Fatalities.	Greater than $10 Million Loss	Catastrophe, destruction of sensitive environment, worldwide attention. Likely EPA prosecution. More than 30 days delay.
4 – High/ Major	Fatality or Permanent Disabilities.	$1 Million to $10 Million Loss	Disaster, high levels of media attention, high cost of clean up. Offsite environmental harm; more than 10 days delay.
3 – Moderate	Major Injuries – Incapacitations or requiring time of work.	$100 Thousand to $1 Million Loss	Major spills, onsite release, substantial environmental nuisance, more than 1day delay. (Leads to an additional resources call out i.e. SES).
2 – Low/ Minor	Significant Injuries – Medical Treatments, non-permanent injury.	$10 Thousand to $100 Thousand Loss	Significant spills. (Leads to a call out of Site Emergency Response Group).
1 – Very Low/ Insignificant	Minor Injuries – First Aid Treatments (cuts/bruises).	Less than $10 Thousand Loss	Low environmental impact. Minor Spills less than 80 Litres.

Score	LIKELIHOOD
5 – Almost Certain	The event is expected to occur in most circumstances. Likely to occur frequently - More than 1 per year.
4 – Likely/ Probable	The event will probably occur in most circumstances. Likely to occur several times – 1 per year.
3 – Moderate/ Occasional	The event should occur at some time. Likely to occur some time – 1 per 5 years.
2 – Remote/ Unlikely	The event could occur at some time. Unlikely but possible. 1 per 10 years.
1 – Rare/ Very Unlikely	The event may occur only in exceptional circumstances. Assumed it may not be experienced. 1 per 100 years.

Risk Rating = Consequence + Likelihood

Consequence	Risk Rating				
5	6	7	8	9	10
4	5	6	7	8	9
3	4	5	6	7	8
2	3	4	5	6	7
1	2	3	4	5	6
	1	2	3	4	5
	Likelihood				

Risk Rating – Definitions

Risk Rating	Definitions	*Action Required*
8 - 10	Intolerable	Task not to start till the risk is eliminated or reduced. Bring to the immediate attention of management. Formal assessment required. MUST reduce the risk as a matter of priority.
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2-4	Low Risk	If practical reduce the risk. Ensure personnel are competent to do the task. Manage by routing procedure. Monitor for change

A JHA considers a variety of activities/tasks involved in a job scope and analyses the key hazards (sources of harm) and their consequences (types of harm) eg. Sources of harm – lifting a heavy pipe - manual handling. Types of harm – Back strain.

Main Points – On how to write a JHA.

1. Define the task – what is to be done.
2. Review previous JHA if any – have we done it before?
3. Identify the steps – what is to be done.
4. Identify the hazards of each step.
5. Identify who or what could be harmed.
6. Give the task a risk rating – Consequence + Frequency
7. Develop solutions to eliminate or control hazards in each step.
8. Review the risk rating after the control system has been implemented.
9. If risk rating unacceptable review the solutions till risk rating acceptable.
10. Agree who will implement the control system.
11. Document the JHA and discuss with the relevant personnel.

Hierarchy of Hazard Management – Control Measures

These steps outline what should be planned for when deciding what control measures are to be put in place. Whenever possible the highest step should be used first and then progress down the list.

1. Eliminate the hazard.
2. Substitution.
3. Reducing the frequency of a hazardous task.
4. Enclosing the hazard.
5. Additional procedures.
6. Additional supervision.
7. Additional training.
8. Instructions / information.
9. Some personal protective equipment.

Baffinland

Attendance Form

Course Name: Marine Spill Response Training Session 2	Date: Aug 17 2014
Instructor's Name: Todd Mitchell Company: Navenco Marine	Course Duration: 8am 5pm
Signature:	
Room / Location:	
Language of Delivery: Inuktitut ✓ English ___ Both(translation) ___	

	Name	M / F	Company	Dept.	Site	Home Community	Initials
1	Loël Guillemette	M	Bim	MH	Milne	Embrun	J.G.
2	Nick Kuzyk	M	BIM	ENV	Milne	MTL, QC	NK
3	Kyle Lingard	M	BIM	MH	Milne	Cobourg ON	KL
4	Jonathan Alexander	M	BIM	HSE	Milne	Iqaluit NU	JA
5	MIKE NEWMAN	M	BIM	MAINTENANCE	MILNE	N.S. / BEDFORD.	MEN.
6	TERRY M JESSOME	M	BIM	TRAINING	Milne	N.S Cape Breton	
7	KALYO'MARA	F	BIM	HR	MILNE	K.T.C.K.L.N.E.R	
8	DAN DUBEAU	M	BIM	HSE	MILNE	OUT	
9	Nunaliea Kilpatrick	M	BIM	SS	Milne	Ottawa	
10	DALE JAMES	M	BIM	ORT	YES	KINGSVILLE	
11	Jeremy McMillan	M	BIM	MH	Milne	Ramara ON	
12	Joe Blandford	M	BIM	Maint	milne	Dorchester, ON	
13	Dustin Kunkel	M	BIM	ENVR	MR	Pembroke, ON	
14	KYLE HEMMERLING	M	BIM	SS	MILNE	KELOWNA BC	
15	Bill Bowden	M	BIM	ENV	Milne	London, ON	
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Baffinland

Attendance Form

Course Name: Marine Spill Response Session 2	Date: August 16 2014
Instructor's Name: Todd Mitchell Company: Navenco Marine	Course Duration: 8AM – 5PM
Signature:	
Room / Location:	
Language of Delivery: Inuktitut ___ English ✓ Both(translation) ___	

	Name	M / F	Company	Dept.	Site	Home Community	Initials
1	TERRY M JESSOMME	M	BIM	TRAINER	MILNE	N.S.	
2	Kyle Lingard	M	BIM	M/H	Milne	Cobourg	
3	Nick Kuzyk	M	BIM	ENV	Milne	MTL, QC	
4	Joe Bloomfield	M	BIM	Maint	Milne	Cambridge, Ont	
5	CALE WALES	M	BIM	ERT	YES	KINGSVILLE ON	
6	Jeremy McMillan	M	BIM	M/H	Milne	Kanata ON	
7	Krystian Kjarnik	M	BIM	SS	Milne	Ottawa	
8	Joe Guillemette	M	BIM	M/H	Milne	EMBRUN	
9	MIKE NEWMAN	M	BIM	MAINT	MILNE	N.S.	
10	DAN DUBE	M	BIM	HSE	MILNE	ONT.	
11	Glean Mehge	M	BIM	HSE	milne	W.I.	
12	Jonathan Alexander	M	BIM	HSE	Milne	Iqaluit	
13	Dustin Kuntz	M	BIM	ENV	Milne	Penhold AB	
14	Kyle Hemmerling	M	BIM	SS	MILNE	KELOWNA BC	
15	Kelly Omard	F	BIM	HR	MILNE	KITCHENER	
16	Allan Knight	M	BIM	ENV.	NS	LONDON	
17	Bill Bowden	M	BIM	ENV	Milne	London	
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Appendix G3

Annual Spill Exercise Report

Milne Inlet Marine Spill Response Exercise 2014

Exercise Report:

Date:	**August 18th, 2014**
Location:	Milne Inlet, Nunavut
Participants:	Per attached Training Rosters

Training Objective:

The detailed goals and objectives of this exercise are outlined in the accompanying document entitled "MILNE INLET OIL SPILL RESPONSE EXERCISE – August 2014"

The effectiveness of the Oil Pollution Emergency Plan (OPEP) plan is validated though the 3 year cyclical exercise program. The results of scheduled exercises, information gathered from operations or actual spills and the lessons learned are documented and are an important element in the periodic plan review. The exercise conducted in conjunction with the ship during the bulk fuel transfer satisfies the following exercise elements:

- Internal notification
- External notification
- Validation of the Baffinland Iron Mines Emergency Response Management System
- Spill response equipment deployment

Exercise Scenario and synopsis:

While at anchorage in Milne Inlet, and during pumping operations (ship to shore transfer) a rupture occurs in the hose. The shore low pressure alarm at the manifold is tripped. The shore crew notifies the ship immediately. Pumping is immediately stopped. Shore watch reports a spill of product, approximately 2500 litres along the length of the hose between ship and shore which is moving eastward towards the freight receiving launch. The exercise begins with notification in accordance with the OPEP and leads to a deployment of spill control gear.

Summary log of events:

A number of logs were created and updated with key and significant events during the exercise. An incident log was created at the CC in Milne Inlet, an additional log of on-scene events at the CC in Mary River was also updated regularly during the exercise. Furthermore, logs from various participants as well as the log of the exercise coordinator and CEMT were reviewed.

In order to present a continuous chronological *overview* log of the entire exercise event, a compilation of *major events only* from several logs is presented herewith.

Marine Spill Response Exercise Actions Log

Weather Conditions (At initial alarm): Winds Moderate - N NE 10-20km/hr. Skies overcast. Temp 3C.
Marine conditions: Low tide –waves 1-2 feet
Approx Exercise Position: 71.53.55 N, 080.53.96 W (approx)

Legend
IC – Incident Commander
CC – Command Centre
MCC – Mary River Command Centre
CEMT – Corporate Emergency Management Team
EC – Exercise Coordinator

Time:	Entry	Originating Log
13:30	Code 1 announced over channel 1 for hydrocarbon spill in Milne Inlet	CC
13:30	Security is notified that it is a code 1 drill – directed to announce this every 15 minutes	CC
13:32	Command center is set up in Milne	CC
13:34	Responders arrive at the beach (fire truck, ambulance, spill truck)	EC
13:36	Environment coordinator states oil is coming east, evaluates proper response; a significant spill has occurred and requests that all spill notifications go out	EC
13:36	People cut into emergency channel and were told to stay off the channel	CC
13:39	Responders begin mobilizing the boat and securing the area with help of Safety Coordinator	EC
13:40	Boat inspection carried out by Safety Coordinator	EC
13:41	CC requests information on spill and calls Mary River	CC
13:44	Mary Incident Command Center activated. Milne CC informs a spill to Milne Inlet has occurred. During the bulk fuel transfer a low pressure alarm on the manifold sounded; contacted ship to stop transferring fuel: 2500 liters of diesel, rupture in hose, deploying boon to the east, boat launched, send out all regulatory notifications as required.	MCC
13:44	IC tries to reach the CC and cannot – IC must reach higher ground to reach CC	EC

13:45	IC relocates his base radio to the beach for reliable communication	EC
13:48	IC requests extra sorbents for the beach	EC
13:48	Environmental superintendent verifies that the Nunavut 24hr spill line, Canadian Coast Guard, Transport Canada, AANDC and QIA will be notified	CC
13:49	Port and logistics requests warehouse to get an inventory of spill supplies on site	CC
13:50	Received a call from MCC that a code 1 had been called, that there was a drop in pressure in the offloading of diesel. It is estimated that approx. 2500 litres had been spilled in the Inlet. MRT has been mobilized and are mobilizing the spill booms	CEMT
13:50	CEMT informs MCC to contact Petro Nav that exercise is occurring	CEMT
13:51	Secondary boat is located and told to be brought to the shore for rescue boat	EC
13:52	Environment requests that more sorbents be shipped from Mary River	EC
13:53	Asks Mary River to Mobilize both helicopters for support	CC
13:54	Baffinland President is informed that marine oil spill exercise has begun	CEMT
13:54	Milne has 86 bags of sorbent pads and 36 boxes of sorbent socks while Mary River has 51 bags of sorbent pads and 24 boxes of sorbent socks	CC
13:55	Spill boom is pulled out of box by responders	EC
13:58	Work boat hooking onto to tow line of boom	EC
14:00	Corporate Emergency Management Team boardroom is assembled and appraised of the situation	CEMT
14:02	Vacuum truck and loader are requested to beach for support	MCC
14:03	50 people are requested for sorbent deployment and clean up	CC
14:06	9 Materials handling, 2 site services, 15 QL, 4 port and logistics personal will be filling the personnel needs. Arctic construction will supply more personnel	CC
14:06	Boom was anchored to shore and boat begins deployment	EC
14:07	Bus is requested to transport clean up personnel to the beach	CC
14:08	IT contacted to cut all unauthorized communication off	CC
14:08	IC requests ETA on helicopters	EC
14:09	Anchor line disconnects from the boom and is reattached	EC
14:09	Helicopter will be at Milne in 15 minutes. Environmental Coordinator reports all notifications have gone out.	MCC
14:12	Boom anchor is deployed and allowed to set	EC
14:13	Vacuum truck and loader arrive	EC
14:14	Boom trip line is used to reposition boom to better contain the spill	EC
14:15	50 people assembled at bus ready to be deployed for spill clean up	CC
14:18	Boom anchor dropped to hold repositioned boom	EC
14:18	MCC updates the corporate boardroom on the developing situation	CET
14:19	Beach is surveyed by Environment Coordinator and IC requests more spill supplies	EC
14:20	Requests warehouse to send required PPE for all responders without	CC
14:24	Boom trip line is used to reposition boom	EC
14:25	Helicopter arrives in Milne and takes photos of the spill	CC
14:27	Photos received at MCC and forwarded to corporate	MCC
14:27	Skimmer power pack is brought to recovery area	EC
14:30	Boom is anchored after repositioning to better contain the spill	EC
14:32	IT asked to ascertain the immediate future weather conditions	CC
14:35	Checked to see if Summit Airlines were available to fly to Iqaluit to pick up extra supplies if required; they were available.	MCC
14:37	Skimmer deployed to contaminated area at boom deflection apex	EC

14:45	Skimmer is started and begins to pump contaminated water to containment	EC
14:45	IC inquires if the ship has ceased transfer and the status of their crew and hose lines	CC
14:47	More supplies required at beach; all spill response sorbent are to be sent to Milne	CC
14:50	Helicopter departing from Mary with all available sorbents	MCC
14:49	The ship confirms that fuel transfer had stopped once the spill had been identified and that the crew is safe	CC
14:51	Spill contained, clean up requires more spill sorbents to be ordered from Iqaluit	MCC
14:51	Contacts Iqaluit to order and inquire timeline of bulk sorbent shipment	CC
14:52	Iqaluit confirms that a bulk shipment of sorbents will be available in 48 to 72 hours	CC
14:52	IC requests hot drinks and food be delivered to the beach for responders	CC
14:54	Mary River sorbent supplies being sent to Milne by helicopter	MCC
14:55	Code 1 stand down- Exercise complete	EC
15:03	Receives update that the spill is contained and the code 1 has been stood down; ongoing monitoring and cleanup will continue	CEMT
15:10	Baffinland president is informed that the exercise has completed and the code 1 has been stood down	CEMT

Debrief at PSC Training Center:

Following the exercise, a complete debrief was held at the Milne PSC Training center. The debrief was moderated by the Exercise Coordinator.

Present:

- Exercise Coordinator
- Environmental Coordinator
- Incident Commander
- Baffinland ERT responders
- Baffinland Training
- Baffinland Safety Supervisor
- Mr. Jayko Alooloo (Observer – QIA)

The purpose of the debrief is to provide a forum for all participants and observers to fully discuss the operation, outcome of the exercise and to gather observations that can lead to improvements in the overall response mechanism in the future.

Each of the participants were invited to provide comments reflecting their day's experience:

Exercise Coordinator

- The weather was less favorable than the previous training sessions, however the crews were suitably prepared, dressed and handled the harsher conditions extremely well.
- All workboat operations were performed in a timely and safe manner. Despite the more challenging wave conditions, the crew worked well and was able to successfully deploy the containment boom within the anticipated time.
- It was noted that the handheld radios were not able to reach the CC and the IC had to transmit from his base unit in his vehicle.
- Some difficulty in tying knots on the boom rigging was observed, it would be important for ERT members to master a simple bowline and practice regularly.
- One rope attaching the boom to the shoreline became free on deployment. All lines should be secured and rechecked regularly.
- Deployment of the skimmer would be much easier and especially safer if 30 meters of hydraulic hose were available. In that way, the diesel powerpack would not have to be manually pushed to the recovery site across the beach. This would also ensure it would not be set up in the intertidal zone.

Lyle Hemmerling –Site Services Superintendent - EMTL

Lyle presented an overview of the activities in the Milne CC during the event.

- It was noted that the command structure worked efficiently and that all of the participants understood and executed their roles well.
- A second base radio would be desirable to ensure better flow of communications during an emergency response. Also, a secondary room or method of reducing cross noise between the team would be helpful.
- Requests for onsite support for trucks and other materials were met in a timely fashion

Dale Wales – Incident Commander

- Dale commended his team for having followed all of the training provided and responding as instructed.
- Communications to the CC were poor with handheld radios necessitating using his vehicle base unit to communicate.
- He noted that a larger workboat is recommended from not only a safety standpoint, but also would be much a more capable platform for the intended task, especially as weather deteriorates. With a drop bow type arrangement, boom could even be deployed directly from the deck of the workboat over the bow.
- The ice rescue suits worn by two of the beach deployment crew worked very well and helped in keeping the workboat off the beach and from grounding.
- Winches on ER vehicles could be used to provide shoreline attachment points and also assist in the recovery process.
- Some method for accounting for workers at the beach (head count) would be desirable

- 15 minute checks on radio during a code 1 event are helpful in providing the ERT members time perspective while responding.

Dan Dubroy – Safety Coordinator

- Dan noted that traffic control using cones was set up immediately at the launch area to keep uninvolved personnel away.
- All personnel required to wear PFD's did so.
- He found radio communications to be adequate while executing his functions
- Team lifts for all heavy gear was noted and lifts were performed safely at all times.
- Some difficulty in launching the workboat was encountered as the launch site had been disturbed by the freight barges and not properly repaired. The launch truck became stuck, however was freed easily. He did note that a roller trailer would make the task easier to accomplish.
- He noted that regular status checks on the personnel, especially those in the workboat were made. This ensured that no one was at risk of exposure.
- While moving the skimmer with the loader, excellent spotting and communication was noted.
- No rushing, running or other hazardous activity was noted.

Nick Kuzyk, Environmental Coordinator

- Commented that all tasks were well coordinated and the goals of the deployment were well carried out
- His main concern was the protection of sensitive areas recognizing the use of the area by local hunters from nearby communities. In a real incident, he would have chosen to deploy additional boom as a protective measure considerably further east, closer to the hunter's camp.
- He noted the techniques used during the exercise were sound and could easily be used in future responses.

Mr. Jayco Alooloo – QIA Observer:

- Mr. Alooloo remarked that the team worked well together and the effort was well coordinated. He noted that although last year's exercise was well performed, a marked improvement this year was evident.
- Recommended that the skimmer be anchored rather than deployed and held by responders. It was explained that in a real incident the skimmer would be appropriately anchored.
- Suggested that some training and spill response exercises on ice would be beneficial as spills may occur during winter.

Responders:

- Responders working in the water would be safer with a handheld waterproof radio.
- Workboat crews suggest that some racks and holders for paddles and safety gear be installed in the workboat

Debrief at Mary River:

In addition to the Milne Inlet debrief, a debrief was held at the Mary MSC location on August 21st. The debrief was moderated by the Exercise Coordinator. Alan Knight, Environmental Coordinator was present.

Alan reviewed the events that took place in the Mary River CC. Some points of note are as follows:

- The events in the Mary River CC unfolded in an orderly fashion. Communications were efficient and the flow of information from the Milne CC was timely.
- All requests for additional resources and materials from Milne were handled in real time. The respective departments i.e. warehouse, purchasing were involved and responded with real estimates of availabilities and inventories.
- Purchasing initiated contacts with oil spill equipment suppliers to ascertain availability of large volumes of sorbents if needed. They also explored the logistics involved in moving these items to site if required.
- All external notifications were initiated without delay and responses from all of the external agencies were immediate.
- The CEMT in Oakville was notified and mobilized accordingly. They were regularly updated as to the status of activities on site.

Summary:

The exercise was considered by all to have been a resounding success. The deployment of workboat, boom and related equipment as outlined in the OPEP scenarios was accomplished in a timely, safe and highly professional manner. The exercise on August 18th met Baffinland's objectives of internal, external notification, validation of the Emergency Management System and as well provided a full equipment deployment exercise.

Responders that are required to fulfill the pollution response roles as outlined in the OHF "OPEP" were trained in sufficient numbers. The responders also participated in physical deployments and received adequate instruction as to be able to competently deploy the facility's level 1 spill gear in the event of a spill or potential spill.

The important aspect of validating the effectiveness of the Baffinland Emergency Response Management structure was also met. The team effectively managed the response to the emergency from an incident command standpoint and exercised full notification procedures and follow-ups both internally and externally.

In this instructor's opinion the deployment during the exercise and instruction was of excellent value to all who participated. All trainees carried out their duties in a professional manner and showed good co-ordination throughout the exercise. The operation was accomplished safely, and in a timely fashion.

Todd Mitchell
Navenco Marine Inc.

RESIDENT OIL SPILL RESPONSE EQUIPMENT MILNE INLET BULK HANDLING FACILITY –EQUIPMENT AUDIT – August 19, 2014

Quantity	Description	Inspected	Quantities	Inspection comments
1	Oil containment boom 1000 ft – Aquaguard "Liteflex" 24	Yes	3 X 100 M	All boom found to be as new, unused and fully operational
4	Anchor kits for anchoring boom in place	Yes	7 kits complete	Anchor kits found to be as new, unused and fully operational.
4	Towing bridle for oil boom	Yes	4	
3	Towing paravanes C/W bridles	Yes	3	One in each boom container
8	Spill response unit – X Large Land	Yes	8	Various locations on site
4	Overpack spill kit	Yes	4	Various locations on site
6	48" x 36" x 6" Arctic mini berm for under fittings	Yes	3	Assigned in various site locations, available when required within time standards
2	Insta berm 10' x 10' x 15" Arctic	Yes	2	
50	Bales assorted sorbents	Yes	50	
1	Aluminium workboat with outboard engine, equipped with towing post and related equipment for boom deployment	Yes	1	Verified workboat, all safety equipment onboard as delivered.

1	Drum skimmer and diesel driven power pack, suitable for recovery of distillates – Capacity 7.5 tonnes per hour	No	1	Fully functional and response ready
1	Vacuum truck, 3000 gallon capacity	Yes	1	Functional and response ready
20	45 gallon steel drums	Yes	20	
1	Sand, 15 tons	Yes	15T	

DATE INSPECTED: August 18, 2014

Per:
Todd Mitchell – Spill Response Specialist

Milne Inlet Marine Spill Response Training and Spill Response Exercise 2014

Observations, Recommendations and Corrective Action

Ref	Observation	Recommendation	Corrective Action	Scheduled Completion Date	Accountable	Consultant's Comments and OPEP Considerations
1.	Additional propellers for the workboat should be available	Order several spares for inventory prior to bulk fuel transfer	Ordered and will be on site prior to fuel transfer	August 31, 2014	D. Pope	Still not received on site as of August 18th.
2.	VHF antenna was an obstruction in the workboat during boom deployments. Radio also was not transmitting	Remove and replace with a more suitable antenna. Alternatively, a handheld VHF could substitute for the permanently mounted antenna. Verify reason for malfunction.	Replace antenna, VHF portables are available for the ERT.	August 31, 2014	D. Pope	
3.	It was noted that additional hydraulic hose from skimmer to powerpack would eliminate the need to reposition the powerpack over the rough stone at the beach. This would not only enhance safety of the crew but would also remove a potential ignition source further from the spill zone.	Purchase additional hydraulic hoses to double working distance between hydraulic powerpack and skimmer head	Additional hose to be purchased as soon as possible.	TBD	Deon Pope	

Baffinland
Iron Mines Corporation

MILNE INLET OIL SPILL RESPONSE EXERCISE

EXERCISE PLAN

AUGUST 18, 2014

NAVENCO MARINE INC.

BAFFINLAND OIL SPILL RESPONSE EXERCISE PLAN

MILNE INLET - AUGUST 18 - 2014

Purpose and Scope:

The Canada Shipping Act – CSA 2001 requires that Oil Handling Facilities have Oil Pollution Emergency Plans. The effectiveness of the plan is evaluated and validated through the BIM three year exercise program as outlined in the OPEP.

For 2014, an exercise shall be held at the Milne Inlet Port site, scheduled to occur between the two the bulk fuel transfers planned for August/September.

The oil spill response exercise planned for Milne Inlet provides several benefits to the corporation, the staff, monitoring bodies and ultimately to the environment. The responders are provided with the opportunity to practice skills in the handling and deployment of oil spill gear, in addition to exercising skills in the management of complex decisions under real-time conditions. Plans, equipment and systems will be tested and, with proper feedback, strategies for effective response can be further developed. Recommendations for improvements are a primary goal of the exercise.

The important principles in the development of this and all Baffinland exercises are:

- Management support of the exercise activity, at all levels
- Setting clear and measurable objectives for the deployments
- The objective of an exercise is to improve, rather than impress
- Simple and more frequent exercises lead to faster and more effective response to real incidents
- Limit the amount of activities, participants and locations to keep exercises manageable
- Effective evaluation of the exercise is as important as conducting the deployment successfully
- Planning and conducting an exercise successfully is an important accomplishment, meeting the objectives of protection of health, safety and environment of the company

Overall Exercise Synopsis:

The exercise planned for Milne Inlet, 2014 is designed to validate several elements of the OPEP including:

- Internal notifications
- Activation of the BIM Emergency Management System and escalation according to severity of the incident
- External notifications
- Activation of the emergency response team and initiation of a deployment of pollution response equipment by responders
- Incident management at all levels

The exercise shall provide an opportunity to enhance individual skills and team work of the Baffinland Iron Mines Corporation participants who may be called upon should a real incident occur. Several observers may also be present, and comments from all parties are most welcome in the objective of improving the operation and enhancing successful spill response.

The management of a simulated emergency will provide an important opportunity for the validation of the effectiveness of the BIM emergency response structure. Activation of the ERT and escalation of the incident as required will be tested and evaluated.

As the exercise will also include a deployment of spill response equipment, the feasibility of deploying spill response equipment in the conditions typically encountered shall be evaluated, and the valuable lessons learned will be used in the development of further strategies and response plans in the future.

The decision as to timing of the deployment, the extent of the deployment etc. will be made by the Exercise Coordinator, taking into consideration many factors, especially the safety of the operation and weather at the planned time of the event.

Exercise Coordination:

The exercise Coordinator shall be responsible for:

- Preparation of the exercise plan
- Preparation of the exercise scenario
- Starting and ending the exercise taking into account the specific goals of the exercise
- Maintaining exercise play and adhesion to scenario and exercise objectives during the event
- Gathering logs and documentation from the various participants following the exercise
- Chairing the debrief following the completion of the exercise
- Preparing the exercise report, overall evaluation and provide recommendations following the conclusion

Exercise Scenario:

While at anchorage in Milne Inlet, and during pumping operations (ship to shore transfer) a rupture occurs in the hose. The shore low pressure alarm at the manifold is tripped. The shore crew notifies the ship immediately. Pumping is immediately stopped. Shore watch reports a spill of product, approximately 2500 litres along the length of the hose between ship and shore which is moving eastward towards the freight receiving launch. The exercise begins with notification in accordance with the OPEP and leads to a deployment of spill control gear.

Key Drill Objectives:

- Practice and test Baffinland's actions in response to a crisis incident involving a loss of product to the environment
- Activation of the BIM Emergency Management System and escalation according to severity of the incident
- CC documentation and logs
- Exercise the deployment of level 1 equipment, from the beach by the response team (Workboat, booms and skimmer – weather dependent)
- Test the ability to communicate effectively and to co-ordinate an effective response
- Practice effective communication with outside organizations
- Test the ability of Baffinland to notify the appropriate parties of the incident
- Ascertain the feasibility of deploying the spill response gear in the context of local currents, tides, and other environmental factors
- Effectively evaluate the exercise, through debriefing and objective professional input with the goal of providing constructive contributions for the improvement of the company's abilities to respond to a real incident

Exercise initiation and termination:

The exercise shall be initiated and terminated at the discretion of the Exercise Coordinator. No set time for start or ending is anticipated; rather the exercise will be of duration so as to ensure that the exercise objectives have been achieved to the extent possible.

Exercise evaluation:

The Exercise Coordinator shall prepare the final evaluation of the exercise. The lessons learned during the exercise will be extremely valuable in the continuing development of Baffinland's Oil Handling Facility Oil Pollution Emergency Plan.

Input from observers is considered of great value, is certainly appreciated and shall be solicited wherever possible. This information will be constructively used in the preparation of future efforts in to regards to pollution operations.

Baffinland

Attendance Form

Course Name: MILNE INLET SPILL RESPONSE EXERCISE	Date: Aug 18 2014
Instructor's Name: TODD MCKINLEY Company:	Course Duration:
Signature:	8 11-4 PM
Room / Location:	
Language of Delivery: Inuktitut ___ English X Both(translation) ___	

	Name	M / F	Company	Dept.	Site	Home Community	Initials
1	Nicole Knight	M	BIM	ENV	Milne	MTL, QC	NK
2	Joel Guillemette	M	BIM	MH	Milne	EMBRUN, ON	J.G.
3	Dustin Kunuk	M	BIM	ENV	MR	POND INLET, NU	D. K
4	Kyle Lapgard	M	BIM	MH	Milne	COBOURG ON	KL
5	DEON PEPAS	M	BIM	PHL	Milne	KW	
6	Marie Cheeseman	F	Scarlet	Sec	Milne	KIT	MC
7	KELLY O'MARA	F	HR	BIM	MINE	KITCHENER	KO
8	Joe Bloomfield	M	BIM	Maint	Milne	Peterborough ON	JB
9	Jeremy McMillan	M	BIM	MH	Milne	Ramore, ON	JM
10	Joannie Dalatecta	F	UBA	HR	Milne	Pond Inlet	JD
11	Jayko Alooloo	M	COMMUNITY REP		Milne	Pond Inlet	JA
12	Connor Devereaux	M	BIM	Enviro	Milne	Seaforth	C.D.
13	Rene Tulugarjuk	M	BIM	S.S	Milne	IGLOOLIK	RT
14	LYLE Hemmerling	M	BIM	SS	Milne	Kelowna BC	LH
15	Nyvalen Kilpenik	M	BIM	SS	Milne	Ottawa	NK
16	TERRY M Jessome	M	BIM	TRAINER	Milne	NS Cape Breton	TJ
17	OLA Arnaquq	F	BIM	HR	MR	Iqaluit	OA
18	MIKE NEWMAN	M	BIM	MAINTENANCE	MILNE	BEDFORD N.S.	MN
19	Jonathan Alexander	M	BIM	HS	Milne	Iqaluit, NU	JA
20	DAN DuBROY	M	BIM	HSE	MILNE	ON.	
21	Glenn Mahon	M	BIM	HSE	Milne	NL	
22	Bill Bowden	M	BIM	ENV	Milne	London	BB
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Appendix G4

Training Register

Baffinland

Attendance Form

Course Name: Marine Spill Response Training Session 2	Date: Aug 12 2014
Instructor's Name: Todd Mitchell Company: Navenco Marine	Course Duration: 9am 5pm
Signature:	
Room / Location:	
Language of Delivery: Inuktitut ✓ English ___ Both(translation) ___	

	Name	M / F	Company	Dept.	Site	Home Community	Initials
1	Joël Guillemette	M	Bim	MH	Milne	Embrun	J.G.
2	Nick Kuzyk	M	BIM	ENV	MILNE	MTL, QC	NK
3	Kyle Lingard	M	BIM	MH	MILNE	Cobourg ON	KL
4	Jonathan Alexandes	M	BIM	HSE	Milne	Iqaluit NU	JA
5	MIKE NEWMAN	M	BIM	MAINTENANCE	MILNE	N.S. / BEDFORD	MEN
6	TERRY M JESSOME	M	BIM	TRAINING	MILNE	N.S CapeBreton	
7	KALYO'MARA	F	BIM	HR	MILNE	KITCHENER	
8	DAN DUBEAU	M	BIM	HSE	MILNE	ONT.	
9	Nuyalea Kilpatrick	M	BIM	SS	Milne	Ottawa	
10	DALE JAMES	M	BIM	ERT	YES	KINGSVILLE	
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12	Joe Blandford	M	Bim	maint	milne	Dorchester, ON	
13	Dustin Kunkel	M	BIM	ENVR	MR	Powassan ON	
14	DANE HEMMERLING	M	BIM	SS	MILNE	KELOWNA BC	
15	Bill Bowden	M	BIM	ENV	Milne	London, ON	BB
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Baffinland

Attendance Form

Course Name: Marine Spill Response Session 2	Date: August 16 2014.
Instructor's Name: Todd Mitchell Company: Navenco Marine	Course Duration: 8 AM – 5 PM
Signature:	
Room / Location:	
Language of Delivery: Inuktitut___ English ✓ Both(translation)___	

	Name	M/F	Company	Dept.	Site	Home Community	Initials
1	TERRY M JESSOME	M	BIM	TRAINER	MILNE	N.S.	
2	Kyle Lingard	M	BIM	M/H	Milne	Cobourg	
3	Nick Kuzyk	M	BIM	ENV	Milne	MTL, QC	
4	Joe Bloomfield	M	BIM	Maint	Milne	Dundas, Ont	
5	CALE WALES	M	BIM	ERT	YES	KINGSVILLE ON	
6	Jeremy McMillan	M	BIM	M/H	Milne	Kemptville ON	
7	Nuyalee Kilabuk	M	BIM	SS	Milne	Ottawa	
8	Joe Guillemette	M	BIM	M/H	Milne	EMBRUN	
9	MIKE NEWMAN	M	BIM	MAINT	MILNE	N.S.	
10	DAN DUBE	M	BIM	HSE	MILNE	ONT.	
11	Glean Mehgr	M	BIM	HSE	Milne	N.L.	
12	Jonathan Alexander	M	BIM	HSE	Milne	Iqaluit	
13	Dustin Kunkel	M	BIM	ENV	Mine	Powassan ON	
14	Kyle Hemmerling	M	BIM	SS	MILNE	KELOWNA BC	
15	Kelly Omard	F	BIM	HR	MILNE	KITCHENER	
16	Allan Knight	M	BIM	ENV.	NS	LONDON	
17	Bill Bowden	M	BIM	ENV	Mine	London	
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Appendix G5

Corrective Actions Log

Corrective Actions Log

Ref.	Observation	Recommendation	Corrective Action	Completed	Notes
2014 Training Exercise					
1	Additional propellers for the workboat should be available.	Order several spares for inventory prior to bulk fuel transfer.	Ordered and will be on site prior to fuel transfer.	Yes	
2	VHF antenna was an obstruction in the workboat during boom deployments. Radio also was not transmitting.	Remove and replace with a more suitable antenna. Alternatively, a handheld VHF could substitute for the permanently mounted antenna. Verify reason for malfunction.	Replace antenna, VHF portables are available for the ERT.	Yes	
3	It was noted that additional hydraulic hose from skimmer to powerpack would eliminate the need to reposition the powerpack over the rough stone at the beach. This would not only enhance safety of the crew but would also remove a potential ignition source further from the spill zone.	Purchase additional hydraulic hoses to double working distance between hydraulic powerpack and skimmer head.	Additional hose to be purchased as soon as possible.	In progress	The additional hose will be procured for the 2015 shipping season.

APPENDIX H

Material Safety Data Sheets

Avjet Holding Inc.

Material Safety Data Sheet

Effective Date: 2013-01-01
Supersedes: 2009-12-09

Class B3 Combustible Liquid

Class D2B Other Toxic Effects - Skin Irritant

1. PRODUCT AND COMPANY IDENTIFICATION

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

MANUFACTURER	**TELEPHONE NUMBERS**	
Avjet Holding Inc.	**Avjet Emergency Number**	1-866-472-0007
900, Lemire Boulevard		
Drummondville, QC Canada	For general information:	(819) 479-1000
J2C 7W8	For MSDS information:	(819) 479-1000

This MSDS was prepared by the Toxicology and Product Stewardship Section of Avjet Holding Inc.

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 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. Try to work upwind of spill. 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 water spills 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: 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 recommended threshold limit value 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 Explosion Limit:	1 % (vol.)
Upper Explosion Limit:	6 % (vol.)
Autoignition Temperature:	250 °C
Viscosity:	1.3 - 2.1 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 (cement kilns, thermal power generation), 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 Other Toxic Effects - Skin Irritant
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 Limited
Material Safety Data Sheet

Effective Date: 2011-08-22
Supersedes: 2008-08-01

Class B3 Combustible Liquid

Class D2A Embryo/Fetotoxicity
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
PRODUCT CODE:	**142-011**

SUPPLIER
Shell Canada Limited (SCL)
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	1-613-996-6666
For general information:	1-800-661-1600
	www.shell.ca

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 of Shell Brands International AG. Used under license.

2. HAZARDS IDENTIFICATION

Physical Description: Liquid Bright Clear 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.
Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis.

Handling:

Eliminate all ignition sources.
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.
Avoid prolonged exposure to vapours.

For further information on health effects, see Section 11.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS Number	% Range	WHMIS Controlled
Kerosene (Petroleum), Hydrodesulfurized	64742-81-0	60 - 100	Yes
Ethanol, 2-(2-methoxyethoxy)-	111-77-3	0 - 0.15	Yes

See Section 8 for Occupational Exposure Guidelines.

4. FIRST AID MEASURES

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; get medical help 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.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Carbon Dioxide
Foam
Dry Chemical
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. Avoid inhalation of smoke. 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. 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. Wear

appropriate breathing apparatus (if applicable) and protective clothing. Handling equipment must be grounded. Work upwind of spill if it is safe to do so. Avoid direct contact with material. 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. Adsorb residue or small spills with adsorbent material and remove to non-leaking containers for disposal. Notify appropriate environmental agency(ies). After area has been cleaned up to the satisfaction of regulatory authorities, flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations.

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):

The exposure limits listed here are provided for guidance only. Consult local, provincial and territorial authorities for specific values.
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: 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. Local ventilation recommended where general 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: 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 AND CHEMICAL PROPERTIES

Physical State:	Liquid
Appearance:	Bright Clear
Odour:	Hydrocarbon Odour
Odour Threshold:	Not available
Freezing/Pour 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:	TCC > 43 °C
Lower Flammable Limit:	0.7 % (vol.)
Upper Flammable Limit:	5 % (vol.)
Autoignition Temperature:	210 °C
Viscosity:	< 8 mm2/s @ -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 Oral Rat > 5000 mg/kg LD50 Dermal Rabbit > 2000 mg/kg
Ethanol, 2-(2-methoxyethoxy)-	LD50 Oral Rat 4140 - 5180 mg/kg

	LD50 Dermal Rabbit > 2000 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.

Feto/Teratogenicity: A component of this product has shown adverse effects on the growth and development of the fetus in some animal studies.

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. May cause physical fouling of aquatic and avian organisms. The immediate effect of a release is the physical impairment of the environment from the coating of surfaces, resulting in the disruption of oxygen, water and light to flora and fauna. Prolonged exposure may result in the partitioning of light-end hydrocarbon fractions into the water and gas phases of the subsurface soil environment with potential to adversely affect soil and groundwater quality.

Biodegradability: Not readily biodegradable.

Bioaccumulation: Potential for bioaccumulation.
Potential for bioconcentration.

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	LL50 (WAF method) Rainbow Trout (96hr) 1 - 10 mg/L. EL50 (WAF method) Daphnia Magna (48hr) 1 - 10 mg/L. EL50 - growth rate (WAF method) Algae (72hr) 1 - 10 mg/L.
Ethanol, 2-(2-methoxyethoxy)-	

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. TRANSPORT 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 D2A Embryo/Fetotoxicity 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:	The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

16. OTHER INFORMATION

LABEL STATEMENTS

Hazard Statement :	Combustible Liquid. Irritating to skin.
Handling Statement:	Eliminate all ignition sources. 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. Avoid prolonged exposure to vapours.
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 4 Section 8 Section 15

APPENDIX I

Transport Canada – TP 9834E

"Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and/or Marine Pollutants"

Transport Canada Transports Canada

TP 9834E
(07/2009)

Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and/or Marine Pollutants

2ND EDITION
JULY 2009

TC-1003421

Canada

Responsible Authority	Approval
The Director Operations and Environmental Programs is responsible for this document, including any change, correction, or update.	Director Operations and Environmental Programs Marine Safety

Original Date Issued: December, 1995 **Date Revised: July, 2009**

TP 9834E
(07/2009)

TC-1003421

DOCUMENT INFORMATION

Title	**Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and/or Marine Pollutants**		
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1	**July 2009**	**All**	**T. Morris**	Updated to reflect the *Canada Shipping Act, 2001* and the amendments to IMO Resolution A.851(20) in Resolution MEPC.138(53).

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INTRODUCTION

These Guidelines comply as far as practicable with the general principles and standard reporting format procedures described in Resolution A.851(20) of the 20th Session of the Assembly of the International Maritime Organization (IMO), adopted 27 November 1997, as amended by Resolution MEPC.138(53).

The intent of these Guidelines is to enable the proper authorities to be informed without delay so that appropriate action may be taken when:

1. any incident occurs involving the loss, or likely loss, overboard of packaged dangerous goods in the sea; or
2. any incident occurs giving rise to pollution, or threat of pollution to the marine environment, as well as of assistance and salvage measures; or
3. any oil pollution incident occurs involving the loading or unloading of oil to or from a vessel at an oil handling facility.

The *Pollutant Discharge Reporting Regulations, 1995* stipulate that a vessel's master or owner must make reports required under the Regulations in the manner described in these Guidelines or IMO Resolution A.851(20). The Regulations also stipulate that the operator of an oil handling facility must make reports in a manner described in these Guidelines. These Guidelines should then be used in conjunction with the *Pollutant Discharge Reporting Regulations, 1995* when harmful substances and/or marine pollutants are involved. Where any discrepancy exists between the regulations and the Guidelines, the requirements of the regulations shall prevail.

1. ABBREVIATIONS

HF	High Frequency
IMO	International Maritime Organization
MARPOL	*The International Convention for the Prevention of Pollution from Ships*, 1973, and the *Protocols* of 1978 and 1997, as amended from time to time
MF	Medium Frequency
UN	United Nations
UTC	Coordinated Universal Time
VHF	Very High Frequency

2. DEFINITIONS

2.1 In these Guidelines,

"dangerous goods" means goods that by reason of their nature, quantity or mode of stowage are either singly or collectively liable to endanger the lives of the passengers or imperil the vessel and includes all substances determined by the Governor in Council, in regulations made by him, including the *Cargo, Fumigation and Tackle Regulations*, to be dangerous goods; *(marchandises dangereuses)*

"harmful substance in packaged form" means any substance which is identified as a marine pollutant in the International Maritimes Dangerous Goods Code (IMDG Code); *(substance nuisible en colis)*

"in bulk" means in a hold or tank that is part of the structure of the vessel, without any intermediate form of containment; *(en vrac)*

"incident" includes the discharge of a pollutant, a dangerous good or a harmful substance in packaged form or their anticipated discharge; (*incident)*

"marine safety inspector" means a person appointed as a marine safety inspector under section 11 of the *Canada Shipping Act, 2001; (inspecteur de la sécurité maritime)*

"marine communications and traffic services officer" means a person designated as a marine communications and traffic services officer by the Minister of Fisheries and Oceans under subsection 126(2) of the *Canada Shipping Act, 2001; (fonctionnaire chargé des services de communications et de trafic maritimes)*

"packaged form" means the forms of containment specified for harmful substances or dangerous goods in the International Maritimes Dangerous Goods Code (IMDG Code); *(en colis)*

"pollution prevention officer" means a person designated as a pollution prevention officer pursuant to section 14 of the *Arctic Waters Pollution Prevention Act*; *(fonctionnaire chargé de la prévention de la pollution)*

"waters under Canadian jurisdiction" means the internal waters of Canada as described in section 6 of the *Oceans Act*, the territorial sea of Canada as described in section 4 of the *Oceans Act* and the exclusive economic zone of Canada as described in section 13 of the *Oceans Act*, , and includes the shipping safety control zones prescribed pursuant to section 11 of the *Arctic Waters Pollution Prevention Act*. *(eaux de compétence canadienne)*

3. HOW TO MAKE A REPORT

3.1 The report should be transmitted in the following manner:

1. when an incident occurs involving a vessel in waters under Canadian jurisdiction, the report shall be made with the highest possible priority and using the quickest means available to a marine safety inspector, or for incidents occurring in a shipping safety control zone, to a pollution prevention officer;
2. when the vessel referred to in paragraph 3.1.1 is in a radio telecommunications area that is covered by Canadian Coast Guard Marine Communications and Traffic Services, the report should, where expedient, be routed through that system to a marine communications and traffic services officer;
3. when an incident occurs involving a Canadian vessel outside waters under Canadian jurisdiction, the report should be made to the nearest coastal State through an appropriate coast station, preceded by the safety signal (if the incident affects the safety of navigation), or by the urgency signal (if the incident affects the safety of the vessel or persons);
4. on appropriate frequencies (in the bands 405-525 kHz, 1605-2850 kHz or 156-174 MHz);
5. when the vessel is not within reach of a MF or VHF coast station, to the most appropriate HF coast station or on the relevant maritime satellite communication system;
6. when the vessel is within or near an area for which a vessel reporting system has been established, to the designated shore establishment responsible for operation of that system;
7. the format and procedures should, when practicable, comply with the relevant requirements of Section A2 in the Appendix, *Standard Reporting Format and Procedures*; and
8. in addition to any report referred to in paragraph 3.1.1, when an oil pollution incident occurs involving a vessel at a designated oil handling facility, the operator of the oil handling facility shall:
    1. report with the highest possible priority and using the quickest means available, to the federal emergency telephone number identified in the facility's oil pollution emergency plan;
    2. report in writing any incident involving oil to the Transport Canada Marine Safety office nearest to the facility; and
    3. report, when practicable, in compliance with the relevant requirements of Section A2 of the Appendix, *Standard Reporting Format and Procedures*.

4. CONTENT OF REPORT

4.1 Reports should contain the specific information listed in Section A3 of the Appendix, *Detailed Reporting Requirements*.

5. SUPPLEMENTARY REPORT

5.1 Particulars not immediately available should be inserted in a supplementary message or messages.

5.2 When harmful substances and/or marine pollutants are involved, a supplementary message should follow immediately or as soon as possible after the initial report. Information that is essential for the protection of the marine environment, as appropriate to the incident, should be included. That information should include Items P, Q, R, S and X, as listed in Section A2 of the Appendix.

6. PROBABILITY OF DISCHARGE

6.1 The probability of a discharge resulting from damage to the vessel or its equipment is a reason for making a report. In judging whether there is such a probability and whether a report should be made, the following factors, among others, should be taken into account:

1. the nature of the damage, failure or breakdown of the vessel, machinery or equipment; and
2. sea and wind state and also traffic density in the area at the time and place of the incident.

6.2 It is recognized that it would be impracticable to lay down precise definitions of all types of incidents involving probable discharge which would warrant an obligation to report. Nevertheless as a general guideline, the master of the vessel should make reports in cases of:

1. damage, failure or breakdown which affects the safety of vessels. Examples of such incidents are collision, grounding, fire, explosion, structural failure, flooding, cargo shifting; and
2. failure or breakdown of machinery or equipment which results in the impairment of the safety of navigation. Examples of such incidents are failure or breakdown of steering gear, propulsion plant, electrical generating system, essential shipborne navigational aids.

7. REPORT ON ASSISTANCE OR SALVAGE

7.1 The master of any vessel engaged in or requested to engage in an operation to render assistance or undertake salvage should report, as far as practicable, Items A, B, C (or D), E, F, L, M, N, P, Q, R, S, T, U, X of the *Standard Reporting Format* (Appendix). The Master should ensure that the coastal State is kept informed of developments.

APPENDIX

A1. PROCEDURES

A1.1 Reports should be sent as follows:

Dangerous Goods Report - Packaged form (DG)	When an incident takes place involving loss, or likely loss overboard of packaged dangerous goods, including those in freight containers, portable tanks, road and rail vehicles and shipborne barges, into the sea.
Harmful Substances Report in Bulk (HS)	When an incident takes place involving the discharge or probable discharge of oil (Annex I of MARPOL) or noxious liquid substances in bulk (Annex II of MARPOL).
Harmful Substances Report - packaged form (MP)	In the case of loss or likely loss overboard of harmful substances in packaged form, including those in freight containers, portable tanks, road and rail vehicles and shipborne barges, identified in the *International Maritime Dangerous Goods Code* as marine pollutants (Annex III of MARPOL).

A2. STANDARD REPORTING FORMAT AND PROCEDURES

A2.1 Sections of the reporting format which are inappropriate should be omitted from the report.

A2.2 Where language difficulties may exist, the languages used should include English, using where possible the *Standard Marine Navigational Vocabulary.*

A2.3 Alternatively, the *International Code of Signals* may be used to send detailed information. When the International Code is used, the appropriate indicator should be inserted in the text, after the alphabetical index.

A2.4 For route information, latitude and longitude should be given for each turn point, expressed as in Item C below, together with type of intended track between these points, for example “RL” (rhumb line), “GC” (great circle) or “coastal”, in the case of coastal sailing the estimated date and time of passing significant points expressed by a 6 digit group as in Item B below.

Telegraphy	**Telephone (alternative)**	**Function**	**Information Required**
Name of system (e.g., AMVER/ MAREP/ ECAREG/ NORDREG/ WESTREG)	Name of system (e.g., AMVER/ MAREP/ ECAREG/ NORDREG/ WESTREG)	System Identifier	Ship Reporting system or nearest appropriate coast radio station
DG	Dangerous goods report – packaged form	Type of report	Dangerous goods report – packaged form

Telegraphy	Telephone (alternative)	Function	Information Required
HS	Harmful substances report - in bulk	Type of report	Harmful substances report - in bulk
MP	Harmful substances report - packaged from	Type of report	Harmful substances report - packaged from
A	Vessel (alpha)	Vessel identity	Name, call sign or ship station identity, and flag
B	Time (bravo)	Date and time of event	A 6 digit group giving day of month (first two digits), hours and minutes (last four digits). If other than UTC state time zone used
C	Position (charlie)	Position	A 4 digit group giving latitude in degrees and minutes suffixed with N (north) or S (south) and a 5 digit group giving longitude in degrees and minutes suffixed with E (east) or W (west); or
D	Position (delta)	Position	True bearing (first 3 digits) and distance (state distance) in nautical miles form a clearly identified landmark (state landmark)
E	Course (echo)	True course	A 3 digit group
F	Speed (foxtrot)	Speed in knots & tenths of knots	A 3 digit group
G	Departed (golf)	Port of departure	Name of last port of call
H	Entry (hotel)	Date, time and point of entry into System	Entry time expressed as in (B) and entry position expressed as in (C) or (D)
I	Destination and ETA (india)	Destination and estimated time of arrival	Name of port and date time group expressed as in (B)
J	Pilot (juliet)	Pilot	State whether a deep sea or local Pilot is on board
K	Exit (kilo)	Date, time and point of exit from system or arrival at the vessel's destination	Exit time expressed as in (B) and exit position expressed as in (C) or (D)
L	Route (lima)	Route information	Intended track
M	Radio communications (mike)	Radio communications	State in full names of stations/frequencies guarded

Telegraphy	**Telephone (alternative)**	**Function**	**Information Required**
N	Next report (november)	Time of next report	Date time group expressed as in (B)
O	Draught (oscar)	Maximum present static drought in metres	4 digit group giving metres and centimetres
P	Cargo (papa)	Cargo on board	Cargo and brief details of any dangerous cargoes as well as harmful substances and gases that could endanger persons or the environment (See *Detailed Reporting Requirements*)
Q	Defect, damage, deficiency, limitations (quebec)	Defects/damage deficiencies/ other limitations	Brief details of defects, damage, deficiencies or other limitations (See *Detailed Reporting Requirements*)
R	Pollution/ dangerous goods lost overboard (romeo)	Description of pollutant or dangerous goods lost overboard	Brief details of type of pollution (oil, chemicals, etc.) or dangerous goods lost overboard; position expressed as in (C) or (D) (See *Detailed Reporting Requirements*)
S	Weather (sierra)	Weather conditions	Brief details of weather and sea conditions prevailing
T	Agent (tango)	Vessel's representative and/or owner	Details of name and particulars of vessel's representative or owner or both for provision of information (See *Detailed Reporting Requirements*)
U	Size and type (uniform)	Vessel size and type	Details of length, breadth, tonnage, and type etc. as required
V	Medic (victor)	Medical personnel	Doctor, physician's assistant, nurse, no-medic
W	Persons (whiskey)	Total number of persons on board	State number
X	Remarks (x-ray)	Miscellaneous	Any other information - including as appropriate brief details of incident and of other vessels involved either in incident, assistance or salvage (See *Detailed Reporting Requirements*)

Telegraphy	Telephone (alternative)	Function	Information Required
Y	Relay (yankee)	Request to relay report to another system e.g., AMVER, AUSREP, JASREP, MAREP etc.	Content of report
Z	End of report (zulu)	End of report	No further information required

A3. DETAILED REPORTING REQUIREMENTS

A3.1 Dangerous Goods Reports - Packaged Form (DG)

A3.1.1 Primary report should contain Items, A, B, C (or D), M, Q, R, S, T, U, X of the *Standard Reporting Format*; details for Item R should be as follows:

R

1. Correct technical name or names of goods.
2. UN number or numbers.
3. IMO Hazard class or classes.
4. Names of manufacturers of goods when known, or consignee or consignor.
5. Types of packages including identification marks. Specify whether portable tank or tank vehicle, or whether vehicle or freight container or other cargo transport unit containing packages. Include official registration marks and numbers assigned to the unit.
6. An estimate of the quantity and likely condition of the goods.
7. Whether loss floated or sank.
8. Whether loss is continuing.
9. Cause of loss.

A3.1.2 If the condition of the vessel is such that there is danger of further loss of packaged dangerous goods into the sea, items P and Q of the *Standard Reporting Format* should be reported; details for P should be as follows:

P

1. Correct technical name or names of goods.
2. UN number or numbers.
3. IMO Hazard class or classes.
4. Names of manufacturers of goods when known, or consignee or consignor.
5. Types of packages including identification marks. Specify whether portable tank or tank vehicle, or whether vehicle or freight container or other cargo transport unit containing packages. Include official registration marks and numbers assigned to the unit.
6. An estimate of the quantity and likely condition of the goods.

A3.1.3 Particulars not immediately available should be inserted in a supplementary message or messages.

A3.2 Harmful Substances Reports - In Bulk (HS)

A3.2.1 In the case of actual discharge, primary HS reports should contain Items A, B, C (or D), E, F, L, M, N, Q, R, S, T, U, X of the *Standard Reporting Format*. In the case of probable discharge, item P should also be included. Details for P, Q, R, T and X should be as follows:

P

1. Type of oil or the correct technical name of the noxious liquid substances on board.
2. UN number or numbers if available.
3. Pollution category (X, Y or Z), for noxious liquid substances.
4. Names of manufacturers of substances if appropriate and known, or consignee or consignor.
5. Quantity.

Q

1. Condition of the vessel as relevant.
2. Ability to transfer cargo/ballast/fuel.

R

1. Type of oil or the correct technical name of the noxious liquid substances discharged into the sea.
2. UN number or numbers if available.
3. Pollution category (X, Y or Z), for noxious liquid substances.
4. Names of manufacturers of substances if appropriate and known, or consignee or consignor.
5. An estimate of the quantity of the substances.
6. Whether loss floated or sank.
7. Whether loss is continuing.
8. Cause of loss.
9. Estimate of the movement of the discharge or loss, giving current conditions if known.
10. Estimate of the surface area of the spill if possible.

T

1. Name, address, telex and telephone number of the vessel's owner and representative (charterer, manager or operator of the vessel or their agent).

X

1. Action being taken with regard to the discharge and the movement of the vessel.
2. Assistance or salvage efforts which have been requested or which have been provided by others.
3. The master of an assisting or salvaging vessel should report the particulars of the action undertaken or planned.

A3.2.2 Particulars not immediately available should be inserted in a supplementary message or messages.

A3.3 Harmful Substance Reports - Packaged Form (MP)

A3.3.1 In the case of actual discharges, primary MP reports should contain Items A, B, C (or D), M, Q, R, S, T, U, X of the *Standard Reporting Format*. In the case of probable discharge, Item P should also be included. Details of P, Q, R, T and X should be as follows:

P

1. Correct technical name or names of goods.
2. UN number or numbers.
3. IMO Hazard class or classes.
4. Names of manufacturers of goods when known, or consignee or consignor.
5. Types of packages including identification marks. Specify whether portable tank or tank vehicle, or whether vehicle or freight container or other cargo transport unit containing packages. Include official registration marks and numbers assigned to the unit.
6. An estimate of the quantity and likely condition of the goods.

Q

1. Condition of the vessel as relevant.
2. Ability to transfer cargo/ballast/fuel.

R

1. Correct technical name or names of goods.
2. UN number or numbers.
3. IMO Hazard class or classes.
4. Names of manufacturers of goods when known, or consignee or consignor.
5. Types of packages including identification marks. Specify whether portable tank or tank vehicle, or whether vehicle or freight container or other cargo transport unit containing packages. Include official registration marks and numbers assigned to the unit.
6. An estimate of the quantity and likely condition of the goods.
7. Whether lost goods floated or sank.
8. Whether loss is continuing.
9. Cause of loss.

T

1. Name, address, telex and telephone number of the vessel's owner and representative (charterer, manager or operator of the vessel or their agent).

X

1. Actions being taken with regard to the discharge and movement of the vessel.
2. Assistance or salvage efforts which have been requested or which have been provided by others.
3. The master of an assisting or salvaging vessel should report the particulars of the action undertaken or planned.

A3.3.2 Particulars not immediately available should be inserted in a supplementary message or messages.

A4. PRIMARY REPORT FORMS

A4.1 Dangerous Goods Report - Packaged Form (DG)

Function		**Report**
DG	Type of report	/DG//
A	Vessel identity	A/ /__ __ __ __//
B	Date and time of event	B/ __ __ __ __ __ __ Z //
C	Position	C/__ __ __ __N S __ __ __ __ __ E W//
D*	Position	D/ //
M	Radio communications	M/ //
P**	Cargo on board	P/*** //
Q**	Defect, damage, deficiency, other limitations	Q/ //
R	Description of dangerous goods lost overboard	R/*** //
S	Weather conditions	S/ //
T	Agent	T/ //
U	Vessel size and type	U/ //
X	Remarks	X/ //

* Report either Item C or D.

** Include if the condition of the vessel is such that there is danger of further loss of packaged dangerous goods into the sea.

*** See *Detailed Reporting Requirements* (Appendix A3.1).

A4.2 Harmful Substances Report - In Bulk (HS)

Function		**Report**
HS	Type of report	/HS//
A	Vessel identity	A/ /__ __ __ __//
B	Date and time of event	B/ __ __ __ __ __ __ Z //
C	Position	C/__ __ __ __N S __ __ __ __ __ E W//
D*	Position	D/ //
E	True course	E/ __ __ __ //
F	Speed in knots and tenths of knots	F/ __ __ __ //
L	Route information	L/ //
M	Radio communications	M/ //
N	Next report	N/__ __ __ __ __ __ Z//
P**	Cargo on board	P/*** //
Q	Defect, damage, deficiency, other limitations	Q/*** //
R	Description of dangerous goods lost overboard	R/*** //
S	Weather conditions	S/ //
T	Agent	T/*** //
U	Vessel size and type	U/ //
X	Remarks	X/*** //

* Report either Item C or D.

** Include in the case of a probable discharge.

*** See *Detailed Reporting Requirements* (Appendix A3.2).

A4.3 Harmful Substances Report - Packaged Form (MP)

Function		**Report**
MP	Type of report	/MP//
A	Vessel identity	A/ /__ __ __ __//
B	Date and time of event	B/ __ __ __ __ __ __ Z //
C	Position	C/__ __ __ __N S __ __ __ __ __ E W//
D*	Position	D/ //
M	Radio communications	M/ //
P**	Cargo on board	P/*** //
Q	Defect, damage, deficiency, other limitations	Q/*** //
R	Description of dangerous goods lost overboard	R/*** //
S	Weather conditions	S/ //
T	Agent	T/*** //
U	Vessel size and type	U/ //
X	Remarks	X/*** //

* Report either Item C or D.

** Include in the case of a probable discharge.

*** See *Detailed Reporting Requirements* (Appendix A3.3).