Baffinland Iron Mines Corporation

Oil Pollution Emergency Plan - Milne Inlet (OPEP)

BAF-PH1-830-P16-0013

Rev 5

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Date: September 10, 2018
Signature:

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Signature:

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LIST OF ACRYONYMS

Arctic Shipping Pollution Prevention Regulations	(ASPPR)
Arctic Waters Pollution Prevention Act	(AWPPA)
Baffinland Iron Mines	(BIM)
Canada Shipping Act	(CSA)
Canadian Council of Ministers of the Environment	(CCME)
Corporate Emergency Management Team	(CEMT)
Department of Fisheries and Oceans	(DFO)
Emergency Management Team	(EMT)
Emergency Management Team Lead	(EMTL)
Emergency Response Coordinator	(ERC)
Emergency Response	(ER)
Emergency Response Plan	(ERP)
Emergency Response Team	(ERT)
Environment Canada	(EC)
Government of Nunavut, Department of Environment	(GN-DOE)
Indian and Northern Affairs Canada	(DIAND)
Incident Commander	(IC)
Incident Command Center	(CC)
Hydrocarbon Contaminated Water	(HCW)
Job Safety Analysis	(JSA)
Material Safety Data Sheet	(MSDS)
Northwest Territories	(NWT)
Oil Pollution Emergency Plan	(OPEP)

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Personal Protective Equipment	(PPE)
Process Hazard Analysis	(PHA)
Potential Hazard Review	(PHR)
Qikiqtani Inuit Association	(QIA)
Regional Environmental Emergencies Team	(REET)
Shipboard Oil Pollution Emergency Plan	(SOPEP)
Spill Contingency Plan	(SCP)
Standard Operating Guideline	(SOG)
Universal Transverse Mercator	(UTM)
Workplace Hazardous Materials Information System	(WHIMIS)

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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: Sept. 10, 2018

Baffinland Iron Mines Corporation, Deon Pope, Senior Superintendent Site Coordination, Supply and Logistics

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TABLE 1-1: CONTACT INFORMATION OF BAFFINALND PERSONNEL WITH AUTHORITY TO IMPLEMENT THE OPEP

Role	Primary	Primary Alternate	Secondary Alternate
Emergency Management Team Lead	Sylvain Proulx Francois Gaudreau Gerald Rogers	Andy Ezak Michael Sullivan Deon Pope	William Bowden Connor Devereaux
Primary Phone	416-364-8820 x 6091 416-364-8820 x 6072 416-364-8820 x 6015	416-364-8820 x 6009	416-364-8820 x 6016
Alternate Phone	416-970-6983 418-297-0736 416-886-7348	677-456-1131 289-834-0930 416-364-8820	647-580-7699 647-456-9067
Email	Sylvain.proulx@baffinland.com Francois.gaudreau@baffinland.com Gerald.rogers@baffinland.com	Andy.ezak@baffinland.com Michael.sullivan@baffinland.com Deon.pope@baffinland.com	William.bowden@baffinland.com Connor.devereaux@baffinland.com
Incident Commander	Dale Wales Steve Janknegt	Mine Rescue Team Captain Assigned weekly	Darryl Finlay Wayne LeDrew
Primary Phone	416-364-8820 x 4145	416-364-8820 x 4145	416-364-8820 x 4122 416-364-8820 x 4153
Email	Dale.wales@baffinland.com Steve.janknegt@baffinland.com		Darryl.finlay@baffinland.com Wayne.LeDrew@baffinland.com
Environmental Superintendent	William Bowden Connor Devereaux	Dominic Ritgen Ezra Arreak	Bryan Lukeman Ben Widdowson
Primary Phone	416-364-8820 x 6016	416-364-8820 x 4131 416-364-8820 x 4130	416-364-8820 x 6056
Alternate Phone	647-580-7699 647-456-9067		
Email	William.bowden@baffinland.com Connor.devereaux@baffinland.com	Dominic.Ritgen@baffinland.com Ezra.Arreak@baffinland.com	Bryan.Lukeman@baffinland.com Ben.Widdowson @baffinland.com
Health and Safety Manager/Super intendent	Timothy Ray Sewell	Shawn Stevens Keith Winship	
Primary Phone	416-364-8820 x 6054	416-364-8820 x 6006	
Alternate Phone	647-828-3432	647-710-5974	
Email	Timothy.sewell@baffinland.com	Shawn.stevens@baffinland.com Keith.Winship@baffinland.com	
Health and Safety Coordinator	Darryl Finlay Wayne LeDrew	Mario Vottero Blaine Taylor	
Primary Phone	416-364-8820 x 4122 416-364-8820 x 4153	416-364-8820 x 6052	
Email	Darryl.finlay@baffinland.com Wayne.LeDrew@baffinland.com	Mario.vottero@baffinland.com Blaine.taylor@baffinland.com	

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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 2018

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

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Sustainable Development Policy

At Baffinland Iron Mines Corporation (Baffinland), 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. Baffinland conducts its business in accordance with the Universal Declaration of Human Rights and ArcelorMittal's Human Rights Policy which applies to all employees and affiliates globally.

Everything we do is underpinned by our responsibility to protect the environment, to operate safely and fiscally responsibly and with utmost respect for the cultural values and legal rights of Inuit. 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 and Human Rights 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. Upholding Human Rights of Stakeholders

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, 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.

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2.0 ENVIRONMENT

- Baffinland employs a balance of the best scientific and traditional Inuit knowledge to safeguard the environment.
- Baffinland applies 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 more sustainable practices.
- Baffinland ensures that an effective closure strategy is in place at all stages of project development to ensure reclamation objectives are met.

3.0 UPHOLDING HUMAN RIGHTS OF STAKEHOLDERS

- We respect human rights, the dignity of others and the diversity in our workforce. Baffinland honours and respects the unique cultural values and traditions of Inuit.
- Baffinland does not tolerate discrimination against individuals on the basis of race, colour, gender, religion, political opinion, nationality or social origin, or harassment of individuals freely employed.
- Baffinland contributes 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.
- We expect our employees and contractors, as well as community members, to bring human rights concerns to our attention through our external grievance mechanism and internal human resources channels. Baffinland is committed to engaging with our communities of interest on our human rights impacts and to reporting on our performance.

4.0 TRANSPARENT GOVERNANCE

- Baffinland 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.

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- Baffinland endeavours 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.
- Baffinland conducts 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 and demonstrate honesty and integrity by applying the highest standards of ethical conduct.

4.1 FURTHER INFORMATION

Please refer to the following policies and documents for more information on Baffinland's commitment to operating in an environmentally and socially responsible manner:

Health, Safety and Environment Policy

Workplace Conduct Policy

Inuktitut in the Workplace Policy

Site Access Policy

Hunting and Fishing (Harvesting) Policy

Annual Report to Nunavut Impact Review Board

ArcelorMittal Canada Sustainability and Corporate Responsibility Report

If you have questions about Baffinland's commitment to upholding human rights, please direct them to contact@baffinland.com.

Brian Penney - Chief Executive Officer

March 2016

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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.
- Reclamation of lands to a condition acceptable to stakeholders.

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.

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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.

Brian Penney
Chief Executive Officer
April 2018

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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 program, 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

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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.

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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;

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(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

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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.

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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 2018 total tankage and capacities shall be as follows:

- 2 steel tanks of 5 ML each containing diesel
- 3 steel tanks of 12 ML each containing diesel
- 4 steel tanks of 750,000 L each containing Jet-A fuel
- 1 steel tank of 3 ML containing diesel
- 1 steel tank of 15 ML containing diesel beginning service October 4, 2018

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 current 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 fenced and access to the facility is restricted to personnel authorized by Marine Facility Security Officer.

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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.

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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

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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.

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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 mid to late July through mid to late 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

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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. The Enfotec report has been updated and the latest version includes information up until 2016. 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.

Should ice conditions deem it necessary, the tanker may also be moored at the ore dock and a direct transfer into an overland Arctic grade hose may be effected. This procedure is described in section 4 of this OPEP and also is detailed in the “Baffinland Standard Bulk Fuel Transfer Procedures” found in Appendix E of this plan.

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4 SITE ACTIVITIES

4.1 BULK OIL TRANSFER, SHIP TO SHORE

Multiple bulk fuel transfers from ship to shore for 2018 are anticipated. It is anticipated that the total volume of the bulk fuel transfers shall be in the order of up to 60-75 ML and will take place during the months of July through October. The open water 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.

Late season bulk fuel deliveries and transfers are also possible into early October. While the preference is to perform these bulk fuel transfers via a floating hose operation, it is possible, when significant ice is present that tankers may be received at the port ore dock. The vessel shall be moored at the ore dock allowing for a direct transfer of product from ship to receiving manifold via an over ground 4 inch diameter Arctic hose. During such transfers the tanker shall have exclusive use of the ore dock. The hose is selected expressly for the purpose of transfer of petroleum products in arctic conditions and shall be an approximate length of up to 2800 feet. The entire hose length shall be tested and certified to 1.5 times the maximum working pressure and certificates are retained at the oil handling facility in accordance with the regulatory requirements.

The overland trajectory and security of the hose is addressed in the "Baffinland Standard Bulk Fuel Transfer Procedures" and are found in Appendix E of this plan. These procedures have been updated to reflect the possibility of an overland fuel transfer between ship and receiving manifold.

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 m^3/hour depending on the number of hoses used and also final obtainable pumping rate. This discharge rate is applicable to either the floating hose or overland discharge option.

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.

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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 2018 operating season.

Dry cargo sealift (including backhaul) and ore vessel loading and shipping operations are scheduled to take place throughout the 2018 season (July 20th - October 20th). Tug employment in support of shipping operations will be provided via two tugs. While these activities are scheduled to take place in the Inlet at various times, often occurring at the same time, they will be completed independent of the bulk fuel facility and transfer operations and are therefore not considered in this Oil Pollution Emergency Plan. For additional information pertaining to Milne Port Marine Facility operations, refer to the Milne Port Marine Facility Security Plan (Doc. # BAF-PH1-310-P16-0001).

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.

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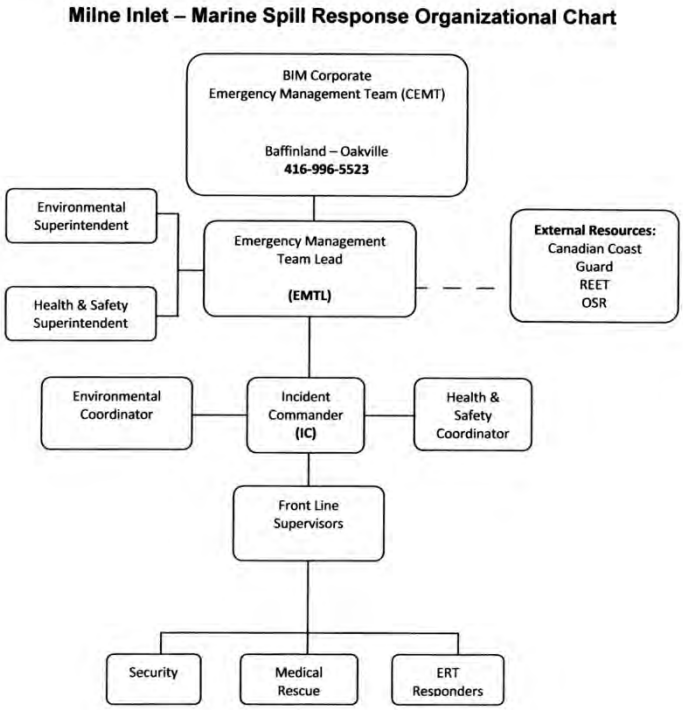

FIGURE 5-1 – MILNE INLET – MARINE SPILL RESPONSE ORGANIZATIONAL CHART

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

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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.

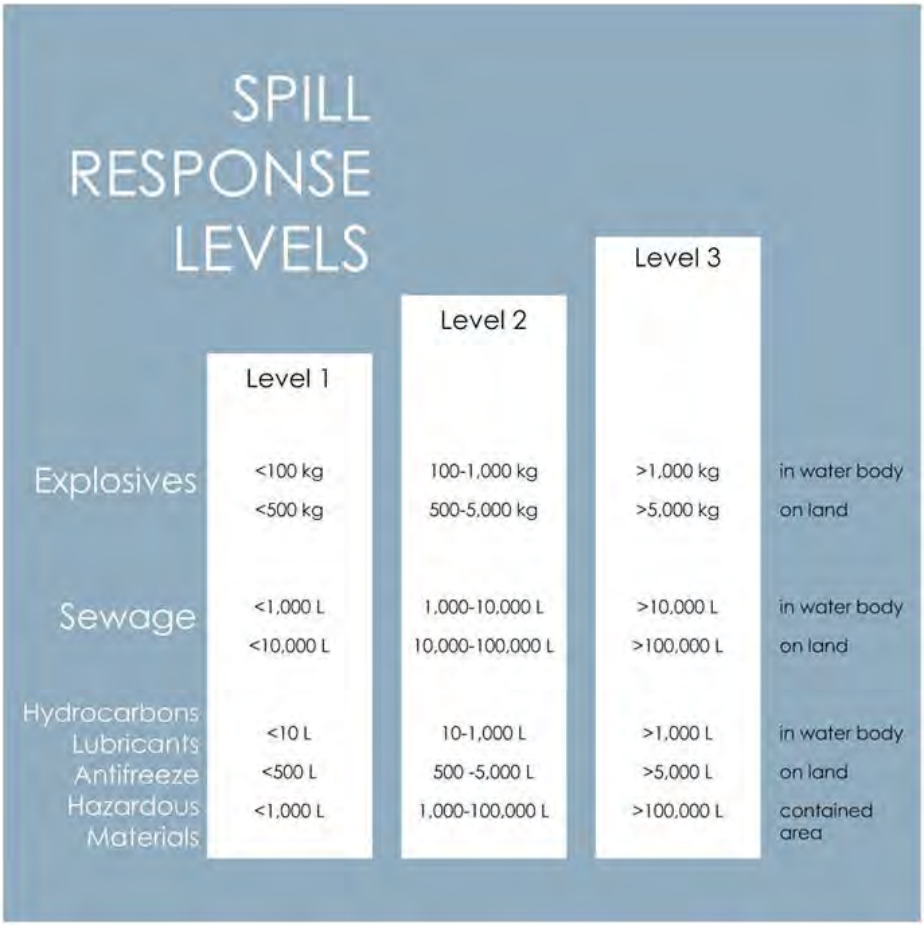

FIGURE 5-2 – SPILL RESPONSE LEVELS

5.2 Management Control Centre

The Management Control Centre (MCC) functions to provide a place for the coordination and direction of response efforts during an emergency. In the event of no available senior operations managers are at the site experiencing the emergency, the location of the senior operations manager will host the MCC. The conference room at the main office in the Mine Site Complex (MSC) is the primary MCC for incidents

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occurring at the Mine. The conference room in the Port Site Complex (PSC) is also used for MCC activities. Both MCCs may be activated during a crisis emergency, or in response to an emergency along the Tote Road where both ERT respond. In this case, the Mine MCC will be the primary centre unless changed by the direction of the EMTL. Alternative MCC are properly stocked and available should the primary location be unavailable due to the emergency. The secondary MCC is the maintenance garage boardroom for both sites. For those incidents where command centre must be established in Corporate Office, conference room #3 shall be designated for use.

5.2.1 Management Control Centre Equipment/Supplies

The MCC 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 MCC contains:

- The most current version of the Emergency Response Plan along with supporting response plans
- Log book
- Stationary
- Emergency site maps and current site plans
- Emergency contact information (ERP)
- 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 Emergency Response 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)

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Location of the emergency

Your name

Pause and repeat

- Remain calm and in a safe location
- Stay on the channel/phone
- 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 ERT 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. ERT 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 ERT personnel.
- Obtain additional internal resources.
- Emergency notification.
- Evacuation of employees from work areas.
- Maintain communications with aircraft/marine vessels.

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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 boats for in land water use, and marine support boat are available to aid in spill response and recovery efforts.

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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. When both sites ERT resources are utilized, both command centres shall be established, with control provided by the most senior operations manager(EMTL). During a Level I Code 1, a trained management representative may assume the role of the EMTL.

Duties during an Emergency

- The EMTL will ensure coordination of ERT support systems from the MCC.
- 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 MCC and assess the situation based on current information from the IC.
- Activate the MCC system and escalate according to severity of incident.
- Coordinate all activities in the MCC. In the event the EMTL leaves the MCC, the EMTL will designate an individual to coordinate the MCC, notifying the IC.
- Ensure that the appropriate area manager(s) has been notified.
- Appoint a Muster Station Coordinator to conduct a roll call of all evacuated personnel.
- Advise the IC of the number of missing personnel and the room number or area of their last known location.
- Dispatch the medical personnel when requested by the IC.
- 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 regular updates to the CEMT throughout the response effort, up to and including external agencies (RCMP, Government agencies, etc.) coming to site to perform investigations related to the incident.
- Provide instruction to ensure that appropriate External Resources are notified.
- Receive information from the IC and ensure appropriate resources are made available.
- Ensure at least one Log Keeper, preferably two, is or are present in the MCC 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 MCC 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.

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- Coordinate 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 Mine Rescue Trainer is the site lead administrator for the ERT, responsible for ensuring the necessary emergency response equipment and adequate level of training for ERT members. The Mine Rescue Trainer directs the Emergency Response Team (ERT) at the scene but reports to the EMTL at the MCC. In the absence of the Mine Rescue 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:

- Will respond to the scene of the incident, and direct responding ERT members in regards to the equipment and personnel required to respond.
- 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.
- Obtain results of muster station head counts and direct the ERT accordingly to ensure full evacuation.

Duties Post Emergency

- Account for all ERT 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.
- Ensure that the ERT Garage and equipment are response ready.
- 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.

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6.3 Health and Safety Coordinator

Duties during an Emergency

- Respond to the MCC and assist with duties as assigned by the EMTL.
- At the direction of the EMTL, respond to the scene and make 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 ERT response and notify the IC
- Carries out field safety duties as assigned by the IC, including surveillance of activities such as general field activities, identification of health safety equipment needs, etc.
- Ensure appropriate personal protective equipment for involved non ERT personnel.
- Note pertinent information that may be relative to the investigation.

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.

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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 employees and emergency responding group (including management) through the use of the radio system and Code 1 announcement.
- 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 EMTL
- 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 MCC.
- 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.
- If trained management representation is low at one site during an emergency, the other sites management team will activate the MCC to support the other site.

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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 Environmental Superintendent/Manager

Duties during an Emergency

- For Level II and III emergencies report to the MCC.
- At the direction of the EMTL, notify the required external agencies.
- Support 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 an Emergency

- Report to the MCC for Level I emergencies and act as the EMTL
- For Level II and III emergencies report to the MCC.
- 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.

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6.9 Front-Line Supervisor

Duties during an Emergency

- Pre-investigate alarms if in work structure without harm to self, activate "Code 1"
- 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 witness statements are completed by any personnel involved in the incident
- Ensure that the incident investigation is completed.

6.10 Medic Personnel

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

Duties during an Emergency

- Respond to Code 1's as directed by the IC
- Responsible for all decisions of medical-related situations on site.
- 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 (e.g. Medi-vac, Iqaluit hospital, etc.)
- Maintain a log of events, actions and outcomes.

Duties Post Emergency

- Participate in an emergency debriefing session.

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6.11 Muster Station Coordinator

During an evacuation of any area that is designated to evacuate, the EMTL will designate a person responsible to assume the role of Muster Station Coordinator.

Duties during an 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 EMTL
- Log time of events at muster station.

Duties Post Emergency

- Notify evacuees once the "all clear" has been called by the EMTL and instruct employees 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.
- Once the all clear has been called, make yourself known to Safety and complete a witness statement for the investigation.

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7 General Spill Procedures

The response to spills begins immediately when the spill has been detected. In all cases and 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.

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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 and 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.

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7.1 Health and Safety

Baffinland 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 requires all personnel to regard accident prevention and working safely as a collective individual responsibility.

Baffinland 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 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 responders through Baffinland's marine spill training program. Responders who are involved in marine operations have participated 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
- High visibility jacket or vest

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

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- Hard Hat
- CSA approved work boots
- Safety glasses or goggles
- High visibility 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

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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:

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Stephen Sherburne
Manager/Gestionnaire
Technical Services/ service technique &
Office of Boating Safety/Bureau de la sécurité nautique
Prairie and Northern Region/Région des Prairies et du Nord
Tél: 780-495-6325; Fax: 780-495-8607
Transport Canada/Transports Canada
1100-9700 Jasper Ave (RMEB)
Edmonton, Alberta T5J 4E6
stephen.sherburne@tc.gc.ca

Capt. Shane Sadoway
Manager, Marine Safety
Marine Safety & Security, Prairie & Northern Region
Gestionnaire du sécurité maritime, région des Prairies et du Nord
Transport Canada / Transports Canada
shane.sadoway@tc.gc.ca
Telephone (587) 338-7141 / Facsimile (780) 495-8607

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) 873-6924

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 Chief Operations Officer to prepare the proper reports and transmit them to regulatory authorities. The Environmental

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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

When required, the following audible and visual techniques shall be used to prevent wildlife from interacting with spilled product or a contaminated area(s) following a spill:

Pyrotechnics, i.e. shell crackers, screamers, propane cannons for shore based spills;

Visual scare tactics, i.e.: helicopters, emergency response vessels or other water vessels;

Broadcast sounds, i.e. Breco Bird Scarer designed to float with an oil spill; and

Exclusion, i.e. netting applied in smaller contaminated areas such as settling or evaporation ponds.

To minimize environmental impact, these devices are most effective when initiated immediately.

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 (PPE) will be worn by all personnel using deterrent equipment, as per manufactures instructions, with the minimum PPE requirements consisting 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 entering an area where they may become endangered. It is also important to ensure that hazing efforts do not cause already contaminated animals to scatter away before they are able to receive treatment. Techniques should be applied as soon as possible to prevent wildlife from interacting with spilled product or contaminated areas and becoming oiled or contaminated.

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

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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 method (i.e. rehabilitation or euthanasia) to be implemented for live oiled wildlife.

For wildlife mortalities, all carcass are required to 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 is required to be consulted and approval shall be 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 provided in Table 7-1.

TABLE 7-1: EMERGENCY CONTACTS IN CASE OF SPILLS AFFECTING WILDLIFE

Name	Location	Phone Number	Purpose
Canadian Wildlife Services (CWS) Prairie and Northern Region	Eastgate Offices 9250 - 49th Street Edmonton, Alberta T6B 1K5	1-780-951-8600	Providing information on migratory bird resource and species at risk (under CWS jurisdiction) in the area of a spills (this includes damage assessment and restoration planning after the event); Minimizing the damage to birds by deterring unoiled birds from becoming oiled; and Ensuring the humane treatment of captured migratory birds and species at risk by determining appropriate response and treatment strategies (i.e. Euthanasia or cleaning and rehabilitation).
Nunavut Emergency Management	P.O. Box 1000, Station 700 Iqaluit, NU X0A 0H0	1-800-693-1666	Responsible for developing territorial emergency response plans, coordinating general emergency operations at the territorial and regional levels, and supporting community emergency response operations.
International Bird Rescue	International	1-888-447-1743	Wildlife rehabilitation specialists, that manage various aspects of wildlife response.

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7.5 Disposal of Contaminated Material

Quatrex bags, overpack drums, or other appropriate containers as approved by the Environmental Department are used to contain and transport contaminated soil for treatment. Depending on the nature of the spilled contaminant (hydrocarbon based spills), the soil may be treated for remediation at Baffinland's Landfarm and Contaminated Snow Containment Facility (Landfarm Facility) at Milne Port. Soil, contaminated from the spill of other hazardous chemicals will be treated as a hazardous waste and shipped off-site to a licensed facility for treatment and disposal. For additional information, refer to Baffinland's Hazardous Materials and Hazardous Waste Management Plan (BAF-PH1-830-P16-0011).

Used sorbent material is burned in Project incinerators as per incinerator standard operating procedures and contaminated snow from sewage releases are disposed in Polishing and Waste Stabilizations Ponds for treatment during the summer months.

7.5.1 Milne Port Soil Landfarm and Contaminated Snow Containment Facility

The Milne Port Landfarm Facility consisting of two geomembrane lined containment cells. The larger (3,383 m^3) west cell (landfarm) was constructed for the containment and bio treatment of hydrocarbon contaminated soils. Treated soils that meet the appropriate criteria will be used as landfill cover material or other purposes only upon approval.

The smaller (929 m^3) east cell was constructed for the containment of hydrocarbon contaminated snow collected during the winter months for treatment of the contaminated water during the summer months using an on-site mobile Oily Water Treatment Facility (OWTF). During treatment, monitoring will be completed to ensure compliance with prescribed water quality guideline criteria outlined in Baffinland's Type A Water Licence.

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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 150 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 Milne Port that the most common wind direction is from the east to north east. Average wind speeds at Milne Port for this period have been observed to be between 15 and 20 km/hr. 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

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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 - Floating Hose Operations

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 the east of manifold, and Phillips Creek west of the 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.	

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hose between ship and shore manifold		Consideration of protection booming of beach front, protective booming of hunter's camps to the east of manifold, and Phillips Creek west of the 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 Port Site Services Department

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8.2 PIPELINE OR ALONG SHORE BASED HOSE - OVERLAND HOSE LENGTH (LATE SEASON DELIVERY)

Source of discharge	Potential loss*	Appropriate actions	Resources required
Failure of flange or coupling Vehicle Accident involving pipeline or shore based or overland 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 ***Open Water Marine response if necessary and if possible***: 1: Deploy containment boom to control migration of spill. Consideration of protection booming of beach front, protective booming of hunter's camps to the east of manifold, and Phillips Creek west of the 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	Same marine response, shore-based response deploy berms and sorbents 3-6 additional shore responders Milne Port Site Services Department

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		Response to Spills in or on Ice 1: Limited deployment of containment boom when and where possible in partial ice cover 2: Response on ice *only in accordance with BIM protocol for working on ice* – minimum ice thickness to be respected at all times 3: Deployment of skimmer and recovery if in open water or partial ice conditions 4: Recovery of oil by skimmer using ice slots or by cutting holes in ice cover *where thicknesses permit* 5: Recovery of contaminated ice by machinery for secondary treatment 6: Stabilization of the area, berming or containment in preparation for deferred recovery operations post break-up	Necessary tools for cutting slots or holes in ice where thicknesses permit Heavy equipment for removal and transport of ice and/or contaminated snow/debris

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.

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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 Department and ERT. 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 m³ 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 m³ and depending on the specific circumstances, management shall determine if it is necessary to increase the response capability by requesting 3rd party assistance. In such cases, Baffinland's Spill at Sea Response Plan (BAF-PH1-830-P16-0042) will be activated.

BIM has entered into a contractual arrangement with Oil Spill Response Limited, of Southampton, UK. (OSR). OSR is retained by BIM to provide 3rd party spill response, oil spill response equipment resources, technical advisory and spill management services on demand. OSR maintains at its base in Southampton a world class stockpile of response gear, most of which is air-deployable to remote regions.

Where this support is deemed necessary, the EMTL shall immediately request this assistance while ensuring ongoing mitigation of spill impact to the extent possible while awaiting additional resources and assistance from OSR.

Activation is initiated with the OSR 24 hour duty manager by telephone as follows:

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9 PREVENTIVE MEASURES

It is Baffinland's 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 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 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 relevant emergency plans. These personnel will also reexamine the manual of the relevant emergency plans on a yearly basis according to their duties and responsibilities. All training is recorded in the training register and the most recent year reports are retained in the Oil Pollution Emergency Plan binder. Previous years are archived and retained accordingly.

The personnel directly linked to spill response operations, contract employees and the other responders identified in the relevant emergency plans 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's onsite 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

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- 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 Training - Spill Response in or on Ice

While the preference is to perform bulk fuel transfers via a floating hose operation, it is possible, when significant ice is present that tankers may be received at the port ore dock. Scenarios for spill response in or on ice are presented in section 8.2 of this plan. In order to ensure a safe and effective response, BIM shall provide additional specific training to those ERT members responding in these conditions. The training includes:

- Behavior of spilled oil on snow, ice, in broken ice and under ice
- Response tactics on snow and ice (on land)
- Response tactics in and under ice
- Ice boring and slotting for skimmer deployment/recovery operations
- Special considerations for boom deployment and containment in broken ice
- Safety of responders when working in or on ice

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9.1.3 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. Personnel from the Milne Port Site Services Department 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 includes many inspections which are performed regularly and kept on records. Any discrepancies noted are documented and investigated. Corrective measures are then applied.

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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
- 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 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 and any overland hose are 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.

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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.

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9.5.3 Contact Lists

9.5.3.1 Internal Contacts

Position	Name	Phone*
Chief Executive Officer	Brian Penney	5038 416-427-6907
Chief Operating Officer	Sylvain Proulx	6091 416-970-6983
Chief Technology Officer	Michael Anderson	6030 416 526 0004
Executive vice president corporate development	Stephanie Anderson	5001 416-200-6744
Vice-President, Sustainable Development	Grant Goddard	416-553-0062
Vice-President Human Resources	Grant Goddard	289-834-0744
Vice-President, Technical Services	Richard (Dick) Matthews	5172 647-938-8147
General Manager	Gerald Rogers	6114 416-886-7348
General Manager	Francios Gaudreau	6072 418-297-0736
Mine Manager	Simon Fleury	6099
Mine Superintendent	Cody Gagne	6044 905-580-2478
Site Services Manager	Gordon Mudryk	6065
Chief Procurement Officer	Sandeep Kumar	5181 416-919-4377
Logistics Superintendent – Mine Site	Deon Pope Al Wertz	6009 905-483-0261 647-709-4029
Logistics Superintendent – Port Site	Michael Sullivan Andrew Esak	4115 289-834-0930 647-456-1131
Maintenance Manager	Lee Dixon	6038 416 526 7785
Primary Control Centre – Mine Site		6078 6074
Primary Control Centre – Port Site		4902 4905
Secondary Control Centre – Mine Site		6119 6146
Secondary Control Centre – Port Site		4904 4906

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Ore Handling Manager Ore Handling Superintendent	Sangjin Yun Lyle Hemmerling J-P Provencher	4156 6105 289 795 8689 418-455-9789
Road Maintenance Manager Road Maintenance Superintendent	 Shawn Parry Remi Pelletier	6057 416-209-6444 406-919-1735
HR Manager	Brenda Roberts	6027 437-344-7342
Human Resources Advisor	Vanessa Bryan	4505
Environment Superintendent	William Bowden Connor Devereaux	6016
Head of Health, Safety and Environment	Tim Sewell	6054 647-828-3432
Health and Safety Superintendent	 Shawn Stevens Keith Winship	6006 647-710-5974
Health and Safety Coordinator - PORT	Darryl Finlay Wayne LeDrew	4122
Health and Safety Coordinator - MINE	Mario Vottero, Blaine Taylor	6052
Emergency Rescue Team Trainer I/C	Dale Wales Steve Janknegt	4145
Physician Assistant – Mine	Michel Gagnon Claudine Daigle	6008
Physician Assistant - Milne	Sylvie Seward Charles Briggins	4107

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

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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) 669-4430
Royal Canadian Mounted Police								
Iqaluit – Headquarters	N	Y	Y	Y	N	M[1]	M	(867) 975-4409
Iqaluit								(867) 979-0123
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
NT-NU 24-hour Spill Report Line	N	N	N	N	N	Y	Y	(867) 920-8130
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								

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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**
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
Pond Inlet Health Clinic								(867) 899-7500 (867) 899-7538 (fax)
Iqaluit								(867) 975-4800 (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 (24hr) (867) 975-5403
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

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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.

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APPENDIX A

Milne Inlet Site Overview

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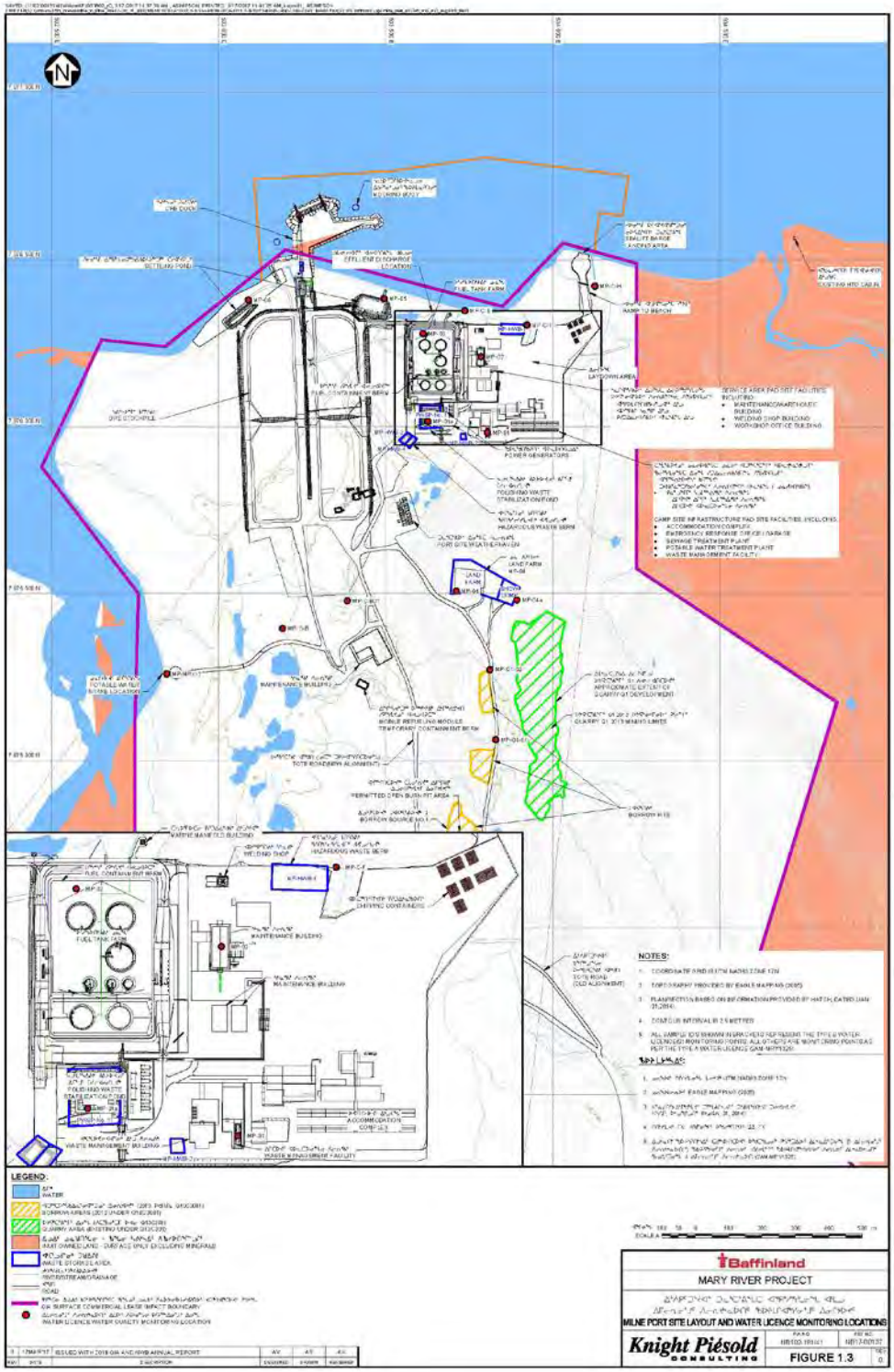

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APPENDIX B

Bulk Fuel Storage Facility Layout (2018)

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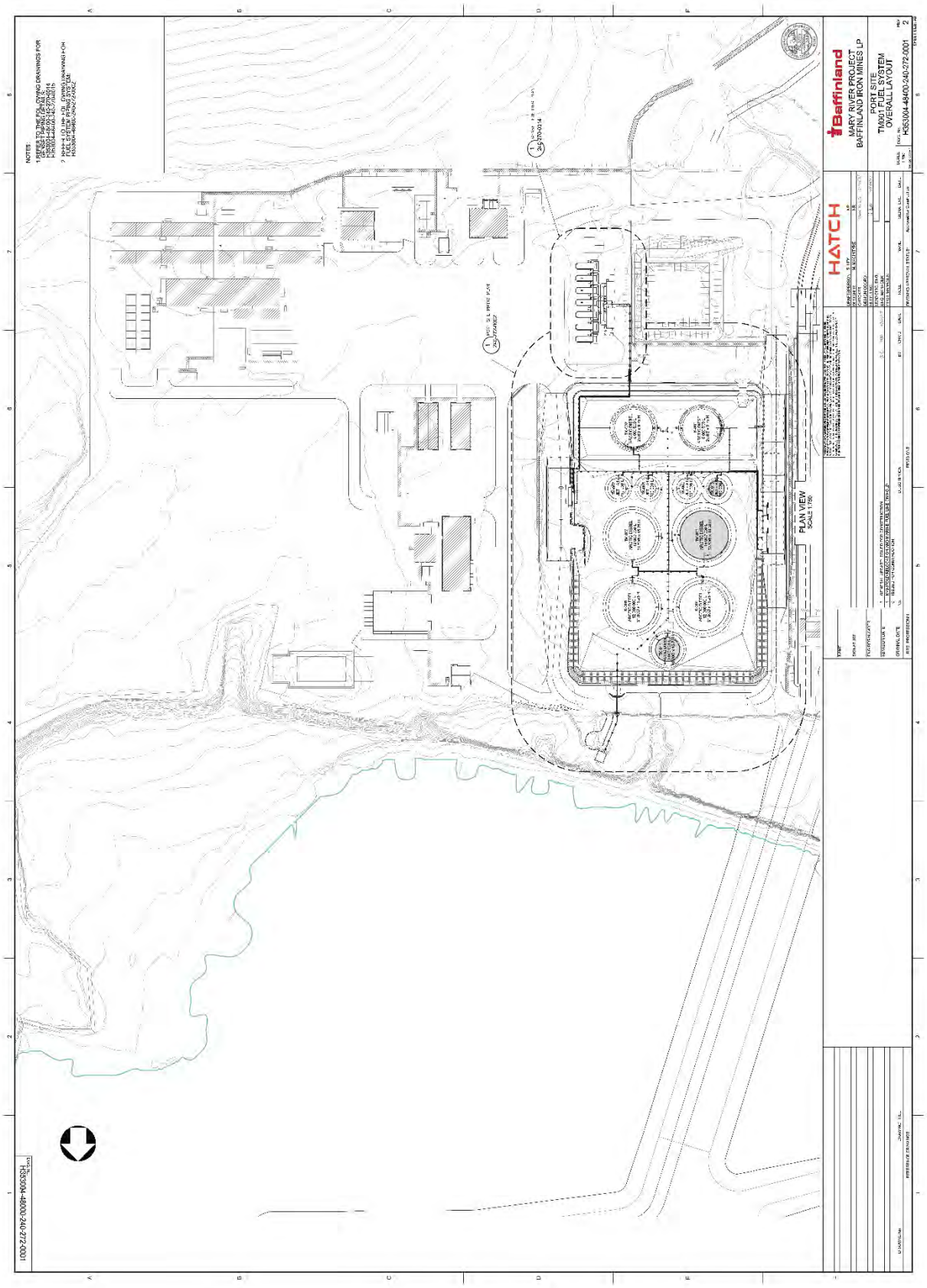
NOTES:
1. REFER TO THE FOLLOWING DRAWINGS FOR
H263004-28-03-142-0001
H263004-28-03-142-0014
H263004-28-03-142-0015
2. REFER TO THE FOLLOWING DRAWING FOR
FUEL SYSTEM PIPING SYSTEM
H263004-44400-240-272-0001
PLAN VIEW
SCALE 1:150
Baffinland
MARY RIVER PROJECT
BAFFINLAND IRON MINES LP
HATCH
PORT SITE
TM001 FUEL SYSTEM
OVERALL LAYOUT
H263004-44400-240-272-0001

APPENDIX C

Shoreline Characterization and Sensitive Zones

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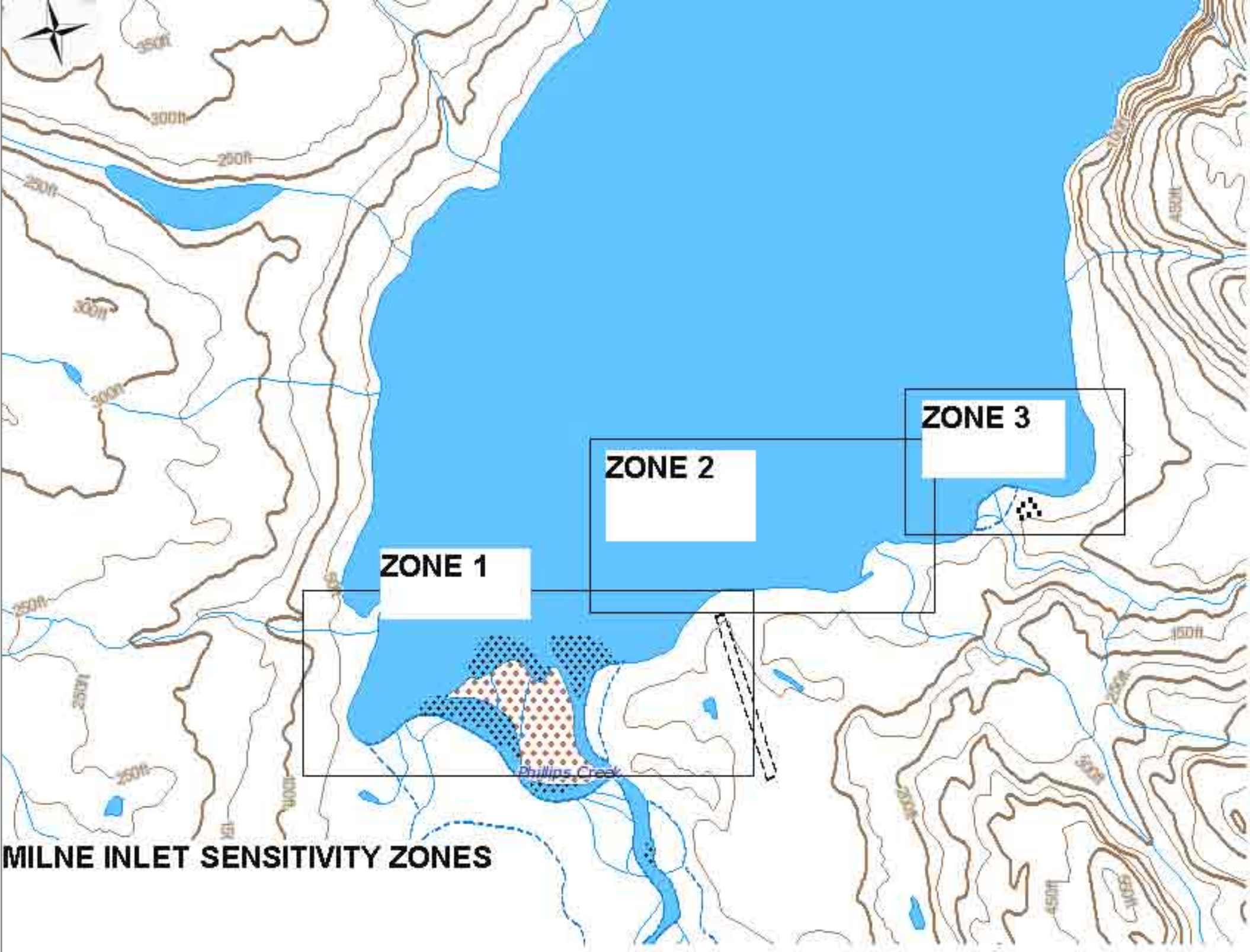

MILNE INLET SENSITIVITY ZONES

APPENDIX D

Resident Spill Response Equipment

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APPENDIX D – RESIDENT SPILL RESPONSE EQUIPMENT

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

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Baffinland Iron Mines Corporation

Fuel Tanker Offload to Shore Tanks- Milne Inlet

BAF-PH1-310-PRO-0011

Rev 4

Prepared by: **Deon Pope**
Department: **Port and Logistics**
Title: **Port and Logistics – Senior Superintendent**
Date: **Sept 8, 2018**
Signature:

Approved by: **Francois Gaudreau**
Department: **Operations**
Title: **General Manager**
Date: **September 8, 2018**
Signature:

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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
06/06/18	2	DP	SP	Use
08/31/18	3	AE	FG	Use
09/08/18	4	DP	FG	Section 6.4.1 & Appendix E

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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

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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,

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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 and depending on timing of the season, tanker will be either moored by stern of vessel or tied to the ore dock berth. Two stern lines will be ran from the vessel and attached to existing shore restraints if moored at an anchorage point in the inlet. Actual mooring is to be verified with the

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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 and the Maximum flow rate must not exceed 149M³/hr.

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.

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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
- If the vessel is unable to contact Baffinland shore representative in a timely manner.

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.

At this time the JETA must be tested for Electrical Conductivity. The Electrical Conductivity must be tested by a professional fuel surveyor using Method ASTM D2624. If conductivity is found to be lacking, additive must be added to the JetA fuel PRIOR to the discharge from the vessel. The reading suitable for discharge is 50-600Ps/M.

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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.

As well as verification of the vessel volumes the shore tanks must also be verified for volumes and capacity. All shore tanks must be physically dipped prior to the BIM shore rep going aboard for the Pre Transfer Meeting. This will allow the BIM shore representative to accurately set a discharge plan with the Master of the vessel and First Mate. Further to this each tank shall be gauged prior to switching to it during the course of the discharge.

6.4 Transfer Hose Placement for Floating Line ON WATER

The Transfer fuel hose route will be as follows for floating lines:

- The fuel offload floating hose will be running from the ship to the shore manifold located inside the manifold building.
- Hose will be running 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 Manifold. Vessel Contractor will monitor the floating 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.

6.4.1 TRANSFER HOSE PLACMENT FOR ARCTIC FLEXWING LINE ON LAND

- The fuel offload Arctic flex wing hose will be running from the ship to the shore manifold located inside the manifold building following the traffic route outlines in Appendix E.
- Hose will be running in such a manner to eliminate heavy lifting and possible damage to the hose from excessive pulling strain.

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- Hose traffic pattern will be running in avoidance of all vehicle & pedestrian traffic and the route of travel will only be open to authorized personnel only.
- Baffinland representative or delegated contractors will walk and inspect the transfer hose route between the Vessel and Manifold every hour and record in a log book. Vessel Contractor will monitor the hose connection on the Vessel.
- 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.
- Ball valves will be inserted along the hose for emergency shutdowns if required.
- Preventers will be installed along the hose to eliminate stored energy.
- Vessel personnel will be station at the fuel manifold 24hrs while discharge is taking place monitoring the flow.
- The hose will be connected to the shore manifold. low pressure alarm will be installed and a pig catcher to accept the pig after completion of discharge.

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.

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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.

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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.

This shall include all Pressure relief valves (PRV) valves in the system on both the intake and discharge sides. Failure to do so will prevent the ability to develop proper pressure required for the discharge and will prevent the tanks from equalizing via head pressure through the discharge (outlet) sides.

Upon ensuring that all tank inlet valves are closed and locked and all PRV valves have been closed a pressure test shall be conducted prior to the start of the discharge. This test is to ensure that all valves are properly closed and there is no opportunity for pressure loss during discharge leading to a condition that may require stoppage. This will also ensure that there is no potential for undesired fuel level eqaulization between tanks due to head pressure forces. The pressure test shall consist of the following steps

1) Ensure valve at entry to tank farm is open.
2) Ensure all tank valves including PRV's are closed
3) Have the vessel start the on board air compressor and build air to 80PSI
4) Once 80PSI has been achieved have the manifold building valve opened to allow the pressure to the tanks.
5) Have the vessel crew monitor the pressure for a period of 5 minutes to verify the pressure holds at 80PSI.
6) During the 5-minute period the BIM tank farm rep. will walk the line to listen and look for any potential issues.
7) After 5 minutes without pressure loss the air compressor can be shut down, the air released and the fuel discharge can move forward.

This test is to be completed only after the pressure test from the vessel to the manifold has been completed.

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

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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 every hour and this needs to be recorded in the log book.

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. This is performed and recorded every hour.

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.

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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.

Upon recovery of the pig the shore representative will close the intake valve on the tanks being filled. The vessel will start their air compressor and charge the hose to approximately 60PSI. When that pressure is reached shore representative will be advised to open the valve incrementally of the last tank being filled to allow the air pressure to push the remaining fuel into the tank. Once the pressure has dropped the valve will once again be closed. This process will be repeated twice more to ensure the lines from the manifold building to the tanks have been emptied of any remaining fuel.

Once this has been completed the Baffinland shore representative will re-open all PRV valves and ensure they are in locked open position.

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.

Once the discharge has been safely and completely finished Baffinland shore representative and Inspectorate rep will board fuel vessel for Post discharge meeting, debriefing and exchange of all pertinent documents.

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.

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Vessel lines removed and ship departs.

6.12 Fuel Settlement Period.

To prevent usage of fuel with particulate there will be a period of time immediately following filling that each tank will not be available to be drawn from. As the tanks at Milne Port tank farm are of varying size the standard shall be based on the largest volume tank.

The readiness for usage cannot be provided unless a period of 1 (one) hour per foot of fuel added in the tank has been allowed for settlement of the new fuel. This period must be registered in bulk oil check sheet “A” or “B” or another specific register.

In all cases a registered validation of settlement times must be transmitted to Site Services Superintendent or his designate, checked and signed by said person prior to unlocking any discharge valve.

At the end of the fuel discharge a completed copy of all registered settlement records must be transmitted to Site Services department by the party responsible for the loading.

7 REFERENCES AND RECORDS

N/A

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APPENDIX A

Assigned Roles and Responsibilities Schedule

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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

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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 _____

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?					

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 / Tank Prep	Tanker dips (gauging) verified?					
	Any contamination present?					
	Temperature of product measured?					
	Bulk Fuel Tank gauged?					
	Fill level calculated as per gauge?					
Hose, Couplings and Flanges	Verification of transfer hoses (inspected and certified)?					
	Hose couplings wired/locked shut?					
	Hose couplings wrapped in absorbent pads?					
	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?					
Nozzles and Valves	"Nozzle clearly identified on tank?					
	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 rolled 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 C

Emergency Communications Signals

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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

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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 rolled 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 E

TRAVEL ROUTE FOR FLEXWING HOSE

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APPENDIX F

Spill Response Equipment Onboard Ship

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POLLUTION CONTROL EQUIPMENT

ONBOARD PETRO-NAV TANKERS 2018

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

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Appendix G1:

Training Register 2017

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Baffinland
Attendance Form

Course Name: OPEP SPILL Respons Training	Date: 8/5/2017
Instructor's Name: Todd Mitchell Company: NAVENCO Marine	Course Duration:
Steve Jankneght	
Room / Location:	10
Port Site	
Language of Delivery: Inuktitut ___ English ✓ Both(translation) ___	

	Name	Company	Dept.	Site	Home Community	Initials
1	Brendan Peachey	BIM	ENVR	MP	Fernie, BC	BP
2	DANIEL SKINNER	BIM	ENV	MR	STRATHROY, ON	[illegible]
3	DEAN WEEDMARK	BIM	OPER	MR/MI	McBRIDE B.C.	[illegible]
4	Wendra Button	BIM	ENV	MR	Carleton Place, ON	[illegible]
5	Trevor Robillard	BIM	MOB	MI	WINNIPEG MB	[illegible]
6	Enooyaq Sudlovenick	BIM	ENV	MR	Igaluit	[illegible]
7	Matthew Kitchen	BIM	ENVIRO	MR	Severn, ON	[illegible]
8	Bodden Lecordes	Bim	R.M	MI	Banff, Ab	[illegible]
9	Leo McGuire	BIM	Enviro	MP	Smiths Falls, ON	LM
10	Mike Bruser	BIM	MAINT	PORT	CALGARY, AB	MB
11	Sylvain Talbot	BIM	ED	Port		S.T.
12	Dean Pope	BIM	P+L	Mine	GANDER, NL	[illegible]
13	Mario Cotero	BIM	H&S	Port	Kahnawake, QN	[illegible]
14	J-P Provencher	BIM	OH	Mine	[illegible]	[illegible]
15	Laura Tait	BIM	ENV	Port	[illegible]	[illegible]
16	Lisa Arcat	BIM	ENV	Port	Pond Inlet, NV	[illegible]
17	Sylvain Pearlx	BIM	OPS		Quebec	[illegible]
18	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~
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Baffinland
Attendance Form

Course Name: OPEP Spill Response Training	Date: 8/6/2017
Instructor's Name: Todd Mitchell Company: Nature Maine	Course Duration:
Steve Jankneght	
Room / Location: Port Site	10
Language of Delivery: Inuktitut ___ English ✓ Both(translation) ___	

	Name	Company	Dept.	Site	Home Community	Initials
1	Brendan Peachey	BIM	ENVR	MIP	Fernie, BC	BP
2	Matt Kitchen	BIM	ENVIRO	MR	Severn, ON	MK
3	DANIEL SKINNER	BIM	ENV	MR	STRATHROY, ON	[illegible]
4	DEAN WEEOMANK	BIM	OPERATIONS	MR/MI	McBRIDE BC	[illegible]
5	Jhendra Button	BIM	ENV	MR	Carleton Place ON	[illegible]
6	Trevor Robitaille	BIM	MOB	MI	Winnipeg M.	[illegible]
7	Emmanuel Sudlovenick	BIM	ENV	MR	Iqaluit, NU	[illegible]
8	Badoo Leaseka	Bim	RM	MI	Bonanza	BL
9	Leo McGuire	BIM	Env	MP	Smiths Falls, ON	LM
10	Meka Kruser	BIM	MOB	PORT	Calgary, AB	MK
11						
12						
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Appendix G2:

Corrective Actions Log 2017

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Milne Inlet Marine Spill Response Training and Spill Response Exercise 2017

Observations, Recommendations and Corrective Actions Taken

Ref	Observation	Recommendation	Corrective Action	Scheduled Completion Date	Accountable	Corrective Action Taken
1.	It was noted that the 3 aluminum boom containers located at the west beach were somewhat contaminated with ore dust. This will likely cause damage to the containers, booms and especially the connectors in the future.	Protect the containers with covers, tarps or relocate the booms to another type of storage such as a closed sea container.	Either protect the existing containers or change storage method.	Undefined, depending on storage option. To be determined.	Environment	The aluminum containers located at the west beach area have been removed. Contents may be restocked into one sea container and returned to the west beach area prior to the 2018 bulk fuel transfer takes place.
2.	Boom containers at west beach are not in an optimal position	Consider a safer deployment path from container to shoreline to avoid cobble and rocks	Reposition containers accordingly.	Prior to bulk fuel transfer	H&S, MRT	See above. Will be addressed when repositioned for 2018 bulk fuel transfer.
3.	Certain procedures in relation to oiled wildlife were not clear to responders	Review the wildlife procedures in section 7 of the OPEP.	Ensure that these procedures are implemented accordingly.	Prior to bulk fuel transfer	Environment	Instruction and review of wildlife procedures to be added to OPEP training for 2018. All trainees will review the procedures to ensure competency in this area.
4	Contact lists in MCC were not up to date	All contacts both internal and external should be updated periodically	Update contacts accordingly	As soon as possible	H&S - MRT	Contact lists to be updated and reviewed prior to bulk fuel transfer.
5	Several corporate contact numbers are provided for (Oakville), it is necessary to call several numbers in succession until a contact is made	Improvements facilitating the corporate contact mechanism would be desirable	Determine best way to provide a more direct corporate contact, implement.	As soon as possible	H&S - MRT	Contact lists to be updated and reviewed prior to bulk fuel transfer.

Appendix G3:

Training and Deployment Exercise Report Milne Inlet 2017

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Milne Inlet Marine Spill Response Training and Equipment Deployment 2017

Training and Equipment Deployment Report:

Date:	**August 5th – 6th, 2017**
Location:	Milne Inlet, Nunavut
Participants:	Per attached Training Rosters

Training Objective:

Marine Spill Response Training, Milne Inlet: August 5th – 6th, 2017

The Marine Spill response training at Milne Inlet provides specific training that provides MRT 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 validated.

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:

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	30-60
3	Marine Spill Behavior	30
4	Safety for responders to spills	30
5	Marine Safety – small craft	45
6	Booming and boom deployment	60-90
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 5th, 2017

Classroom Training:

Classroom training was held on August 5th, 2017 at the Milne Inlet PSC. Training commenced at 08:00. Various attendees present, (roster attached).

The series of classroom modules were presented. At 9:00 key response management personnel were requested to attend so that a detailed review and discussion of each of the emergency management roles would be possible. The structure as indicated in the OPEP was validated and each of the roles was confirmed to be well defined and understood.

Modules 1 through 7 were presented as per agenda. 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 14:30.

Practical lessons and deployment exercise:

Prior to transiting to the beach area, a group FLRA was completed and reviewed by the class.

Practical session was begun on the afternoon of August 5th, 2017 at approximately 15:00 hrs. The spill response equipment had already been staged at the beach area. Four 20 foot sea containers with spill gear had been pre-staged close to the marine lay down launch ramp.

The group assembled at the lay down area and the contents of one of the containers were partially removed to provide a section of boom for instruction. Instruction on correct method of connecting booms and tow floats was given. Also stored in the sea container were anchor kits, including anchor, tow ropes, trip lines , tow floats, shore anchor pins and anchor screws. Instruction on the correct use of these items was also given.

The second boom container was also verified for content and readiness and all items found to be in good order.

A third container was opened and the Canadyne skimmer was inspected. A general overview of the skimmer, assembly and operation was covered. The skimmer was prepared for transfer to the west beach so that hands on deployment could be made the following morning.

The group then transited to the west beach area to review the three boom storage boxes that had been staged there. The placement of the containers did not permit opening the boxes so that was deferred to the following morning.

The group then reassembled at the fire hall area where the latest equipment for response to spills at sea had been received and was stored in a sea container. The container was opened and the group emptied, prepared the equipment and reloaded all the gear to the container to response ready condition. The skimmer was uncrated and it was noted that it should be filled with fuel, any maintenance performed and it should be prepared for full service as soon as possible.

Training for the day concluded at approximately 17:00 hrs.

August 6th, 2017

The trainees assembled at the PSC training room at 08:00 on August 6th, 2017. A work plan was discussed and methods of containment boom deployment were reviewed.

A Job Hazard Assessment (JHA) was completed by Steve Janknegt with the group, reviewing all elements of the equipment deployment and response at the beach.

The trainees then assembled in the fire hall and returned to the west beach. Permission was obtained from the ship loader prior to proceeding to the worksite.

On arrival at the beach, the ERT vehicles were positioned and trainees assembled accordingly.

The Baffinland workboat had already been launched and was at the ship loading dock area. A team was dispatched to move the workboat from the dock to the west beach area. On arrival at the beach a responder led a review of the workboat and safety gear. Two minor items missing were identified but were quickly available at the fire hall. The pre-launch inspection covering vessel/motor integrity found the workboat to be in response ready condition.

Wind conditions the day of the exercise were from the N.E. and were favorable to allow launch of the workboat to practice cascading of booms. The workboat was launched and 150 meters of containment boom were consecutively deployed and retrieved by 3 different teams. The boomed area simulated a recovery zone that could be used for product containment during skimming operations. The entire team deployed the Canadyne skimmer at the shoreline and simulated recovery operations.
Function was verified.

The training was completed at approximately 17:00 hrs and the crews stowed all the response gear and returned to the fire hall.

Debrief:

An informal debrief was held at the west beach area with the responders once the gear had been secured. It was noted that the deployments were very well carried out in a safe manner.

Steve Jankgnet reiterated the importance of good rope handling on the deck of the workboat during the boom deployments. One of the teams experienced some tangling of ropes and this could be much improved by ensuring that all ropes are properly coiled and laid out on the deck of the workboat prior to

launch of the booms. The difficulties were quickly overcome however by the team involved and did not significantly hamper the operation.

Instructor's comments:

- It was noted that the teams at the beach worked extremely efficiently and in a very coordinated fashion. All of the teams were able to successfully launch and deploy the containment boom, operate the skimmer and perform all response activities efficiently and safely.
- The instructor encouraged the team to regularly practice tying knots, especially the bowline knot to ensure proficiency in that area. Also, proper rope bundling techniques were demonstrated and it would be recommended to adopt the method as standard practice for the response gear to facilitate training and to ensure readiness in the event of an incident.
- During the workboat inspection, it was noted that some very minor Transport Canada mandated safety gear was not on board. The carrying of all of the safety gear is not only good practice; it is a regulatory requirement that should be immediately corrected.
- An assortment of pins and screw anchor devices were received with the Spills at Sea equipment and are now available in the containers at the beach.
- During the deployments, the instructor reminded the team that during booming operations, boat operators should not attempt to involve themselves in deck tasks; rather they should focus on boat operation only.
- 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.
- Safety and PPE Gear: A complete inventory of PPE for cold weather (Mustang suits), additional Personal Flotation Devices (PFD's) are stored both on the Rescue Unit and in the Port Logistics Container.
- Beach zone deployment: 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. Once in deeper water however, the engine should be completely trimmed down to provide maximum pulling thrust.

  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 may 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 or within 3 meters of the water on the beach.

The instructor noted that the 3 aluminum boom boxes were missing lids and a significant contamination of ore dust was noted. It would be highly recommended that some means of protection from contamination be provided, either by repairing the containers, using traps, or perhaps an alternative storage method such as a sea container could be considered.

The aluminum boxes were completely emptied during the training, the boom was deployed and the containers were swept out and cleaned. The equipment was returned to the containers completely response ready.

Summary:

The spill training and deployment exercise 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.

Baffinland
Attendance Form

Course Name: OPEP SPILL Respons Training	Date: 8/5/2017
Instructor's Name: Todd Mitchell Company: NAVENCO Marine	Course Duration:
Steve Jankneght	
Room / Location:	10
Port Site	
Language of Delivery: Inuktitut ___ English ✓ Both(translation) ___	

	Name	Company	Dept.	Site	Home Community	Initials
1	Brendan Peachey	BIM	ENVR	MP	Fernie, BC	BP
2	DANIEL SKINNER	BIM	ENV	MR	STRATHROY, ON	[illegible]
3	DEAN WEEDMARK	BIM	OPER	MR/MI	McBRIDE B.C.	[illegible]
4	Wendra Button	BIM	ENV	MR	Carleton Place, ON	[illegible]
5	Trevor Robillard	BIM	MOB	MI	WINNIPEG MB	[illegible]
6	Enooyaq Sudlovenick	BIM	ENV	MR	Igaluit	[illegible]
7	Matthew Kitchen	BIM	ENVIRO	MR	Severn, ON	[illegible]
8	Bodden Lecordes	Bim	R.M	MI	Banff, Ab	[illegible]
9	Leo McGuire	BIM	Enviro	MP	Smiths Falls, ON	LM
10	Mike Bruser	BIM	MAINT	PORT	CALGARY, AB	MB
11	Sylvain Talbot	BIM	ED	Port		S.T.
12	Dean Pope	BIM	P+L	Mine	GANDER, NL	[illegible]
13	Mario Cotero	BIM	H&S	Port	Kahnawake, QN	[illegible]
14	J-P Provencher	BIM	OH	Mine	[illegible]	[illegible]
15	Laura Tait	BIM	ENV	Port	[illegible]	[illegible]
16	Lisa Arcat	BIM	ENV	Port	Pond Inlet, NV	[illegible]
17	Sylvain Pearlx	BIM	OPS		Quebec	[illegible]
18	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~
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Baffinland
Attendance Form

Course Name: OPEP Spill Response Training	Date: 8/6/2017
Instructor's Name: Todd Mitchell Company: Nature Maine	Course Duration:
Steve Jankneght	
Room / Location: Port Site	10
Language of Delivery: Inuktitut ___ English ✓ Both(translation) ___	

	Name	Company	Dept.	Site	Home Community	Initials
1	Brendan Peachey	BIM	ENVR	MIP	Fernie, BC	BP
2	Matt Kitchen	BIM	ENVIRO	MR	Severn, ON	MK
3	DANIEL SKINNER	BIM	ENV	MR	STRATHROY, ON	[illegible]
4	DEAN WEEOMANK	BIM	OPERATIONS	MR/MI	McBRIDE BC	[illegible]
5	Jhendra Button	BIM	ENV	MR	Carleton Place ON	[illegible]
6	Trevor Robitaille	BIM	MOB	MI	Winnipeg M.	[illegible]
7	Emmanuel Sudlovenick	BIM	ENV	MR	Iqaluit, NU	[illegible]
8	Badoo Leaseka	Bim	RM	MI	Bonanza	BL
9	Leo McGuire	BIM	Env	MP	Smiths Falls, ON	LM
10	Meka Kruser	BIM	MOB	PORT	Calgary, AB	MK
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Appendix G4:

Annual Spill Exercise Milne Inlet 2017

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Milne Inlet Marine Spill Response Exercise 2017

Exercise Report:

Date:	**August 7th, 2017**
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 PLAN – August 2017"

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 prior to 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 hose coupling, close to the shore manifold begins leaking. 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 1000 litres moving towards and across the beach to the west of the shore manifold. 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 MCC in Milne Inlet; an additional log of on-scene events at the MCC in Mary River was also updated regularly during the exercise. Furthermore, logs from various participants as well as the log of the exercise coordinator 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 15 knots. Skies partly cloudy. Temp 10C.
Marine conditions: Rising tide – waves < 2 foot
Approx. exercise position: N 71° 53' 20'' - W 80° 53' 00"

Legend
IC – Incident Commander
MCC – Milne Port Command Centre
MRCC – Mary River Command Centre
EMTL – Emergency Management Team Leader
EC – Environmental Coordinator
ES – Environmental Superintendent
HSS – Health and Safety Superintendent
HSC - Health and Safety Coordinator
SC – Security
PBM – Polar bear monitor

Time:	Entry	Originating Log
09:34	Initiated Code 1 – Milne Inlet approx. 1000 liters of oil spilled from Tanker. Spill is headed west towards Phillip creek towards the west beach.	SC
09:36	IC informs MCC that MRT is mobilizing and heading towards west beach. MCC confirms.	SC
09:37	Mary River MCC advised of spill	HSS
09:39	Emergency vehicles mobilizing at west beach.	SC
09:41	IC informs MCC that the spill originated from the bulk fuel carrier. One of their couplings is broken. Working to contain spill on west beach. The boat crew is working on getting everything contained. There are no injuries. Security blocking access to west beach.	SC
09:42	ES initiates calls to notify Canadian Coast Guard, Corporate MCC, Environment Canada and Transport Canada.	ES
09:43	Boom crews begin deploying boom at west beach	IC
09:43	MCC asks security if all channels were notified of Code 1. Security confirms.	SC
09:44	IC calls MCC looking for plastic totes as a means to collect the fuel. Needing absorbents on the beach and booms. MCC confirms they will contact warehouse.	SC
09:44	EC and one responder to rescue truck to obtain sorbent pads	EC

09:45	Brian Penny corporate advised of spill. All site departments notified of spill.	ES
09:46	MCC - EMTL calls IC. Safety spotted an LTP on the shoreline and informed IC. IC said he will deal with it	SC
09:46	Crew boards workboat at ship loader via ladder	IC
09:49	IC advises oil starting to encroach on the beach will need absorbent pads. MCC EMTL confirms that they have 30 booms and 8-10 skids at the warehouse.	SC
09:49	Workboat crew performs safety checks and proceeds to beach	
09:50	EC and responder place sorbent pads on affected area along west beach, estimate volume to be approx. 1000 litres	EC
09:50	IC informs MCC that boom is partially deployed. IC informing MCC that he has 12 manpower to deploy boom. IC calling EC stating a possible issue with bird wildlife asking him to come back to assess the situation.	SC
09:51	IC informs MCC that pads being placed on west beach approx. 1 cube has washed ashore. MCC asking IC if he can confirm radio communication with the ship. IC confirms. Advises they are starting to deploy the first section of boom and started deploying east of west boat ramp.	SC
09:52	Workboat has boom hooked up and deploying as directed by IC	IC
09:52	IC asking EMTL if they can get a helicopter deployed to do an air survey and asking for an ETA. EMTL - confirmation that the helicopter is ready to deploy.	SC
09:53	EC calls MCC stating that there are six dead arctic char washed up on the beach. Birds flying around need deterrents for birds asking for PBM to assist.	SC
09:53	EC logs dead fish being identified, being bagged and labelled.	EC
09:54	Boom in place and secured to vehicle as shore anchor	IC
09:56	EMTL informing IC that ETA of helicopter is 10:30. EC calling IC informing he is going to dispose of fish and incinerate. IC asking EC to hold off on incineration until fish have been id's and tagged.	SC
09:57	MCC requests cleaning center for birds be initiated. Birds in place awaiting cleaning by appointed personnel	EC
09:58	Mary River MCC requests Port MCC to contact CWS regarding birds	ES
09:58	MCC ES visits security office to confirm that PBM has been dispatched to scene. Security confirms.	SC
09:59	IC asking for approximately 20 responders with garbage bags and would like ETA. Needs count of wildlife affected, six char and other birds affected by hydro carbons. IC to EC requesting to setup caging area to decontaminate birds.	SC
10:01	IC reports skimmer in water and using bladder to contain oil. Requests an ETA when can we get rest of cubes to our location.	SC
10:03	IC to MCC, boom deployed and skimmer activities working well. IC to EC asking if there are any more animals or birds affected. EC responds there are two gulls affected. Confirmation of bodies for cleanup.	SC
10:04	IC Requests coffee and snacks for cleanup crew.	SC
10:05	EC requests Quatrex bags for west beach oil clean up	EC
10:05	EC calling IC confirming fish bagged and two birds as well.	SC
10:06	IC to MCC, request mechanics, having difficulties with skimmer at this point. Also advises that totes have arrived at beach. Note at this time have recovered 30% of SC contaminants with skimmer. ETA on mechanic requested	SC
10:07	IC to MCC reports two guys mechanically inclined that have the skimmer back up and running.	SC
10:07	MCC - ES visits security to have PBM deployed with guns and ammunition	SC

	and to dispatch a mechanic at location. Security confirms PBM has guns and ammo and that they will dispatch mechanic.	
10:08	MCC EMTL calls IC to confirm that the PBM is on his way to scene to deter birds.	SC
10:09	IC informs EC that PBM is on route and heading his direction	SC
10:10	MCC EMTL to IC, confirms that the mechanic will arrive shortly. IC to MCC EMTL - Exercise coordinator is looking for confirmation that all external agencies have been contacted. EMTL confirms. HSC calls IC and advises that PBM is not to use flares. IC will relay message.	SC
10:11	EC calls IC to indicate that PBM has deterred birds. IC advises MCC about birds. IC informs MCC that they are at 50% recovery but running out of containment and is asking to rotate another tote.	SC
10:12	CWS successfully contacted and advised.	ES
10:12	MCC advises IC that the helicopter has arrived on site. IC relays that he is still waiting for 20 people and absorbents. EMTL advises that within 2 minutes the entire ship loading team will arrive to assist with cleanup. IC advises that he will dispatch EC to assist with cleanup. MCC asking if they have necessary amount of PPE and IC confirms that they have enough. IC advises EC that manpower is on its way.	SC
10:13	EC to IC advising that ship loading crew is on the scene and asking for rubber totes in the cleanup area. Two gulls and ducks affected by oils - will need buckets to ensure safety.	SC
10:14	IC calling MCC to request rubber totes or buckets at cleanup to look after ducks and gulls.	SC
10:15	MCC relays to IC that kitchen staff is on its way with buckets.	SC
10:16	IC - team check, all members accounted for.	IC
10:17	IC advised MCC that kitchen staff has arrived with two jugs of coffee and water. MCC to IC requesting a headcount. IC replies an accurate headcount with responders. IC to MCC totes have arrived to pick up wildlife.	SC
10:17	Kitchen staff arrives and starts washing birds, birds to be collected in totes	EC
10:19	IC to MCC informing that ship has repaired couplings and waiting for completion of cleanup. Ship will contact MCC to find out when they can resume fueling. EC to IC advising that they are in the process of wrapping up. We need assistance to bring totes back to site. IC to EC advising he is sending people to assist.	SC
10:20	IC to EMTL advising that the exercise coordinator has confirmed that they have met objectives and that we can stand down the code 1.	SC
10:22	ES visits security to stand down code 1.	SC
10:23	Security stands down the Code 1	SC
10:24	Final calls to all stakeholders and Brian Penny informing them of completion of exercise.	HSS

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
- Environmental Superintendent
- Incident Commander
- ERT responders
- Safety Coordinator
- Security
- EMTL

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 was invited to provide comments reflecting their day's experience:

Deon Pope – EMTL

Deon Pope was assisted in the MCC by Sylvain Talbot, Fixed Plant Superintendent (EMT member), Shawn Stevens, Health and Safety Superintendent and Laura Taylor, Environmental Superintendent. Deon commented as follows:

- Some of the contact sheets on MCC wall were not up to date
- Several corporate contact numbers are provided for (Oakville), it is necessary to call several numbers in succession until a contact is made. Improvements facilitating the corporate contact mechanism would be recommended.
- It was noted by the emergency Management Team that the volume of requests and tasks required in the MCC would require the EMTL to bring in assisting personnel. The level of activity was challenging.

Steve Janknget – Incident Commander

- He noted some difficulty with radio communications on the digital emergency channel
- Steve pointed out that the positions of the boom containers was not optimal, some repositioning could be an enhancement.
- He noted that the cobble and large stone composition at the beach is a potential injury source
- Steve commended his team for having followed all of the training provided and responding as instructed.

Ezra Arreak, Environmental Coordinator

- Ezra was accountable for the overall shoreline zone and areas of stranded oil that had come ashore west of the recovery site. He performed an initial assessment immediately on arrival at the scene and directed sorbent recovery as needed.
- He noted that he had followed procedures in bagging the oiled deceased wildlife and initiated bird capture and cleaning procedures.

Mario Vottero – Health & Safety Coordinator

- Reminded the group that the MCC can be tasked to provide additional back up and resources for any team member who is overwhelmed during the response.
- Observed that all operations at the beach were performed in an orderly and safe fashion.
- Noted that the west beach is a quiet area and a good location for exercises and spill response training

Henry Pintkowsky - Security:

Henry was assisted at Security by Gaetan Roy.

- He agreed that there was indeed a large volume of communications to document. He suggested that a recording of the communications from which a transcript could be made could be an improvement.

Responders:

- It was suggested that additional responders could obtain pleasure boat operator licenses.

Mary River (MCC)

The Mary River Command Center was staffed during the event by:

Allan Knight – Environmental Superintendent
Vanessa Bryan – HR Advisor

The group from Mary River provided logs and e mailed comments regarding events that took place in the command center there. Allan Knight commented as follows:

- The OPEP in the binders at both sites was the wrong revision. Mary River MCC has replaced the one at the Mine Site with the correct revision 3.

- He noted that the complete proper procedure for wildlife mortalities i.e. tagging, bagging etc is detailed in section 7-1 of the OPEP and should be followed accordingly.
- Noted that the weather details were not discussed during the response to the incident.

Vanessa Bryan noted as follows:

- IT could have been contacted right at the onset of the incident to shutdown internet traffic.

Exercise Coordinator / Trainer:

- All tasks were carried out very safely, effectively and in a timely manner.
- Safety set up a perimeter and controlled access to the site immediately at the outset of the event
- Radio communications appeared to be generally sound throughout the exercise, some minor difficulty in using the digital emergency channel was noted, however it did not hinder the response.
- The team should continue to practice simple knots and rope handling which will be an asset on future responses.
- It would be strongly suggested that periodic practice time be allotted for the MRT members using the booms and workboat to ensure team members remain proficient in this task.

Summary:

A high degree of enthusiasm and professionalism was noted by the exercise coordinator throughout the training and exercise. The excellent leadership of the MRT team, the involvement of the Environment, Safety and all departments contributed greatly to the success of the endeavor. The commitment of not only these participants but also of management and the corporation itself to the goal of a high standard of emergency response was evident throughout both the training and the annual exercise. The efforts of Steve Janknegt in assisting the coordination of the training and response during the exercise warrant special mention. He demonstrated excellent leadership throughout the program.

All of the management team roles were handled in a highly professional manner. The important element of validating the effectiveness of the Baffinland Emergency Response Management structure was 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.

The deployment of boom and related equipment as outlined in the OPEP scenarios was accomplished in a timely, safe and highly professional manner.

The exercise on August 7th 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" scenarios 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 6, 2017

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	>200 bales	
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	Yes	1	Fully functional and response ready

	power pack, suitable for recovery of distillates – Capacity 7.5 tonnes per hour			
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 5-6, 2017

Per:
Todd Mitchell – Spill Response Specialist

Baffinland

Milne Inlet Marine Spill Response Training and Spill Response Exercise 2017

Observations, Recommendations and Corrective Action

Ref	Observation	Recommendation	Corrective Action	Scheduled Completion Date	Accountable	Consultant's Comments and OPEP Considerations
1.	It was noted that the 3 aluminum boom containers located at the west beach were somewhat contaminated with ore dust. This will likely cause damage to the containers, booms and especially the connectors in the future.	Protect the containers with covers, tarps or relocate the booms to another type of storage such as a closed sea container.	Either protect the existing containers or change storage method.	Undefined, depending on storage option. To be determined.	Environment	
2.	Boom containers at west beach are not in an optimal position	Consider a safer deployment path from container to shoreline to avoid cobble and rocks	Reposition containers accordingly.	Prior to bulk fuel transfer	H&S, MRT	
3.	Certain procedures in relation to oiled wildlife were not clear to responders	Review the wildlife procedures in section 7 of the OPEP.	Ensure that these procedures are implemented accordingly.	Prior to bulk fuel transfer	Environment	
4	Contact lists in MCC were not up to date	All contacts both internal and external should be updated periodically	Update contacts accordingly	As soon as possible	H&S - MRT	
5	Several corporate contact numbers are provided for (Oakville), it is necessary to call several numbers in succession until a contact is made	Improvements facilitating the corporate contact mechanism would be desirable	Determine best way to provide a more direct corporate contact, implement.	As soon as possible	H&S - MRT	

Baffinland
Attendance Form

Course Name: OPEP Spill Responce Training	Date: 8/7/2017
Instructor's Name: Todd Mitchell Company: BIM	Course Duration:
Steve Jankneg Navenco Marine	
Room / Location:	6
Port Site	
Language of Delivery: Inuktitut ___ English ___ Both(translation) ___	

	Name	Company	Dept.	Site	Home Community	Initials
1	Pierre Berthier	BIM	FPH	P	Timmins	P.B
2	Brendan Peachey	BIM	DNVR	MP	Terrace BC	BP
3	DANIEL SKINNER	BIM	ENV	MR	STRATHROY, ON	[illegible]
4	DEAN WEEDMARK	BIM	OPERATIONS	MR/ML	McBRIDE BC.	[illegible]
5	Kendra Butler	BIM	ENV	MR	Carleton Place, ON	[illegible]
6	Trevor Robertson	BIM	MOB	MI	WINNIPEG MB	[illegible]
7	Enooyaq Sudlovenick	BIM	ENV	MR	Iqaluit, NU	[illegible]
8	Bodden Leaszlen	Bim	R.M	MI	Bonanza, Ab	BL
9	Leo McGuire	BIM	ENV	MP	Smiths Falls, ON	LM
10	Meka Knusen	BIM	MOB	PORT	CALGARY AB	MK
11	Matt Kitchen	BIM	ENVIRO	MR	Severn, ON	MK
12	Erica Arreak	BIM	ENV	Port	Pond Inlet, NU	EA
13	Sylvain Talbot	BIM	FP	Port		ST.
14	Laura Taylor	BIM	Env	Port	TBay	LT
15	Dion Pipa					
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Appendix G5:

Training Register 2018

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2018 OPEP Training Roster and Attendance

	Name	Department	Manager Approva	Day 1 - Signature	Day 2 - Signature
1	Dana Ruff	Fixed Plant	Harold Audet	Dana Ruff	Dana Ruff
2	Jason Kinden	Mobile Maintenance	Quicy Lewis	NOT RELEASED	NOT RELEASED
3	Bill Elson	Mobile Maintenance	Adam Bowerman	NOT RELEASED	NOT RELEASED
4	Kenny Peterloosie	Ship Loader	Sangjin yun	Kenny Peterloosie	Kenny Peterloosie
5	Stephen Perry	Ship Loader	Sangjin yun	NOT RELEASED	NOT RELEASED
6	Mark Lannon	Ship Loader	Sangjin yun	Mark Lannon	Mark Lannon
7	Fraser Snow	Tote Rd	Shawn Parry	[illegible]	[illegible]
8	Ryan Burlingame	Environment	Connor Devereaux	RB	RB
9	Nuylea Kipanik	Surface works	Jim Martin	[illegible]	[illegible]
10	Jeff Rothenburg	Surface Works	James Martin	[illegible]	[illegible]
11	Samson Illuaq	Mine Ops	Matt Tracey	SAMSON ILLUAQ	SAMSON ILLUAQ
	REBECCA MARSH	MOB		Rebecca Marsh	Rebecca Marsh
	Levi Jr Qaunaq	MOB		Levi Jr Qaunaq	Levi Jr Qaunaq

Appendix G6:

Corrective Actions Log 2018

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Baffinland

Milne Inlet Marine Spill Response Training and Spill Response Exercise 2018

Observations, Recommendations and Corrective Action

Ref	Observation	Recommendation	Corrective Action	Scheduled Completion Date	Accountable
1	During rigging of anchors it was noted that 3/8" shackles are required in order to attach the triplines to the anchors.	A quantity of spare 3/8" shackles should be available in each container	Provide necessary shackles	Prior to bulk fuel transfer	**ERT**
2	Some mandated safety items on workboat were deficient. Flares were expired in 2017. Navigation lights were missing/not functioning.	Equip vessel with appropriate/current flares. Repair and replace navigation lights as required	Repair/replace as required	Prior to bulk fuel transfer	**ERT/Mobile Maintenance**
3	Skimmer hoses were relatively short and the powerpack was close to the high tide zone	Provide longer hoses for all skimmers to permit powerpack to be situated well above the high-water limit.	Procure additional hoses	Prior to bulk fuel transfer	**ERT**
4	It was noted that although adequate, the number of responders that possess a Pleasure Boat Safety Operator's card was low. Only one responder possessed an SVOP certification.	It would be recommended that ERT members follow the appropriate training to obtain appropriate certifications.	Training and certification	2019 open water season	**ERT**
5	The VHF radio in the Baffinland workboat is difficult to hear during operations	Replace radio with a better unit or add external speaker	Repair/replace as necessary	Prior to bulk fuel transfer	**ERT/Mobile Maintenance**

6	There were no immediately available bird/wildlife deterring devices in the workboat or available on the rescue unit. No dip nets available.	Add readily available deterring devices/dip nets to workboat and/or rescue unit. Provide training in their use.	Provide devices as noted.	Prior to bulk fuel transfer	**ERT/ENV**

Appendix G7:

Training and Deployment Exercise Report Milne Inlet 2018

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Milne Inlet Marine Spill Response Training and Equipment Deployment 2018

Training and Equipment Deployment Report:

Date:	**July 20th - 21st, 2018**
Location:	Milne Inlet, Nunavut
Participants:	Per attached Training Rosters

Training Objective:

Marine Spill Response Training, Milne Inlet: July 20th - 21st, 2018

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 validated.

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:

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 was held to ensure that all key responders understand these roles and are able to coordinate an effective response to a spill incident of all magnitudes.

For 2018, an additional training module covering Wildlife Protection Procedures was added to the curriculum. Previous training had shown that some participants were not fully versed in this element of spill response and the module covers the information contained in both the SCP and the OPEP.

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	30-60
3	Marine Spill Behavior	30
4	Safety for responders to spills	30
5	Marine Safety – small craft	45
6	Booming and boom deployment	60-90
7	Oil recovery / skimming operations	30
7A	Wildlife Protection Procedures	20
	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

July 20th, 2018

Classroom Training:

Classroom training was held on July 20th, 2018 at the Milne Inlet PSC. Training commenced at 08:30. Various attendees present, (roster attached).

The series of classroom modules were presented. At 11:00 key response management personnel were requested to attend a teleconference so that a detailed review and discussion of each of the emergency management roles would be possible. The structure as indicated in the OPEP was validated and each of the roles was confirmed to be well defined and understood.

Modules 1 through 7A were presented as per agenda. 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 16:00.

July 21, 2018

Practical lessons and deployment exercise:

Practical session was begun on the morning of July 21st, 2018 at approximately 8:00 hrs.

Prior to transiting to the beach area, a JHA was prepared and reviewed with the trainees. All hazards were reviewed and appropriate mitigation measures identified.

The group then moved outside the MRT facility where a 20 foot container containing response boom and a Canadyne multi-skimmer had been placed. Instruction on correct method of connecting booms and tow floats was given. Also stored in the sea container were anchor kits, including anchor, tow ropes, trip lines and tow floats. Instruction on the correct use of these items was also given.

The Canadyne skimmer was completely assembled, connected to the powerpack and run accordingly. The two recovery media modules were demonstrated and the group was shown the procedure for

interchanging the brush and drum modules. It was also pointed out that the drum would be more appropriate for lower viscosity products and that the brush could be substituted for heavier viscosity recovery if needed.

Additional spill response equipment had already been staged at the beach area. Four 20 foot sea containers with spill gear had been pre-staged close to the marine lay down launch ramp.

The group assembled at the lay down area and the contents of one of the containers were partially removed to provide a section of boom for instruction and for deployment practice. Also stored in the sea container were anchor kits, including anchor, tow ropes, trip lines , tow floats, shore anchor pins and anchor screws. Instruction on the correct use of these items was also reviewed.

The second boom container was also verified for content and readiness and all items found to be in good order.

A third container was opened which contained both a Candyne and Elastec drum skimmer. A general overview of both skimmers, assembly and operation was covered. Each skimmer was then connected, run and tested and found to be in good operating condition.

An additional sea container had also been staged at the beach west of the shiploader. The container was also inspected. An inventory of this container will be made and all contents verified prior to completion of the week's training.

Following the lunch break, the trainees were assembled into groups to practice deploying and anchoring boom from the beach.

The responders carried out a pre-launch inspection of the workboat and safety gear. Two minor issues were identified and recorded for correction. The pre-launch inspection covering vessel/motor integrity found the workboat to be in response ready condition.

Wind conditions the day of the exercise were from the N.W. and were favorable to allow launch of the workboat to practice cascading of booms. The workboat was launched and 250 feet of containment boom were consecutively deployed and retrieved by 3 different teams. The boomed area simulated a recovery zone that could be used for product containment during skimming operations. The team deployed a skimmer at the shoreline and simulated recovery operations. Function was verified and all was in good order.

Training for the day concluded at approximately 17:00 hrs.

Debrief:

An informal debrief was held at the beach area with the responders once the gear had been secured. It was noted that the deployments were carried out in a safe manner.

The instructor noted excellent rope handling on the deck of the workboat during the boom deployments. No difficulties to deploy the containment boom was experienced by any of the teams. All work was carried out safely and response times were excellent.

Instructor's comments

- The Wildlife Protection Procedures were presented for the first time this year. Additional review should be undertaken to ensure that the deterring equipment that is outlined in the SCP and OPEP is indeed available and that training in their use is provided to the responders accordingly. The Environmental department should ensure that in the event of an incident that their personnel are aware of these procedures and are trained accordingly.
- It was noted that the teams at the beach worked extremely efficiently and in a very coordinated fashion. All of the teams were able to successfully launch and deploy the containment boom, operate the skimmer and perform all response activities efficiently and safely.
- The instructor encouraged the team to regularly practice tying knots, especially the bowline knot to ensure proficiency in that area.
- During the workboat inspection, it was noted that some very minor Transport Canada mandated safety gear was deficient. The carrying of all of the safety gear is not only good practice; it is a regulatory requirement that should be immediately corrected.
- It was noted that although adequate, the number of responders that possess a Pleasure Boat Safety Operator's card was low. Only one responder possessed an SVOP certification. It would be recommended that ERT members follow the appropriate training to obtain certifications in this regard.
- An assortment of pins and screw anchor devices were received with the Spills at Sea equipment and are now available in the containers at the beach.
- During the deployments, the instructor reminded the team that during booming operations, boat operators should not attempt to involve themselves in deck tasks; rather they should focus on boat operation only.
- 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.
- Safety and PPE Gear: A complete inventory of PPE for cold weather (Mustang suits), additional Personal Flotation Devices (PFD's) are stored both on the Rescue Unit and in the sea container located at the launch area.
- Beach zone deployment: 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. Once in deeper water however, the engine should be completely trimmed down to provide maximum pulling thrust.

  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 may 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 or within 3 meters of the water on the beach.

Summary:

The spill training and deployment exercise 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.

2018 OPEP Training Roster and Attendance

	Name	Department	Manager Approva	Day 1 - Signature	Day 2 - Signature
1	Dana Ruff	Fixed Plant	Harold Audet	Dana Ruff	Dana Ruff
2	Jason Kinden	Mobile Maintenance	Quicy Lewis	NOT RELEASED	NOT RELEASED
3	Bill Elson	Mobile Maintenance	Adam Bowerman	NOT RELEASED	NOT RELEASED
4	Kenny Peterloosie	Ship Loader	Sangjin yun	Kenny Peterloosie	Kenny Peterloosie
5	Stephen Perry	Ship Loader	Sangjin yun	NOT RELEASED	NOT RELEASED
6	Mark Lannon	Ship Loader	Sangjin yun	Mark Lannon	Mark Lannon
7	Fraser Snow	Tote Rd	Shawn Parry	[illegible]	[illegible]
8	Ryan Burlingame	Environment	Connor Devereaux	RB	RB
9	Nuylea Kipanik	Surface works	Jim Martin	[illegible]	[illegible]
10	Jeff Rothenburg	Surface Works	James Martin	[illegible]	[illegible]
11	Samson Illuaq	Mine Ops	Matt Tracey	SAMSON ILLUAQ	SAMSON ILLUAQ
	REBECCA MARSH	MOB		Rebecca Marsh	Rebecca Marsh
	Levi Jr Qaunaq	MOB		Levi Jr Qaunaq	Levi Jr Qaunaq

Appendix G8:

Annual Spill Exercise Milne Inlet 2018

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Milne Inlet Marine Spill Response Exercise 2018

Exercise Report:

Date:	**July 22, 2018**
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 PLAN – JULY 2018"

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 prior to 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 small tear near a coupling along the floating hose length develops and begins leaking. 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 750 litres moving towards and across the beach to the east of the shore manifold. 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 MCC in Milne Inlet and was updated regularly during the exercise. Furthermore, logs from various participants as well as the log of the exercise coordinator 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 NW 10 knots. Skies partly cloudy. Temp 5.5°C.
Marine conditions: Rising tide – waves <1 foot
Approx. exercise position: N 71° 53’ 20’’ - W 80° 53’ 00"

Legend
IC – Incident Commander
MCC – Milne Port Command Centre
EMTL – Emergency Management Team Leader
EC – Environmental Coordinator
ES – Environmental Superintendent
HSS – Health and Safety Superintendent
HSC - Health and Safety Coordinator
SC – Security
PBM – Polar bear monitor
TM – Exercise coordinator

Time:	Entry	Originating Log
10:20	Initiated Code 1 – Milne Inlet approx. 750 liters of oil spilled from torn transfer hose. Spill is headed east towards and across the beach.	TM
10:24	IC arrives at beach	TM
10:24	8 responders arrive at beach	TM
10:24	I/C requests 20 bales each sorbent pads and booms	TM
10:25	Request from I/C for helicopter for overflight	MCC
10:26	Responders dispatched to launch workboat.	TM
10:26	Responders dispatched to prepare skimmer	TM
10:27	Confirmation via tank farm that all discharge pumping suspended	MCC
10:32	Mary River advised and standing by to assist if needed	MCC
10:32	Skimmer positioned at beach and ready for deployment	TM
10:33	Workboat arrives on beach	TM
10:34	Mobile Maintenance confirms dispatching 20 persons for assistance at beach	MCC
10:34	Quatrex bags requested from warehouse and dispatched to beach	MCC
10:35	Boom launched at beach	TM
10:35	EC advises that they have found 1 dead gull, 1 dead Char and 1 live but oiled goose on the beach	TM

10:42	PBM requested to provide bird deterrence	TM
10:42	MCC requests Security to dispatch PBM to beach	MCC
10:42	Boom in position and anchored – Skimmer installed and running	TM
10:46	Corporate office advised of spill	MCC
10:48	Barricades in position on access ramp to control traffic and prevent unauthorized entry into area	TM
10:48	Additional oil observed entering beach zone to east of freight ramp	TM
10:49	IC orders boom to be deployed on east side of ramp	TM
10:49	Flock of Murres observed in area, PBM requested to provide deterrents	TM
10:50	EC request to MCC for dip nets in case recovery of oiled birds is necessary	TM
10:51	Responders (20 persons) cleaning free oil along beach with sorbents – Collection of oiled sorbents to Quatrex bags	TM
10:52	EC tags wildlife as per OPEP procedures and bagged accordingly	TM
10:53	Dip nets requested from warehouse confirmed to be unavailable	MCC
10:56	Helicopter arrived at scene and is engaged in overflights and hazing of seabirds	TM
10:58	Drum adaptor installed on Canadyne skimmer for light oil	TM
11:00	EC confirms that oiled goose has been captured and is being held in a suitable box	TM
11:00	Second containment boom successfully installed on east beach	TM
11:00	Fixed Plant can and will make up some dip nets, will be ready shortly	MCC
11:04	ES confirms external notifications underway – Left message with INAC – RCMP unable to reach -	MCC
11:06	HSC performing head count, monitoring who is in and out of response area. Headcount is 35 responders including those deploying sorbents along beach	TM
11:09	Skimmer running on east beach and skimming oil	TM
11:10	P/P operators observed wearing hearing protection	TM
11:13	MCC advises IC on method of cleaning Goose	MCC
11:15	Responders are cycling through breaks of rest, snacks and refreshments	TM
11:15	ES confirms notification of CCG	TM
11:21	All exercise objectives met – Exercise terminated	TM

Debrief at PSC Training Center:

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

Present:

- Exercise Coordinator
- Environmental Coordinator
- Safety Coordinator
- Environmental Superintendent
- Health and Safety Superintendent
- Incident Commander
- ERT responders
- EMTL

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 was invited to provide comments reflecting their day's experience. Several comments were raised as follows:

- Some of the external contact numbers in the OPEP were incorrect and should be updated
- For future exercises, the number of external contacts should be limited so as to allow the participants to better engage in other tasks relating to the exercise play
- It was noted by safety that the cobble and large stones between the OPEP sea container storage and the beachfront could be hazardous for twists and falls. There should be some improvement of the deployment path between the containers and the water's edge
- It was noted that in a real incident, consideration for relief of shifts and the process for relief would be essential. This process should be reviewed

Comments - Exercise Coordinator / Trainer:

- All tasks were carried out very safely, effectively and in a timely manner.
- The Canadyne skimmer had been stored with the brush recovery module in place. The responders changed to the drum module noting the relatively low viscosity of the spilled product, an excellent initiative.
- The responders used the workboat to deter birds in the area, a viable technique.
- All secondary containment under powerpacks was observed to be in place.
- The handling of wildlife was initiated on the beach in accordance with the procedures as written in the OPEP.
- Safety set up a perimeter and controlled access to the site immediately at the outset of the event. Safety also initiated headcounts.

- Radio communications appeared to be generally sound throughout the exercise, although the VHF radio in the Baffinland workboat is difficult to hear during operations.
- The team should continue to practice simple knots and rope handling which will be an asset on future responses.
- It would be strongly suggested that periodic practice time be allotted for the MRT members using the booms and workboat to ensure team members remain proficient in this task.
- There were no immediately available bird/wildlife deterring devices in the workboat or available on the rescue unit. Having immediately available devices and training in their use is an important element in the protection of wildlife during a spill.

Summary:

A high degree of enthusiasm and professionalism was noted by the exercise coordinator throughout the training and exercise. The excellent leadership of the ERT team, the involvement of all departments including Environment and Safety contributed greatly to the success of the endeavor. The commitment of management and the corporation itself to the goal of a high standard of emergency response was evident throughout both the training and the annual exercise. Dale Wales, ERT Coordinator demonstrated excellent leadership throughout the program. His assistance in organizing the exercise and his input to the training was of great value to the project.

All of the management team roles were handled in satisfactory manner. The important element of validating the effectiveness of the Baffinland Emergency Response Management structure was 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.

The deployment of boom and related equipment as outlined in the OPEP scenarios was accomplished beyond expectations.

The exercise on July 22nd, 2018 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" scenarios 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 – JULY 23, 2018

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 fully operational
4	Anchor kits for anchoring boom in place	Yes	7 kits complete	Anchor kits found to be fully operational.
4	Towing bridle for oil boom	Yes	4	
3	Towing paravanes C/W bridles	Yes	3	
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/boxes assorted sorbents	Yes	50	Additional sorbents to arrive on dry cargo sealift
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	Yes	1	Fully functional and response ready

	power pack, suitable for recovery of distillates – Capacity 7.5 tonnes per hour			
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: July 23, 2018

Per:
Todd Mitchell – Spill Response Specialist

Baffinland

Milne Inlet Marine Spill Response Training and Spill Response Exercise 2018

Observations, Recommendations and Corrective Action

Ref	Observation	Recommendation	Corrective Action	Scheduled Completion Date	Accountable
1	During rigging of anchors it was noted that 3/8" shackles are required in order to attach the triplines to the anchors.	A quantity of spare 3/8" shackles should be available in each container	Provide necessary shackles	Prior to bulk fuel transfer	**ERT**
2	Some mandated safety items on workboat were deficient. Flares were expired in 2017. Navigation lights were missing/not functioning.	Equip vessel with appropriate/current flares. Repair and replace navigation lights as required	Repair/replace as required	Prior to bulk fuel transfer	**ERT/Mobile Maintenance**
3	Skimmer hoses were relatively short and the powerpack was close to the high tide zone	Provide longer hoses for all skimmers to permit powerpack to be situated well above the high-water limit.	Procure additional hoses	Prior to bulk fuel transfer	**ERT**
4	It was noted that although adequate, the number of responders that possess a Pleasure Boat Safety Operator's card was low. Only one responder possessed an SVOP certification.	It would be recommended that ERT members follow the appropriate training to obtain appropriate certifications.	Training and certification	2019 open water season	**ERT**
5	The VHF radio in the Baffinland workboat is difficult to hear during operations	Replace radio with a better unit or add external speaker	Repair/replace as necessary	Prior to bulk fuel transfer	**ERT/Mobile Maintenance**

6	There were no immediately available bird/wildlife deterring devices in the workboat or available on the rescue unit. No dip nets available.	Add readily available deterring devices/dip nets to workboat and/or rescue unit. Provide training in their use.	Provide devices as noted.	Prior to bulk fuel transfer	**ERT/ENV**

APPENDIX H

Material Safety Data Sheets

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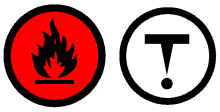
Material Safety Data Sheet

WHMIS	Product name	TDG Road/Rail
	Jet Fuel	

Section 1. Identification

Chemical name : Kerosine (petroleum)

Other means of identification : Not available.

Code : 8521

CAS number : 8008-20-6

Relevant identified uses of the substance or mixture and uses advised against

Supplier's details : ÉNERGIE VALERO INC
1801Avenue McGill College
13è étage
Montréal, Québec
H3A 2N4

Emergency telephone number with hours of operation. : **Canutec (24 heures)**
613-996-6666

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
ASPIRATION HAZARD - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Flammable liquid and vapor.
Causes serious eye irritation.
Causes skin irritation.
May be fatal if swallowed and enters airways.

Precautionary statements

Prevention : Wear protective gloves. Wear eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture Substance

Ingredient name	%	CAS number
Kerosine (petroleum)	100	8008-20-6

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

Contient environ 25% d'aromatiques (pas de benzène); peut contenir des traces de H2S

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Section 4. First aid measures

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes skin irritation.

Ingestion : May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : Adverse symptoms may include the following:
nausea or vomiting

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not swallow. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

United States

Occupational exposure limits

Ingredient name	Exposure limits
Kerosine (petroleum)	**NIOSH REL (United States, 10/2013).** TWA: 100 mg/m³ 10 hours. **ACGIH TLV (United States, 6/2013). Absorbed through skin.** TWA: 200 mg/m³, (as total hydrocarbon vapor) 8 hours.

Canada

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredient	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Kerosine (petroleum), as total hydrocarbon vapor	US ACGIH 6/2013	-	200	-	-	-	-	-	-	-	[1]
Kerosine (petroleum), as total hydrocarbon vapour	AB 4/2009	-	200	-	-	-	-	-	-	-	[1]
	BC 7/2013	-	200	-	-	-	-	-	-	-	[1]
Kerosine (petroleum)	ON 1/2013	-	200	-	-	-	-	-	-	-	[1]

[1]Absorbed through skin.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Section 8. Exposure controls/personal protection

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Viscous liquid.]

Color : Colorless to light yellow. Clear.

Odor : Characteristic.

Odor threshold : Not available.

pH : Not available.

Melting point : -49℃ (-56,2℉)

Boiling point : 90 to 300℃ (194 to 572℉)

Flash point : Closed cup: >38℃ (>100,4℉)

Evaporation rate : 0,212138 (butyl acetate = 1)

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Lower: 0,7%
Upper: 5%

Vapor pressure : 0,27 kPa (2 mm Hg) [room temperature]

Vapor density : 4,5 [Air = 1]

Relative density : 0,8

Solubility : Not available.

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : >220℃ (>428℉)

Decomposition temperature : Not available.

Viscosity : Not available.

Aerosol product

Heat of combustion : -43,12 kJ/g

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Kerosine (petroleum)	LD50 Oral	Rat	15 g/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Kerosine (petroleum)	Skin - Moderate irritant Skin - Moderate irritant Skin - Severe irritant	Rabbit Rabbit Rabbit	- - -	0.5 Mililiters 24 hours 100 Percent 500 milligrams	- - -

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
Kerosine (petroleum)	-	3	-

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Name	Result
Kerosine (petroleum)	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes skin irritation.

Ingestion : May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : No specific data.

Section 11. Toxicological information

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : Adverse symptoms may include the following:
nausea or vomiting

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification				
UN number	UN1863	UN1863				
UN proper shipping name	Fuel, Aviation, Turbine Engine (Kerosine (petroleum))	Fuel, Aviation, Turbine Engine (Kerosine (petroleum))				
Transport hazard class(es)	3	3				
Packing group	III	III				
Environmental hazards	Yes.	No.				
Additional information	This product may be re-classified as "Combustible Liquid," unless transported by vessel or aircraft. Non-bulk packages (less than or equal to 119 gal) of combustible liquids, that are marine pollutants, are not regulated as hazardous materials, unless transported by vessel.	-				

Section 14. Transport information

	The marine pollutant mark is not required when transported on inland waterways in sizes of ≤5 L or ≤5 kg or by road, rail, or inland air in non-bulk sizes.					

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not applicable.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: This material is listed or exempted.
United States inventory (TSCA 8b): This material is listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Kerosine (petroleum)	100	Yes.	No.	No.	Yes.	No.

State regulations

Massachusetts : This material is listed.

Section 15. Regulatory information

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

Canada

WHMIS (Canada) : Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
Class D-2B: Material causing other toxic effects (Toxic).

Canadian lists

Canadian NPRI : This material is not listed.

CEPA Toxic substances : This material is not listed.

Canada inventory : This material is listed or exempted.

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

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Inform Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

International lists

Canada : This material is listed or exempted.

Europe : This material is listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health *	2
Flammability	2
Physical hazards	0

National Fire Protection Association (U.S.A.)

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Section 16. Other information

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Indicates information that has changed from previously issued version.

Notice to reader

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Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

APPENDIX I

Transport Canada – TP 9834E

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

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Transport Canada Transports Canada

TP 9834E
(07/2009)

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

2ND EDITION
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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

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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).