OIL POLLUTION EMERGENCY PLAN

MARINE SPILLS

MILNE INLET FUEL STORAGE FACILITY

Prepared by:

NAVENCO MARINE INC.

Version: July 15, 2013

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Revision History.	Revision Date	Changes	Approval
1	June 30, 2012	Review OPEP with no changes, no bulk fuel transfer for 2012	**D. MCCANN**
2	May/2013	Full review of OPEP, incorporate revision relating to new Mary River Emergency Response and Spill Contingency Plan. Revised management structure, new fuel farm configuration for 2013 season, procedures and spill scenarios.	**D. MCCANN**
3	July 15, 2013	Revisions to add HCW transfer to ship, temporary fuel farm configuration, addition of 3rd party responder for large spills, addition of references to Vessel Pollution and Dangerous Chemical Regulations, (SOR 2012-69), description of ice conditions at Mile Inlet Port	**D. MCCANN**

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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)
Department of Fisheries and Oceans	(DFO)
Emergency Response Coordinator	(ERC)
Emergency Response Command Center	(ERCC)
Emergency Response and Spill Contingency Plan	(ERP)
Environment Canada	(EC)
Government of Nunavut, Department of Environment	(GN-DOE)
Indian and Northern Affairs Canada	(DIAND)
Hydrocarbon Contaminated Water	(HCW)
Job Safety Analysis	(JSA)
Material Safety Data Sheet	(MSDS)
Northwest Territories	(NWT)
Oil Pollution Emergency Plan	(OPEP)
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)
Standard Operating Guideline	(SOG)
Universal Transverse Mercator	(UTM)
Workplace Hazardous Materials Information System	(WHIMIS)

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: July 15, 2013

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

Table 1-1: Baffinland Emergency Personnel Management Team Contact Information

~~Role~~	Primary	First Back Up	Secondary Back-Up
Emergency Response Coordinator	Dave McCann	Jeff Bush	Carmen Properzi
Primary Phone:	647-693-9441	647-693-9442	647-693-9443
Alternate Phone:	647-693-9442	647-693-9441	647-693-9441
Email:	David.McCann@baffinland.com	Jeff.bush@baffinland.com	Carmen.propezi@baffinland.com
Incident Commander	Shift Emergency Response Supervisor	Brian Larson	Gerry Courtemanche
Primary Phone:	647-693-9444	647-693-9444	647-693-9444
Alternate Phone:	647-693-9442	647-693-9442	647-693-9442
Email:	N/A	Brian.larson@baffinland.com	Gerry.courtemanche@baffinland.com
Environmental Superintendent	Jim Millard	Trevor Myers	Allan Knight
Primary Phone:	647-693-9458	647-693-9447	647-693-9447
Alternate Phone:	647-693-9447	647-693-9458	647-693-9458
Email:	jim.millard@baffinland.com	trevor.myers@baffinland.com	allan.knight@baffinland.com
Safety Superintendent	Brian Larson / Gerry Courtemanche	N/A	N/A
Primary Phone:	647-693-9444	N/A	N/A
Alternate Phone:	Ext: 6006	N/A	N/A
Email:	brian.larson@baffinland.com gerry.courtemanche@baffinland.com	N/A	N/A

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 2013

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, ON. L6H 0C3
Tel: (416) 364-8820 Fax: (416) 364-0193

Navenco Marine Inc.
Attn: Todd Mitchell
350 boul. Ford, Suite 130
Chateauguay, QC, J6J 4Z2
Tel : (450) 698-2810
info@navenco.com

Baffinland Iron Mines Corporation

SUSTAINABLE DEVELOPMENT POLICY

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

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

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

1. 0 HEALTH AND SAFETY

We strive to achieve the safest workplace for our employees and contractors; free from occupational injury and illness from the very earliest of planning stages. Why? Because our people are our greatest asset. Nothing is as important as their health and safety.
We report, manage and learn from injuries, illnesses and high potential incidents to foster a workplace culture focused on safety and the prevention of incidents.
We foster and maintain a positive culture of shared responsibility based on participation, behaviour and awareness. We allow our workers and contractors the right to stop any work if and when they see something that is not safe.

2. 0 ENVIRONMENT

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

3.0 INVESTING IN OUR COMMUNITIES AND PEOPLE

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

4.0 TRANSPARENT GOVERNANCE

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

Tom Paddon
President and Chief Executive Officer
September 2011

1 General Introduction

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

1.1 Legislative Requirement

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

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

The Canada Shipping Act Response Organizations and Oil Handling Facilities Regulations (SOR/95-405) applies.

The Oil Handling Facilities Standards, TP12402 applies.

Pollutant Discharge Reporting Regulations, 1995 - SOR/95-351

Vessel Pollution and Dangerous Chemical Regulations, (SOR 2012-69)

1.2 Links to Baffinland Emergency Response Plan

Spills of all types, both marine and land based are addressed in the Baffinland Iron Mines Corporation, Mary River Project, "Emergency Response and Spill Contingency Plan" (ERP) which is a separate document. The ERP addresses a wider scope of operations and includes storage areas other than the Milne Inlet Fuel Storage Facility. The plan also addresses other hazardous materials and chemicals such as explosives, drilling muds, waste oils, etc.

The Milne Inlet Fuel Storage Facility OPEP has been designed specifically to compliment the Mary River Project, "Emergency Response and Spill Contingency Plan" document. 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.

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 Mary River Emergency Response Plan, extensive consultations with local authorities have been undertaken, with the goal of a cooperative response as part of an important incident.

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

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

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

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

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

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

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

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

Several priorities have also been identified among which include:

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

(b) The safety of the facility;

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

(d) The prevention of fire and explosion;

(e) The minimization of the oil pollution incident;

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

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

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

2.2.1 Response Time Standards

The operations and response structure at the Milne Inlet facility have been designed so that a rapid response to a spill incident can be carried out. All equipment and resources are strategically placed near the beach front, directly at the port operation site. Responders, workboats and other support equipment are on standby during all port operations. The deployment of equipment and resources required to contain and control the oil, or where the oil cannot be contained, to control the quantity of oil 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 oil involved in the incident, up to the minimum spill size of 3.5 m^3 as determined in accordance with section 2 of the Oil Handling Facilities Standards shall be deployed on scene as soon as practical and effective, within 6 hours of the oil pollution incident.

2.2.2 On-Water Recovery

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

2.2.3 Dedicated Facility Spill Response Equipment

The Milne Inlet Bulk Fuel Storage Facility has been equipped with appropriate spill response equipment which provides *resident capability* for the response to spills in accordance with the scenarios which have been developed under this Oil Pollution Emergency Plan. Containment and recovery equipment inventories exceed the facility category planning standards and are especially 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 Annex 4.

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 Annex 1.

3.2 Fuel Storage Facilities and Infrastructure

Construction activities at Milne Inlet will provide for a new tank farm which will be undergoing continuing construction through the summer of 2013. A detailed site plan of the projected completed Tank Farm is provided in Annex 2. For the fuel sealift to be carried out during 2013, a number of tanks will be coming on line as construction is completed on a progressive basis throughout the season. Total tankage and capacities for the 2013 sealift shall be as follows: 2 steel tanks of 5 ML ea, 2 steel tanks @ 12 ML ea. both containing diesel and 3 steel tanks of 750,000L each containing Jet-A fuel.

The tank farm located at Milne Port is constructed in an impermeable secondary containment structure (lined and bermed containment area). The construction is in compliance with building codes and best practices for tank farm facilities. The low point of the containment area is fitted with a sump and pumping system for capture/disposal of runoff in this secondary containment area. The same pumping system is used to recover large spills, should they occur. The secondary containment is designed to a capacity to contain the complete volume of the largest tank, as well as 10% of the volume of all the remaining tanks. The placement and configuration of the tank farm is detailed in the drawings provided in Annex 2 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. A complete pipeline inspection procedure is an integral part of the bulk cargo transfer procedures included in Annex 5.

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.

3.2.1 Temporary Fuel Farm Configuration for August 2013 Sealift Only

For the first bulk fuel transfer of the 2013 season planned for early August, only the two 5 ML storage tanks will have been commissioned. Construction activities of the remaining tanks are ongoing and the 6 inch permanent steel pipeline has been temporarily removed to allow for extension of the berms and other infrastructures relating to the remaining tankage under construction. The shore manifold has been repositioned within the primary containment area within the fuel farm berm.

In order to reach the receiving shore manifold, an additional length of 4 inch flexible hose will be run from the beach and over the fuel farm berm covering an additional distance of approximately 450 meters. The connection will then be accomplished at the receiving manifold in the usual manner. All hoses shall be supplied by the vessel and will have been hydrostaticially tested per applicable regulations. The vessel shall have on board the test certificates for all hoses involved in the bulk transfer operation.

For the entire length of hose that traverses the distance between beach and fuel farm, secondary containment shall be provided under each hose connection. The hose length shall be inspected at least hourly as a preventive measure. The receiving manifold shall be fitted with a low pressure alarm and ship's personnel shall be situated at the receiving manifold on watch during all transfer operations.

A drawing showing the hose configuration for the August only transfer has been added to Annex 2 of this plan.

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 very localized to extensive. Biological description shows Intertidal generally bare of attached macrobiota, due to sediment mobility. On boulder ridges or on bedrock outcrops, patchy algal assemblages were seen.

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

Baffinland Mines recognizes several sensitivities in the area and for planning purposes the shoreline at the facility and adjacent areas susceptible to impact from a spill have been divided into zones. In addition to the information described below, a chart showing the geographical zones is presented in Annex 3 of this plan.

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

Zone 1: Phillips Creek

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

Zone 2: Milne Facility Beach Zone

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

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

Zone 3: Milne Eastern Beach

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

Zone 4: Adjacent Areas

Based on the tanker mooring position, the port operations, and the prevailing winds, zones 1 through 3 present the highest probability of impact from spills. The remaining area and shoreline adjacent to the facility is largely characterized by higher relief fiord shorelines, primarily constituted of rock and are considered to be higher energy areas. Most often, response to spills impacting these shores could focus on monitoring as booming and mechanical recovery may be difficult or impossible. In addition the net environment benefit for attempted restoration of these shores would be detrimental.

There are several areas where limited or narrow beaches are present and should they be in danger of contamination, techniques as in Zones 2 and 3 should be considered.

3.3.2 Bathymetric and Marine Data

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

Marine Data, Milne Inlet

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

The marine environment at Milne Inlet is characterized as a sheltered waters environment. As has been noted at the site, the prevailing winds generally provide sea conditions of onshore waves, varying in height from flat calm to less than 1 meter in average winds of less than 30 km/hr. Bulk transfer procedures established by charterer preclude the transfer of bulk product when conditions become

excessive, i.e. wave heights greater than approximately 0.7 M. This enhances the possibility of deploying pollution gear should an incident occur.

3.3.3 Meteorological Data

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

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

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

The North Baffin region is located within the Northern Arctic Ecozone, as delineated in the National Ecological Framework for Canada (Agriculture and Agri-Food Canada, 2000). Northern Baffin Island has a semi-arid climate with relatively little precipitation. The region experiences near 24-hour darkness with less than two hours of twilight from approximately November 12th to January 29th. During winter months (December to April), the treeless topography and fine powdery snow produce blowing snow conditions resulting in restricted visibility. Steam fog may occur in areas of open water, but does not persist more than a few miles downwind. Ice fog is infrequent, due to the lack of moisture in the air, but may occur more frequently if settlements become larger and sufficient moisture is added to the air through fuel combustion.

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

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

Marine operations are anticipated from early August through early October and this period of the year is the most favorable for shipping and the type of marine operations that will be carried out on site.
The meteorological factors most affecting spill recovery operations are wind and temperature. The major observations through data collected and baseline data from Pond Inlet show August and September mean monthly temperatures of 6.6 and minus 1.2°C respectively.

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

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

3.3.4 Ice Conditions

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

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

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

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

The final study has determined that the average open water season is from August 5th to October 15th (71 days). Bulk fuel transfer operations have been planned to coincide with the open water season accordingly. Ice is not anticipated to be an adverse factor affecting the bulk fuel transfer planned for Milne Inlet for the 2013 season.

4 Site Activities

4.1 Bulk Oil Transfer, Ship to Shore

Multiple bulk fuel transfers from ship to shore for 2013 are anticipated. Tankage will be available progressively as construction of the additional tanks is completed. It is anticipated that the total volume of the bulk fuel transfers shall be in the order of approximately 35-50 ML and will take place between the months of August through early October. The fuel transfers shall take place by means of either a single or double 4 inch floating hose with an approximate length of approximately 1000 meters deployed between the vessel and the connecting flange on the shore. The products are then transferred through the pipeline to the above mentioned bulk storage facility. A steel pipeline of 6“ diameter connects between the shore manifold and the tank farm situated at approximately 465 meters from the shoreline.

The tides are not a major risk factor for this village. 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 CP-43 (diesel)). It is

expected that once cargo operations are underway, the ship will discharge at a rate of up to 149 m3/hour depending on the number of hoses used and also final obtainable pumping rate.

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

The bulk transfer procedures are fully detailed in the standard operating procedure in Annex 5.

4.2 Bulk Hydrocarbon Contaminated Water Transfer, Shore to ship

As part of the decommissioning of the previous bulk fuel storage bladders at Milne Inlet, a quantity of approximately 1 ML of hydrocarbon contaminated water (HCW) shall be transferred from the Milne facility to the ship immediately following the bulk ship to shore fuel transfer. The material consists of water that has been contaminated with CP-43 diesel and it will subsequently be returned to Montreal for refinery processing and disposal all in accordance with applicable regulations.

The transfer from the shore facility to the ship shall be accomplished in exactly the same manner as the bulk fuel transfer using the same hoses used for the ship to shore transfer. A shore based pump shall be employed to move the product through the hose to the ship accordingly. A complete non-routine job hazard assessment shall be carried out prior to the transfer.

As the contaminant in the HCW is CP-43 diesel, the response to spills of this product under this plan shall be considered the same as for the hydrocarbon. The spill scenarios and response strategies detailed in section 8 of this plan have been reviewed and have been considered as appropriate for this element of the August bulk transfer of this product.

4.3 Port Operations

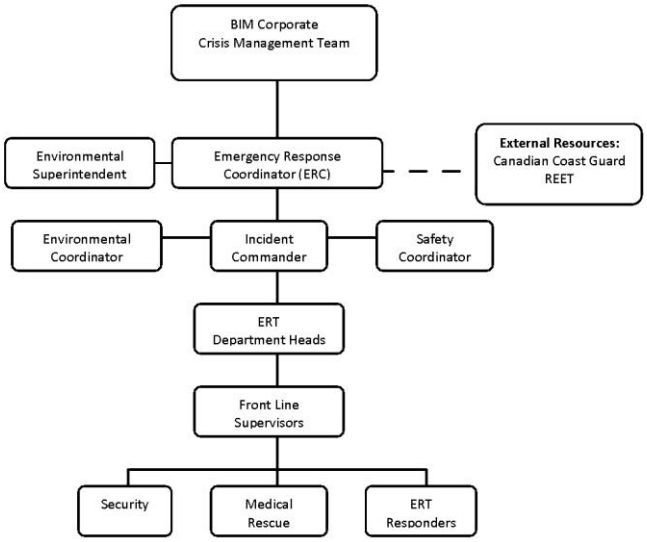
Other than the planned HCW and bulk fuel and transfers, no other port operations involving fuel are anticipated at Milne Inlet for the 2013 operating season.

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

5 General Baffinland Iron Mines Response to Emergencies

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

Figure 5-1: Milne Inlet – Marine Spill Response Organizational Chart



5.1 Levels of Emergency

In order to effectively manage emergency response, BIM Operations has adopted a classification system that includes three levels of emergencies. Each level of emergency requires varying degrees of response, effort and support. The impact on normal business operations will also differ as will the requirements for investigation and reporting. The three levels are outlined in the following sections. Similarly for spills there are three response levels for spills based on the size and nature of the spill. This is also outlined below.

5.1.1 Level I (Low):

A Level I incident is defined as an incident where any or all of the following has occurred:

- Minor personal injury.
- Minor accidental release of a deleterious substance with:
- No threat to public safety; and/or
- Negligible environmental impact
- No impact on reputation.
- Report to government after the fact.

See spill response level chart (Section 5.1.4)

5.1.2 Level II (Medium):

A Level II emergency is defined as an incident where any or all of the following has occurred:

- Potential modified work or lost time injury
- Major accidental release of a deleterious substance with:
- Some threat to public safety; and/or
- Moderate environmental impact.
- Minor fire.
- Local impact on reputation.
- Local/regional media interest/coverage.
- Government involvement.
- Activation of ERCC required by Emergency Response Coordinator.

See spill response level chart (Section 5.1.4)

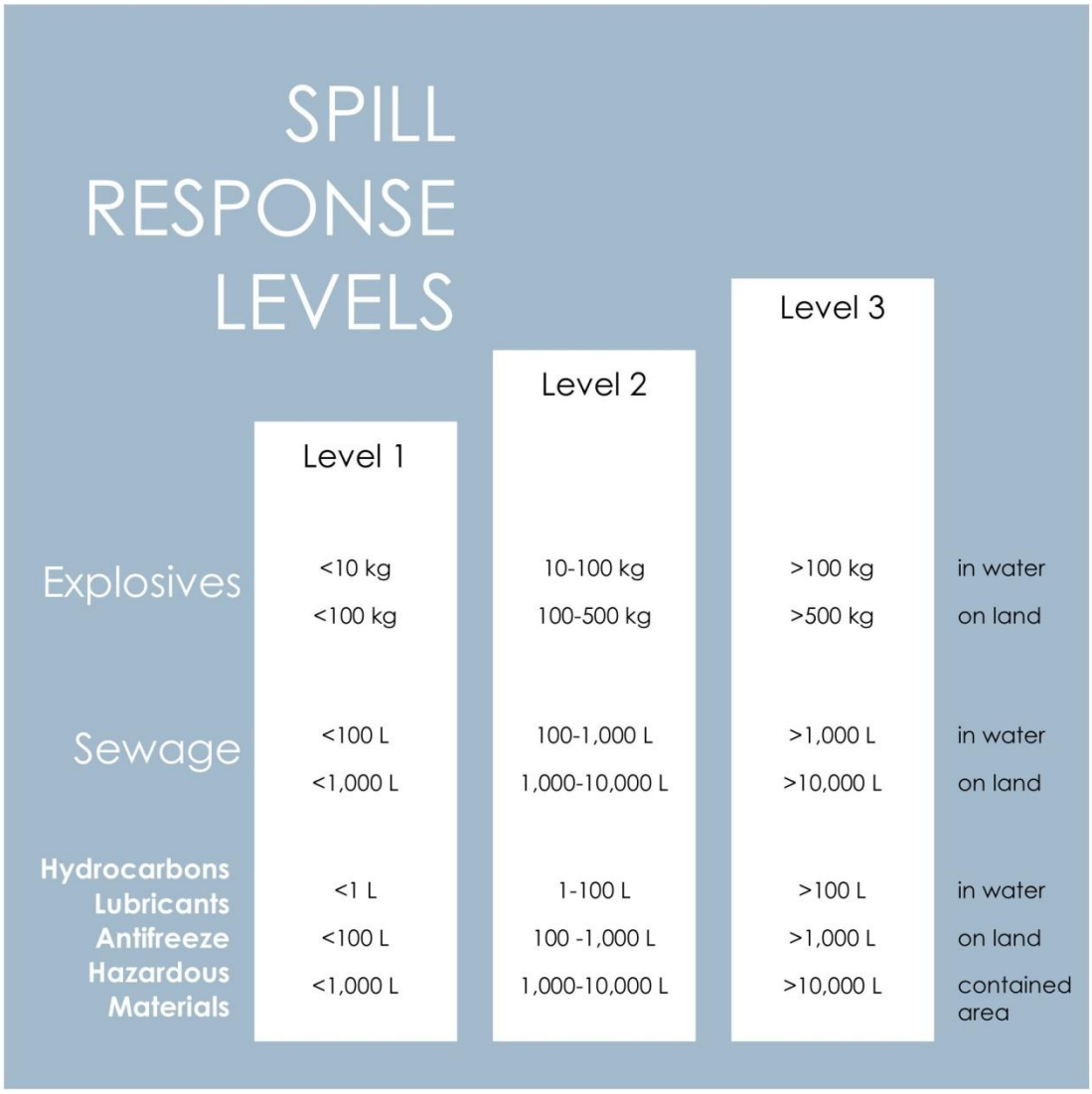
5.1.3 Level III: (High)

A Level III emergency is defined as an incident where any or all of the following has occurred:

- Uncontrolled hazard which:
- Jeopardizes project personnel safety; and/or
- Jeopardizes public safety; and/or
- Significant environmental impacts.
- Major Fire or uncontrolled explosion.
- Negative impact on reputation.
- National/international media.
- Activation of ERCC required by Emergency Response Coordinator.

See spill response level chart (Section 5.1.4).

5.1.4 Spill Response Emergency Level Classification



5.2 Emergency Response Command Centre

The Emergency Response Command Centre (ERCC) functions to provide a place for the coordination and direction of mitigation response efforts during an emergency. For the purpose of this OPEP, the BIM Mary River Office complex will be the primary ERCC. The alternate ERCC shall be located at Mary River aerodrome office and shall have a copy of this plan and associated equipment available for use.

The ERCC will be established for an emergency as deemed necessary by the ER Coordinator. The ERMT personnel will assemble at the ERCC. The primary and alternate ERCC shall be equipped with suitable communications equipment including telephone, radio communication, and teleconferencing.

5.3 ERCC Equipment/Supplies

The ERCC will have 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 BIM Corporate Office.

The ERCC shall contain:

- The most current version of the OPEP.
- Log book.
- Emergency site maps and plans.
- Site resources equipment list.
- Emergency contact information.
- Communications recording forms.
- ERCC attendance forms.
- 2-way radio communication (base station or handheld).
- Satellite Phone System.
- Backup VOIP phone system.

  Network Connections.

5.4 Response Management Structure

All spill procedures and response functions are to be implemented through the Emergency Response Management Team. Table 1-1 presents the management team responsible for overseeing emergency spill response operations and their contact information.

Once a spill event is reported, the Incident Commander establishes a specific strategy for containing and controlling the spill and to initiate the cleanup activities. Other site personnel may act as technical advisers before and during the intervention. The trained Emergency Response Team will conduct all emergency spill response operations under the direction of the Environment Department. During the cleanup phase of the intervention other site personnel (e.g., heavy equipment operators, labourers) could be involved in the intervention.

The Emergency Response Organizational Chart is provided as Figure 5-1.

5.5 Emergency Response Team

The Emergency Response Team will be structured from a worker volunteer base at site. With different work schedules, it will be necessary to have enough team members to maintain sufficient numbers of responders at site at all times.

Recruitment of volunteer ERT members will be an informal process through general solicitation of interest.

5.6 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 Annex 4 of this plan.

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

5.7 Communication

Effective communication systems are critical to the success of emergency responses. Personnel involved, from first person on scene to the ER Coordinator rely on the ability to quickly relay accurate information.
Communications available at the project site during an emergency are listed below.

- Hand-held radio communication.
- Telephone.
- Satellite Phone.
- Alarm systems.
- Internet.

5.7.1 Hand-Held Radio Communication

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 ER Coordinator or Incident Commander, 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.

Channel 1 and Channel 2 have been designated as Emergency Response Channels. Channel 1 is designed to be used to announce an emergency situation by any employee and is also used by ER Team and other personnel involved in assisting the coordination of the response. Emergency Channel 2 is a private ER Team channel that is accessible only by ERT members, Security and Medical personnel. During an emergency, other site radio channels may be used to:

- Locate ER personnel.
- Obtain additional internal resources.
- Emergency notification.
- Evacuation of employees from work areas.
- Maintain communications with aircraft/marine vessels.

5.7.2 Telephone Communication

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 Corporate BIM Office may also be required during some emergency situations. Constant communications links will be established by telephone where offsite assistance is required (from BIM, or external resources such as medical practitioners or SAR/Coast Guards).

5.8 Communication during Emergency

During emergency, the Emergency Command Centre will be contacted immediately. Information will be transmitted from the Emergency Command Centre to other project facilities. The Emergency Command Centre will be manned 24 hours a day by onsite personnel and will be equipped to handle all radio and telecommunications in the case of an emergency. Project facilities will be equipped with a phone system that will be capable of wide range communication when required. In the event of an emergency, there will be prompt notification of appropriate individuals including the BIM Operations Manager, Baffinland Corporate Crisis Management Center, ER Management Team and the Emergency Response Team.

5.9 Communication with the Public

Only Baffinland Senior Management authorized in the Baffinland Crisis Management Plan shall provide external communication to the public during emergencies.

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

6 Roles and Responsibilities

The initial stage of any emergency is critical. An effective and timely response is essential to prevent an emergency situation from escalating to a higher level. Therefore, all personnel must be fully aware of their individual duties and responsibilities as they are presented in this plan.

Personnel identified as having key roles in effective emergency response include the Incident Commander, Emergency Response Team, the Emergency Response Coordinator, Security personnel, ER Management Team and trained medical response professionals.

Specific responsibilities and duties inherent to personnel involved in emergency response are outlined below.

6.1 Emergency Response Coordinator – (ERC)

For the purpose of this OPEP, the ERC will be the Operations Manager or his designate if absent.

6.1.1 Duties during an Emergency

- The Emergency Response Coordinator (ERC) will ensure coordination of ERT support systems from the ERCC.
- Upon being notified of a Level II or III emergency by the Incident Commander, the ERC will initiate activities in the ERCC and assess the situation based on current information from the Incident Commander.

- Activate the ERCC system and escalate according to severity of incident.
- The ERC will coordinate all activities in the ERCC. In the event the ERC leaves the ERCC, the ERC will designate an individual to coordinate the ERCC, notifying the Incident Commander and Security.
- Ensure that the appropriate area manager/s has been notified.
- Provide internal notification as applicable based on the level of emergency.
- Notify the Baffinland crisis management team representative for level two or three emergencies.
- Provide instruction to ensure that appropriate External Resources are notified.
- Receive information from the Incident Commander and ensure appropriate resources are made available.
- Ensure ERP Log Keeper is present in the ERCC at all times to maintain a log of all events, actions and outcomes in ER System.

6.1.2 Duties Post Emergency

- Notify Baffinland crisis management team of the “all clear”.
- Ensure the coordination and establishment of an emergency debriefing session.
- Review ERCC incident log and post response incident report.
- Post incident debrief with Incident Commander.
- Provide necessary information to Public Relations for a media statement release if required.
- Complete a report on the events surrounding the incident.
- Coordinate collection of all incident notes, reports, statements and log of events.
- End the event in ER System.

6.2 BIM Environment Superintendent

6.2.1 Duties during Emergency

- For Level II and III emergencies contact the ER Coordinator and report to the ERCC.
- At the order of the ER Coordinator, notify the required external agencies.
- Provides support for the requirement of additional supplies and resources as requested by the ER Coordinator.

- Contact departmental resources via radio as required during the emergency response.
- Document all actions and decisions.
- Assist the Incident Commander in evaluating the initial situation and assessing the magnitude of the spill.
- Assist in developing an overall plan of action.
- Collect photographic records of the spill event and cleanup efforts.
- Prepare a root cause analysis and an incident investigation for major spills.
- Report to the ER Coordinator and provide recommendations on resource requirements (additional manpower, equipment, material) to complete the cleanup effort.
- Report the spill 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 Annex 9 of this plan.
- Report the spill to NWT 24-hour Spill Report Line at (867) 920-8130, to Qikiqtani Inuit Association (QIA) Lands Administrator at (867) 975-8422, and Aboriginal Affairs and Northern Development Canada (AANDC) Water Inspector at (867) 975-4555.
- Provide liaison with management to keep them informed of cleanup activities.
- Obtain additional required resources not available onsite for spill response and cleanup.
- Act as the spokesperson with government agencies as appropriate.
- Document the cause of the spill and effectiveness of the cleanup effort, and recommend the appropriate measures to prevent a recurrence of the spill.
- Prepare and submit follow-up documentation required by appropriate regulators.
- Ensure that the spill is cleaned up and follow-up communication and reports are filed with the AANDC and QIA Land Administrator. Ensure that the spill reports submitted to QIA include photographic records and an updated map showing Universal Transverse Mercator (UTM) coordinates, date, and amount and nature of the spill.

The BIM Environment Superintendent will be accessible to the Canadian Coast Guard during the entire incident.

6.2.2 Duties Post-Emergency

- Participate in post-emergency debriefing.
- Assist in the accident/incident investigation process.
- Complete Government Agencies notification process.
- Ensure that all involved departments complete reporting process.

6.3 Incident Commander

The Incident Commander 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 Incident Commander directs the ERT at the scene as ERT Leader. In the absence of the Incident Commander, a senior team member will be designated in his place. The following duties are performed by the Incident Commander:

6.3.1 Duties during an emergency

Upon being notified of an emergency, the Incident Commander will:

- Immediately report to the Emergency Response Room and brief team members.
- Report to the scene of the emergency.
- Take charge of the scene.
- Evaluate the details of the emergency as presented by the first person on-scene. Assess the immediate situation, confirm the level of emergency and notify the ER Coordinator.
- Maintain contact with the ERCC and provide support in coordination of the response.
- Request internal/external resources as required.
- Advise ERT on aspects of internal/external support as they are received.
- Obtain results of muster station head counts and direct the team accordingly to ensure full evacuation if required.

6.3.2 Duties Post Emergency

Account for all MRT members:

- Announce the ‘all clear’ to ER Coordinator when the emergency has ended.
- Inform external resources that the emergency has ended (if external resources were mobilized during the emergency).
- Lead the emergency debriefing session.

- Ensure that all ERT equipment is returned to original order and/or replaced to ensure future rapid response.
- Develop a written log of events indicating instructions given, action taken and outcomes achieved.
- Provide assistance with ongoing investigation.
- Prepare a written report on response activities.

6.4 Environmental Coordinator

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

The Environmental Coordinator will:

- Immediately proceed to the scene of the incident.
- Initiate external environmental emergency response resources as required.
- Coordinate internal resources during spill clean-up.
- Request additional resources through the Incident Commander as necessary.
- Secure the area with red "DANGER" tape and sufficient tags. Post guards if necessary.
- Participate in post-emergency debriefing.
- Maintain contact with regulatory bodies as required.
- Maintain a log of events, actions, and outcomes.

6.5 BIM Safety Coordinator

6.5.1 Duties during Emergency

- For Level II and III emergencies contact the ER Coordinator.
- Respond to the scene and make direct contact with the Incident Commander.
- 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 Incident Commander.
- Ensure appropriate personal protective equipment for involved non ERT personnel.

- Note pertinent information that may be relative to the investigation.

6.5.2 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 and complete report.

6.6 Emergency Medical Personnel

- Respond to all Code 1's as directed by the Incident Commander.
- Responsible for all decisions of medical-related situations on site.
- Act as team leader to the ERT during medical emergencies.
- Responsible for assessing, administering and delegating emergency medical care.
- Advise the Incident Commander of the number and condition of ill/injured personnel.
- Advise the ER Coordinator of off-site resources required and liaise with such agencies.
- Maintain a log of events, actions and outcomes.
- Participate in an emergency debriefing session.

6.7 Department Heads – (Emergency Response Team)

6.7.1 Duties during an Emergency

- For Level II and III emergencies contact the ER Coordinator and report to the ERCC.
- Work closely with the ER Coordinator to determine appropriate response strategy for their respective work area.
- If acting Operations Manager, carry out role of ER Coordinator.
- Provides support for the requirement of additional supplies and resources as requested by the ER Coordinator.
- 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 Incident Commander.

6.7.2 Duties Post Emergency

- Participate in an emergency debriefing session.
- Ensure that the incident investigation is entered into the BIM internal incident reporting system.
- Review recommendations from the accident/incident investigation.
- Ensures follow up on remedial action to prevent or mitigate possibility of reoccurrence of emergency.

6.8 Front-Line Supervisors

6.8.1 Duties during an Emergency

- Ensure evacuation or stand down of their work area.
- Assist to ensure accountability of evacuees at muster station.
- Pre- investigate alarms if in work structure without harm to self; activate “Code 1” if necessary.
- Report to Incident Commander (Ch. 1) and identify self and location, acting as a direct resource to the Incident Commander.
- Ensure restricted access allowing only authorized personnel.
- Direct the isolation, de-energizing and lock-out of systems if required.

6.8.2 Duties Post Emergency

- Confirm that work area is safe to return to after an “all clear” has been called by the Incident Commander.
- Ensure that area of incident is secure until all investigations are completed by SH&E department.
- Participate in an emergency debriefing session.
- Ensure that the incident investigation is completed and entered into BIM internal incident reporting system.

6.9 Emergency Response Team

All responders are to be trained under the Response strategies outlined in Section 8. The number of responders and their specific tasks is estimated in accordance with the spill scenarios outlined in Section 8 as applicable.

6.10 Onsite Medical/Rescue Team

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

6.11 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.

6.11.1 Duties during an Emergency

- Receive initial emergency call and document vital information used to plan response.
- All logged information will be given to the ER Coordinator.
- Provide appropriate notification of the ER team members, ER Coordinator and medical response personnel.
- If evacuation is necessary, notify all campsite personnel of emergency evacuation.
- If safe to do so enhance evacuation by sweeping through dorm wings knocking on doors, if smoke, fire or other hazards are identified immediately confirm location to Incident Commander and retreat to safe area.
- For accommodations emergencies, ensure that all evacuated personnel are directed to the muster station.
- Security will report muster and evacuation status to the Incident Commander and await further instruction.
- Provide traffic and crowd control at scene as directed by the Incident Commander.
- 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 ER Coordinator.
- Document all actions, decisions and communications.

6.11.2 Duties Post Emergency

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

7 General Spill Procedures

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

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

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

As outlined in section 3.2 of this plan, two products are received at the facility. Both products, JET A1 and ULTRA LOW SULPHUR DIESEL CP-43 are classified as non-persistent combustible hydrocarbons and will behave in a similar fashion if spilled. In addition, for the August bulk transfer only, a quantity of approximately 1 ML of hydrocarbon contaminated water (HCW) shall be transferred from the Milne facility to the ship immediately following the bulk ship to shore fuel transfer. The material consists of water that has been contaminated with CP-43 diesel and it will subsequently be returned to Montreal for refinery processing and disposal all in accordance with applicable regulations.

As the contaminant in the HCW is CP-43 diesel, the response to spills of this product under this plan shall be considered the same as for the hydrocarbon. The spill scenarios and response strategies detailed in section 8 of this plan have been reviewed and have been considered as appropriate for this element of the August bulk transfer of this product.

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 annex 8 at the end of this plan.

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

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

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

Close all electrical sources.

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

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

Through the marine spill training initiative, all spill response personnel will be fully briefed on the procedures to be followed to report a spill and initiate spill response. The first person to notice a spill will take the following steps:

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

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

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

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

Control of Free Product - Prevent or limit the spread of the spilled material. Accumulate/concentrate spilled product in an area to facilitate recovery. Barriers positioned down-gradient of the spill will slow or stop the progression of the spill. Barriers can consist of absorbent booms, dykes, berms, or trenches (dug in the ground). Deployment of floating booms to contain a marine spill should be carried out by the spill response team as soon as safe and practical.

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

Clean up the Spill – Recover and containerize as much free product as possible. Recover

contaminated soil, and water. Pressure-wash contaminated bedrock surfaces, shorelines, ice and recover as much as possible oily water for containerization and/or treatment.

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

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

7.1 Health and Safety

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

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

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

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

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

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

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

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

7.1.1 Personal Protective Equipment (PPE) – Requirements

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

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

Hard Hat
CSA approved work boots
Safety glasses
Leather work gloves
Orange/yellow retro reflective vests

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

Hard Hat
CSA approved work boots
Safety glasses
Orange/yellow retro reflective 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
PVC rain suit
Nitrile work gloves
Approved personal flotation device

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 whom are 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 Regional Environmental Emergencies Team (REET)

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

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

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. 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 Dangerouis 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 Annex 9 of this plan.

7.3.2 Reporting to Transport Canada

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

Jaideep Johar
Manager, Technical services
Transport Canada, Marine Safety.
Prairie and Northern Region
Marine Safety,Tel: 204 984 8618
Cell: 204 880 0754,Email:joharj@tc.gc.ca

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

Reporting of marine spills shall be in accordance with Transport Canada Guideline TP- 9834E, " Guidelines for Reporting Incidents Involving Dangerouis 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 Annex 9 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, spills are reported to the 24-hour Spill Report Line (see Appendix D for Spill Report Form):
24-Hour Spill Report Line
spills@gov.nt.ca
Tel. (867) 920-8130 or
Fax (867) 920-8127

Failure to report a spill can lead to fines. The Qikiqtani Inuit Association (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 Supervisor on behalf of the Operations Manager to prepare the proper reports and transmit them to regulatory authorities. Table 7-1 presents an additional contact list for spill reporting. The Environmental Supervisor will determine on a spill by spill basis that on the list is to be contacted.

Table 7-1: Contact List for Spill Reporting

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

The spill event is reported in writing using the standard Spill Report Form.
The written report includes the following information:

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

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

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

7.4 Wildlife Protection Procedures

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

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

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

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

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

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

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

ventilated cardboard boxes and label the date and time animal was found, name of finder, location and name of species, if known. Wildlife treatment facilities will then be contacted for advisement on treatment. All contaminated wildlife will be held in a warm quiet place until treatment. The Canadian Wildlife Services (CWS) will be consulted to determine the most humane treatment strategy to be implemented for live oiled wildlife, whether rehabilitation or euthanization.

For wildlife mortalities each carcass shall be bagged and labelled individually. The date and time animal was found, name of finder, location and name of species, if known shall be documented. CWS shall be consulted and approval obtained prior to disposing of any dead wildlife. Contact information for experts in bird hazing and bird exclusion, oiled bird rehabilitation, and, permits needed to haze, salvage, hold and clean, or euthanize birds, are shown in table 7-2.

Table 7-2: Emergency Contacts in Case of Spills Affecting Wildlife

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

7.5 Treatment and Disposal

Plastic ore sacks, steel drums, or other appropriate containers as approved by the Environmental Supervisor are used to contain and transport contaminated soil for treatment. Depending on the nature of the spilled contaminant, the soil may be treated for remediation at Baffindland's land farm at Milne Port (hydrocarbon based spills, sewage spills). Contaminated soil resulting from the spill of hazardous chemicals will be treated as a hazardous waste and shipped to a licensed facility for treatment and disposal. Temporary storage of contaminated materials is within lined berms. Used sorbent material is burned in the site incinerators.

8 Spill Scenarios and Response Strategies

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

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

- The type of ship that is employed for the bulk fuel delivery is a conventional double hulled, multi-compartment petroleum tanker, between 120 to 135 meters in length. The tanker is anchored at a safe distance from the Milne Inlet beach head and approximately 1000 meters of floating hose is deployed between ship and shore.
- As outlined in section 3.2 of this plan, two products are received at the facility. Both products, JET A1 and ULTRA LOW SULPHUR DIESEL CP-43 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 annex 8 at the end of this plan.
- One product shall be transferred from the facility to the ship during the August 2013 bulk transfer. A quantity of approximately 1 ML of hydrocarbon contaminated water (HCW) shall be transferred from the Milne facility to the ship immediately following the bulk ship to shore fuel transfer. The material consists of water that has been contaminated with CP-43 diesel and it will subsequently be returned to Montreal for refinery processing and disposal all in accordance with applicable regulations.
  As the contaminant in the HCW is CP-43 diesel, the response to spills of this product under this plan shall be considered the same as for the hydrocarbon. The spill scenarios and response strategies detailed in section 8 of this plan have been reviewed and have been considered as appropriate for this element of the August bulk transfer of this product.
- 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 annex 3 of this plan.
- Local topography plays an important part in wind direction and force, but it is generally noted at the Milne site that the most common wind direction is from the east to north east. Average wind speeds at the Milne site for this period between 15 and 20 km/hr have been observed. Considering this prevailing wind it is most often probable that any spillage will move towards the zone 1 area of Phillips Creek.
- As is indicated in the plan, upon discovery of spillage of any sort pumping operations are ceased. General response time limits should be observed for each action as follows:

  Deployment of containment boom: 0-1 hr following the spillage event.

  Deployment of skimming equipment: 0-6 hours following the spillage event

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

There is a person on watch at the shore manifold at all times during discharge and in direct radio communication with the vessel. Furthermore, there is a pressure alarm installed on the pipeline during discharge to validate the system. Any leak or malfunction and resulting drop in line pressure would trigger the alarm. In addition a visual gauge is installed at the manifold and regular pressure monitoring is carried out by the manifold watchman. The pipeline is inspected visually and regularly by walking alongside of it. Once a year the pipeline is tested as part of annual maintenance. (Pressure test).

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

In the presentation of the spill scenarios in this section, it is implied that the initial spill response actions outlined in section 7 above have first and foremost been addressed. The scenarios are designed moreover for the purpose of identifying the appropriate specific actions and therefore the related resources required for a given incident.

Detailed scenarios are as follows:

8.1 During Ship to Shore Transfer

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

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

8.2 Pipeline or along shore based hose length

Source of discharge	Potential loss*	Appropriate actions	Resources required
Failure of flange or coupling Vehicle Accident involving pipeline or shore based hose length	20-3500 litres	Land spill only: 1: Immediately install portable berms under leaking or damaged line where possible. 2: If portable berms are not feasible, contain and recover	Land spill only: Response by Milne Inlet site services Recover free products with sorbents, pumps

		oil spill using dykes or trenches 3: Prevent the oil from reaching natural drainage paths leading to the ocean. 4: Collect free-product for temporary storage. Excavate contaminated soil, store and manage appropriately Marine response if necessary: 1: Deploy containment boom to control migration of spill. Consideration of protection booming of beach front, protective booming of hunter's camps to east of manifold, and Phillips Creek west of manifold depending on wind direction, tides and marine conditions present. Typical deployment lengths of 50 meters are anticipated for this task. (Multiple lengths should be used when required) 2: Deploy skimmer and recover spill 3: Final recovery of spill using sorbents if necessary 4: Monitor any free floating oil that is unable to be contained 5: Notifications of local authorities	within temporary berms Earth moving equipment available for berming, etc. 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 Milne inlet site services group

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 Annex 2 of this plan.

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

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

8.4 Response Strategies – Large Spills

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

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

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 On Site Coordinator 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:

+44 (0)23 8033 1551

9 Preventive Measures

It is Baffinland Iron Mines policy to prevent any accidental spillage and all prior efforts are made to minimize the risk of incidents and impact to the environment. Baffinland constantly updates the facility, has adequate safety equipment at the site and provides comprehensive training to its employees, contractors and visitors with the goal of avoiding spills and to minimize their impact if they should occur. Furthermore, Baffinland Mines has established standard operating procedure in relation to the bulk fuel transfer – (Annex 5), that provides safeguards and immediate alarm in the event of failures during the operation.

9.1 Training - General

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

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

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

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

9.1.1 Training Content

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

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

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

The major components of this training program shall include:

Classroom Training:

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

Hands on Training and Deployments:

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

9.1.2 Short Notice Training

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

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

9.2 Exercises

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

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

9.3 Spill Prevention Measures

9.3.1 Bulk Fuel Facility:

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

9.3.2 Bulk Fuel Transfer:

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

- The bulk fuel storage facility, pipeline and all related equipment and infrastructures are inspected prior to the bulk cargo transfer and the inspection methods are documented as a standard operating procedure
- Complete bulk cargo transfer procedures have been established, a copy of which is found in Annex 5 of this OPEP
- As required by the applicable legislation the ship has a comprehensive Shipboard Oil Pollution Emergency Plan (SOPEP) and a copy of this plan has been reviewed by Baffinland Mines
- In addition to the legislative requirements, the charterer has implemented a shipboard spill response training program and performs routine exercises in spill response operations
- The ship carries a compliment of spill response equipment as listed in Annex 6 of the OPEP and this equipment is ready at the ship's rail at all times for deployment during cargo operations
- Baffinland Mines oil spill response equipment is on the beach, ready for immediate deployment at all times during cargo operations
- The workboats and trained responders are available at all times during cargo operations for spill equipment deployment
- Standard transfer procedures include hourly inspections by workboat of the floating hose for leaks or defects
- During transfer operations the shore manifold is manned at all times
- A low pressure alarm is installed at the shore manifold which is highly sensitive to differences in pressure during pumping. Any loss in the system will cause a drop in manifold pressure and results in an audible alarm which is immediately reported by the manifold personnel
- The tank farm is monitored at all times by Baffinland personnel during the transfer
- The pipeline is inspected hourly on foot during the transfer operation

9.4 Response Equipment Auditing

As part of the annual exercise program, a scenario based deployment of spill gear is carried out. Prior to the exercise all gear is inspected, its condition is evaluated and any defects or missing equipment is replaced. The equipment audit is documented in the training register in Annex 7.

9.5 Oil Pollution Response Plan Updates

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

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

9.5.1 Update Registry

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

9.5.2 Plan distribution

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

ANNEX 1

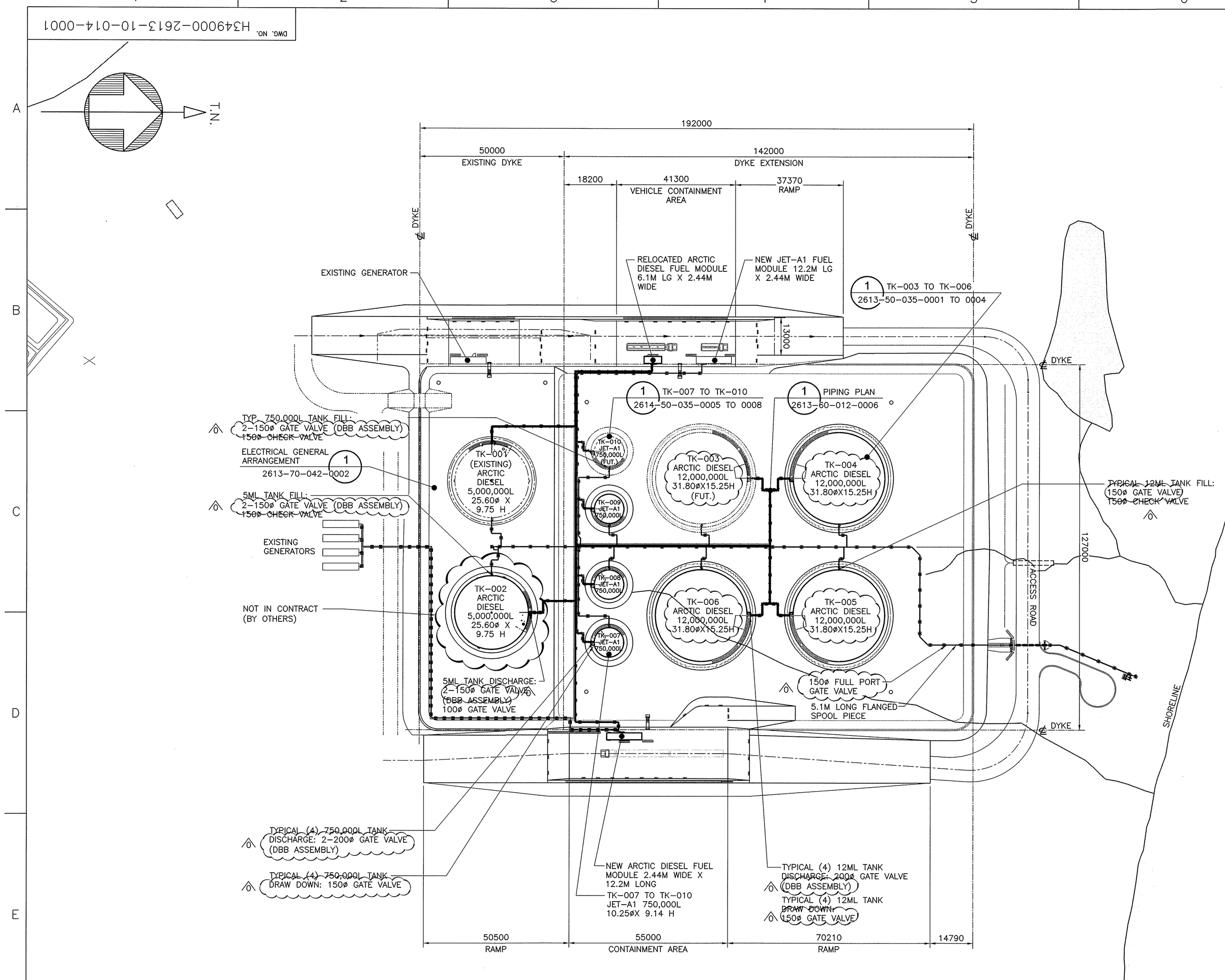
Site Overview Plan

MILNE INLET - SITE OVERVIEW 2013

ANNEX 2

Bulk Fuel Storage Facility Plans/Drawings

DWG. NO. H349000-2613-10-014-0001



NOTES:

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

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

REVISIONS					
NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE

ISSUE AUTHORIZATION			
REV.	ISSUE FOR	AUTH. BY	DATE
0	ISSUED FOR CONSTRUCTION	DS FJ	13-02-20

REGISTERED PROFESSIONAL ENGINEER — E. BUTTS — LICENSEE — NUNAVUT

HATCH

DESIGNED BY D. STEPHENSON DATE 13-02-20	DRAWN BY M. PETERSON DATE 13-02-20
CHECKED BY M. MacIntyre DATE 13-04-26	DISCIP. ENGR. DATE 13-04-26
PROJ. DES. COORD. T. THERTELL DATE 13-04-26	PROJ. ENGR. J. CLELAND DATE 13-04-26
PROJ. MGR. S. PERRY DATE 13-04-26	

Baffinland — IRON MINES CORPORATION

MARY RIVER PROJECT - ERP

MILNE PORT - SITE PREPARATION
BULK FUEL STORAGE
OVERALL PLAN

SCALE 1:750 OR AS NOTED

DWG. NO. H349000-2613-10-014-0001

REV. 0

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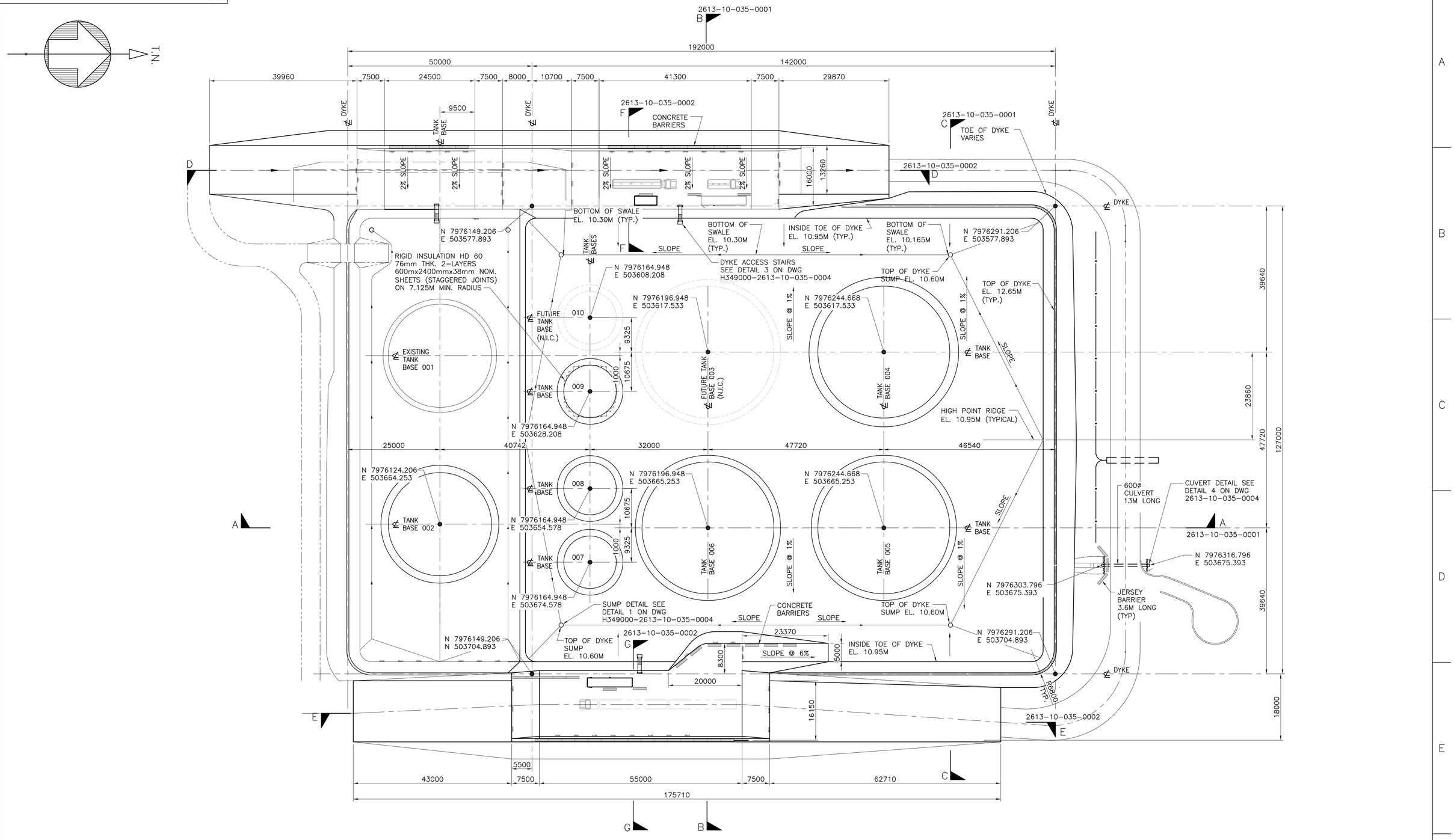

DRAWING NO.	DRAWING TITLE
REFERENCE DRAWINGS	

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE
REVISIONS					

REV.	ISSUE FOR	AUTH. BY	DATE
C	ISSUED FOR INTERNAL AND CLIENT REVIEW		13-05-03
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HATCH

DESIGNED BY D. STEPHENSON DATE 13-03-06	DRAWN BY M. PETERSON DATE 13-03-06
CHECKED BY DATE 13-05-03	DISCIP. ENGR. DATE 13-05-03
PROJ. DES. COORD. T. THERTELL DATE 13-05-03	PROJ. ENGR. J. CLELAND DATE 13-05-03
PROJ. MGR. S. PERRY DATE 13-05-03	

Baffinland Iron Mines Corporation

MARY RIVER PROJECT - ERP

MILNE PORT – SITE PREPARATION
BULK FUEL STORAGE
SITE GRADING PLAN

SCALE	DWG. NO.	REV.
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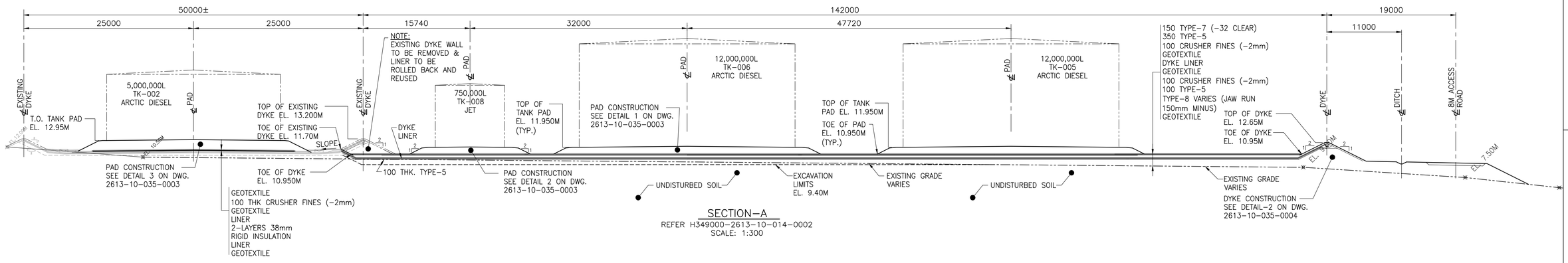

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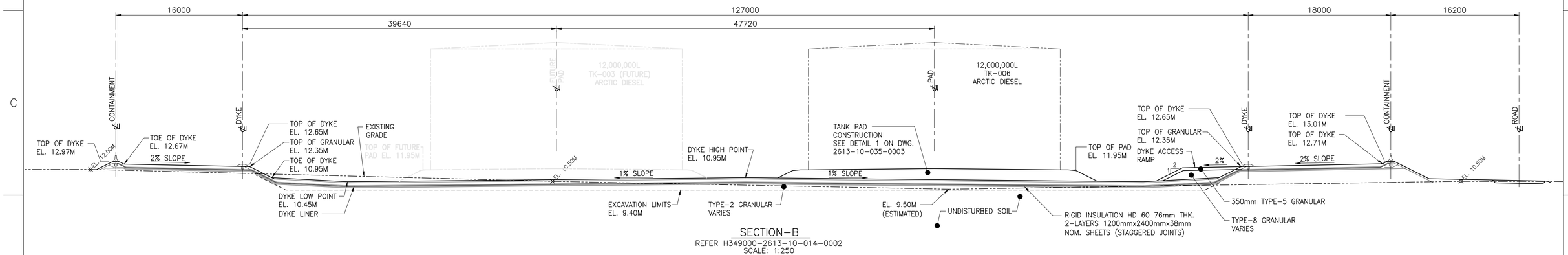

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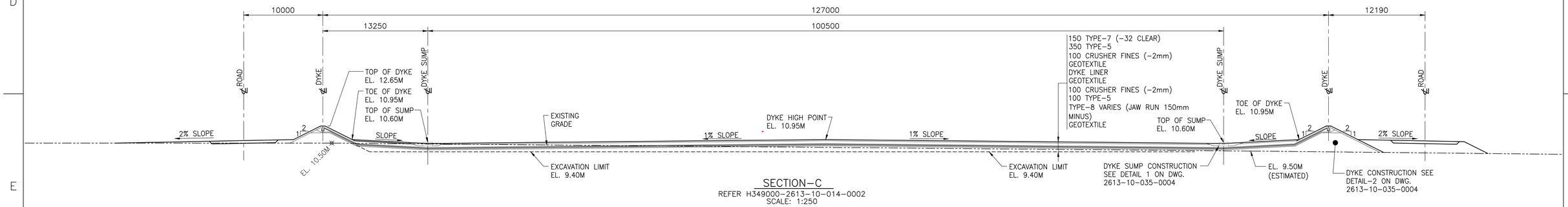

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REFERENCE DRAWINGS	

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE
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DESIGNED BY D. STEPHENSON DATE 13-03-06	DRAWN BY M. PETERSON DATE 13-02-21
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PROJ. DES. COORD. T. THERTELL DATE 13-05-03	PROJ. ENGR. J. CLELAND DATE 13-05-03
PROJ. MGR. S. PERRY DATE 13-05-03	

Baffinland IRON MINES CORPORATION

MARY RIVER PROJECT – ERP

MILNE PORT – SITE PREPARATION
BULK FUEL STORAGE
DYKE SECTIONS

SCALE	DWG. NO.	REV.
AS NOTED OR AS NOTED	H349000-2613-10-035-0001	C

$$DATAENTRY$$

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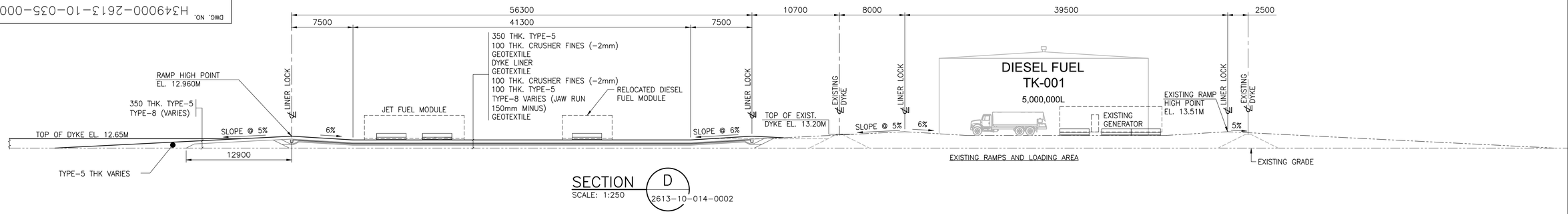

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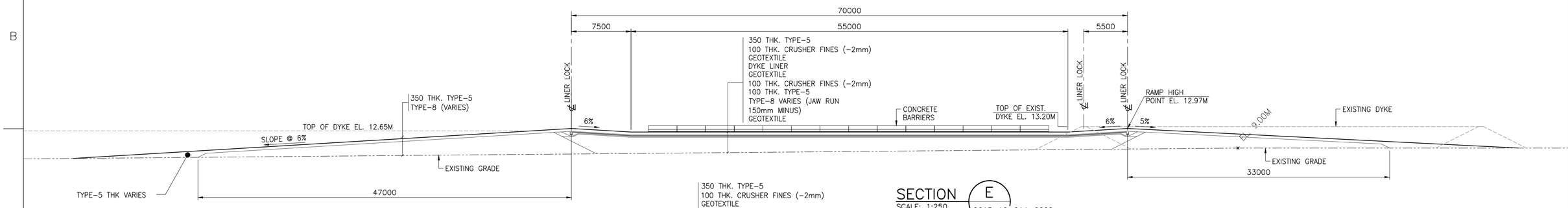

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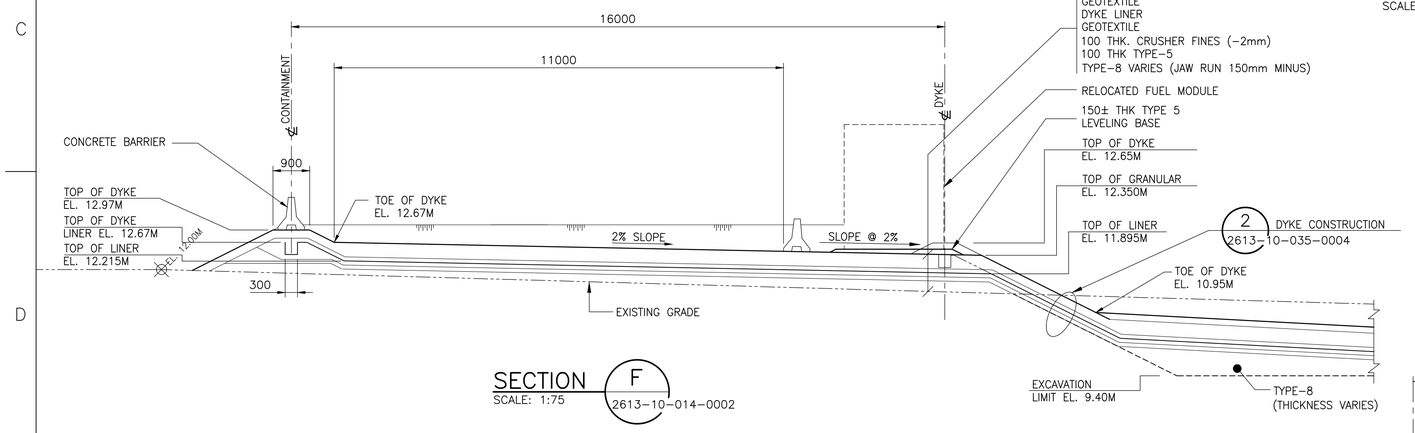

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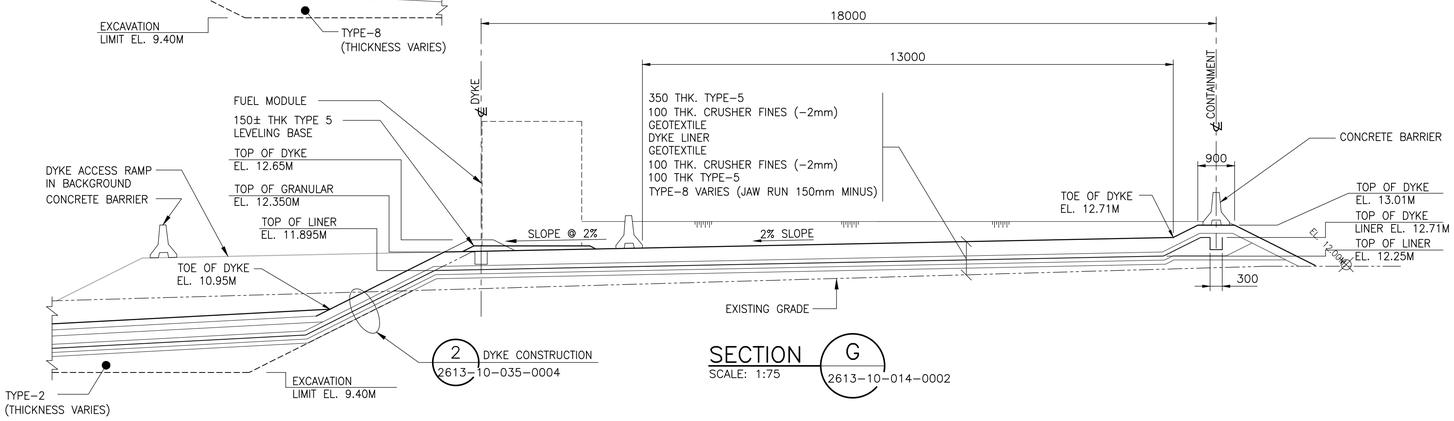

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DRAWING NO.	DRAWING TITLE
REFERENCE DRAWINGS	

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE
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DESIGNED BY D. STEPHENSON DATE 13-03-08	DRAWN BY M. PETERSON DATE 13-03-08
CHECKED BY DATE 13-05-03	DISCIP. ENGR. DATE 13-05-03
PROJ. DES. COORD. T. THERTELL DATE 13-05-03	PROJ. ENGR. J. CLELAND DATE 13-05-03
PROJ. MGR. S. PERRY DATE 13-05-03	

Baffinland

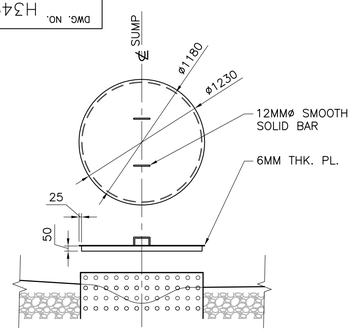
MARY RIVER PROJECT – ERP

MILNE PORT – SITE PREPARATION
BULK FUEL STORAGE
SECTIONS THROUGH TRUCK LOADING AREA

SCALE	DWG. NO.	REV.
AS NOTED OR AS NOTED	H349000-2613-10-035-0002	C

$$DATAENTRY$$

DWG. NO. H349000-2613-10-035-0004



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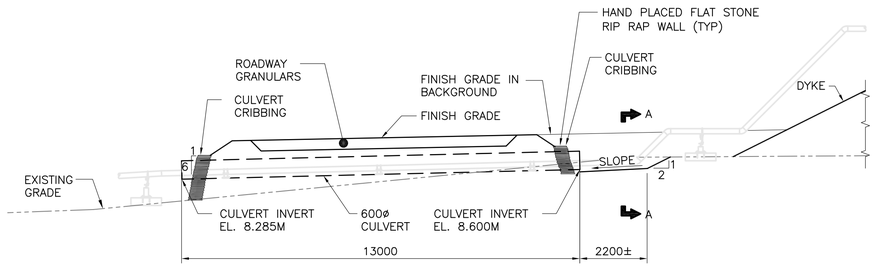
DYKE SUMP COVER



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REFER
H349000–2613–10–014–0002
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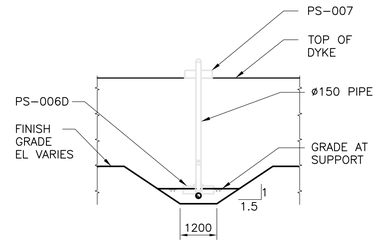

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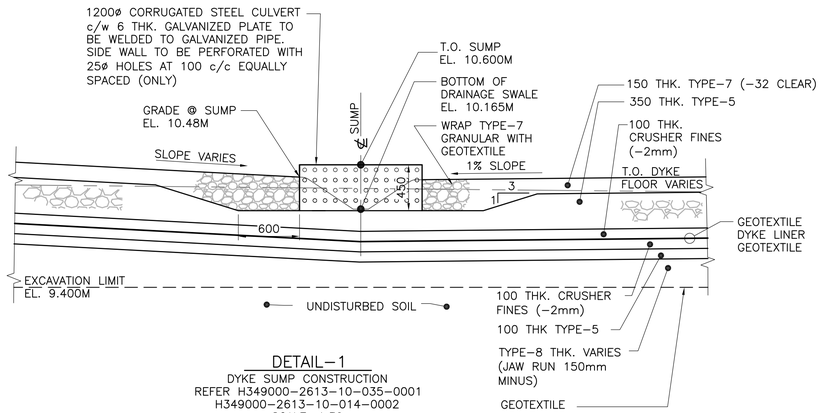
2613–10–035–0004



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H349000–2613–10–014–0002
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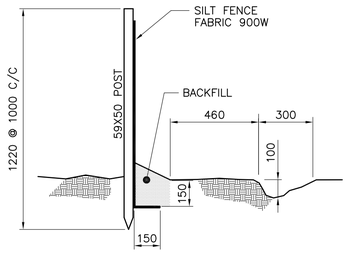

SILT FENCE

TEMPORARY SILT FENCE DURING CONSTRUCTION
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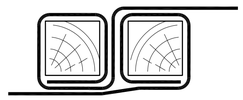

TYP. FENCE JOINT
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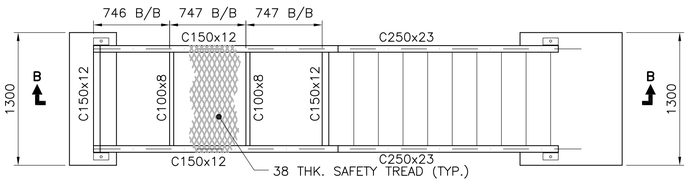

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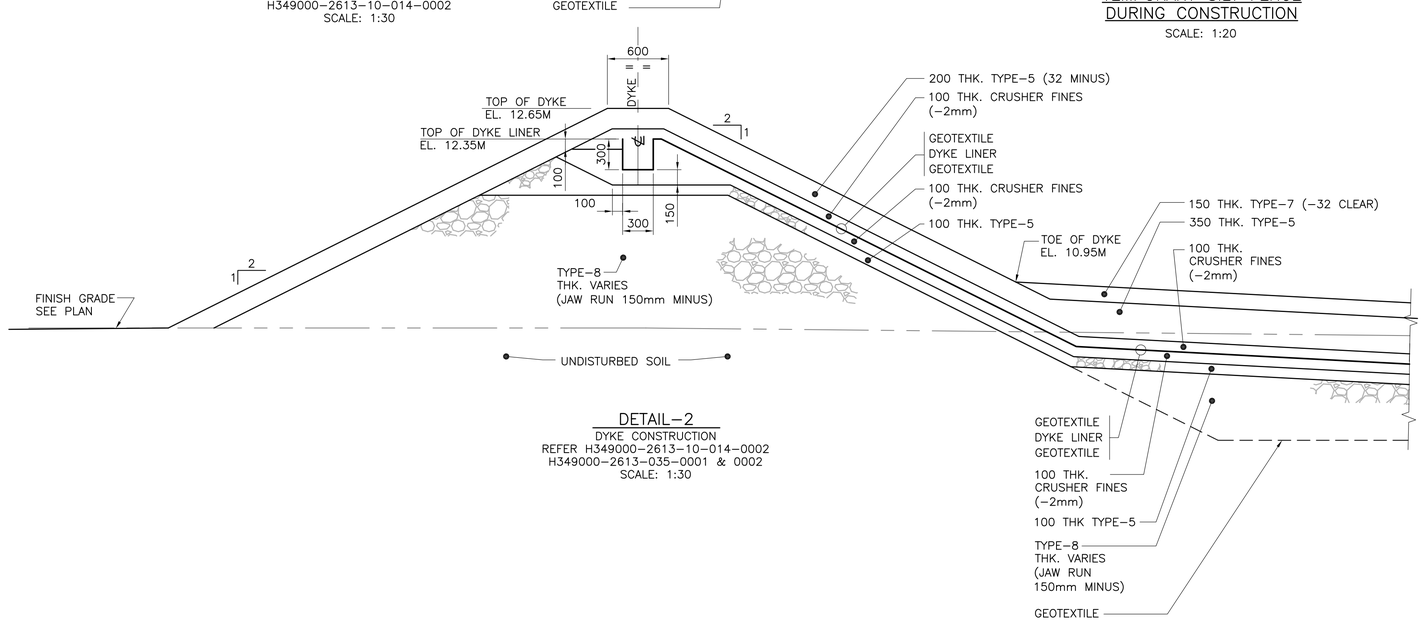

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H349000–2613–035–0001 & 0002
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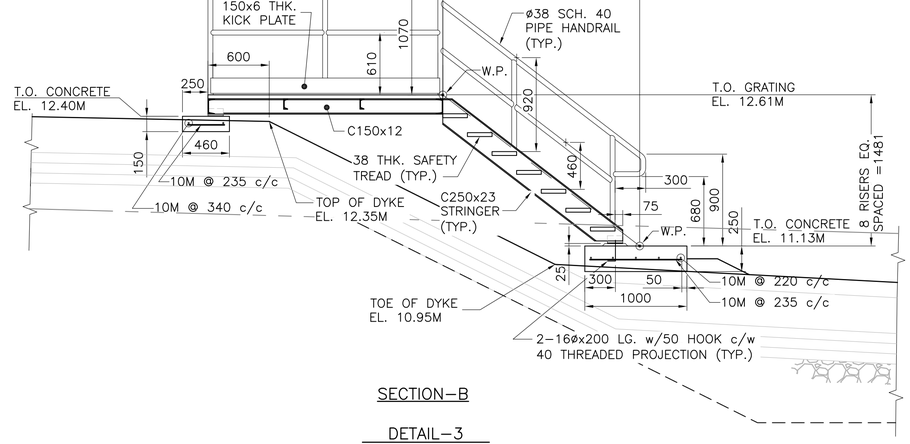

SECTION–B

DETAIL–3
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REFER H349000–2613–10–014–0002
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DRAWING NO.	DRAWING TITLE
REFERENCE DRAWINGS	

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE
REVISIONS					

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C	ISSUED FOR INTERNAL AND CLIENT REVIEW		13-05-03
ISSUE AUTHORIZATION			

HATCH

DESIGNED BY	DRAWN BY
D. STEPHENSON DATE 13-03-08	M. PETERSON DATE 13-03-08
CHECKED BY DATE 13-05-03	DISCIP. ENGR. DATE 13-05-03
PROJ. DES. COORD. T. THERTELL DATE 13-05-03	PROJ. ENGR. J. CLELAND DATE 13-05-03
PROJ. MGR. S. PERRY DATE 13-05-03	

Baffinland IRON MINES CORPORATION

MARY RIVER PROJECT - ERP

MILNE PORT – SITE PREPARATION
BULK FUEL STORAGE
DYKE SECTIONS AND DETAILS

SCALE	DWG. NO.	REV.
AS NOTED OR AS NOTED	H349000–2613–10–035–0004	C

$$DATAENTRY$$

DWG. NO. H349000-2613-60-012-0007

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001A&B	EL. 6.544M	EL. 6.995M
002	EL. 6.646M	EL. 7.026M
003	EL. 6.895M	EL. 7.382M
004	EL. 7.010M	EL. 7.737M
005	EL. 7.625M	EL. 8.093M
006	EL. 7.677M	EL. 8.444M
006D	EL. 9.135M	EL. 9.850M
007	EL. 12.914M	EL. 12.400M
008–21	EL. 11.125M	EL. 12.400M
024–26A	EL. 11.125M	EL. 12.400M
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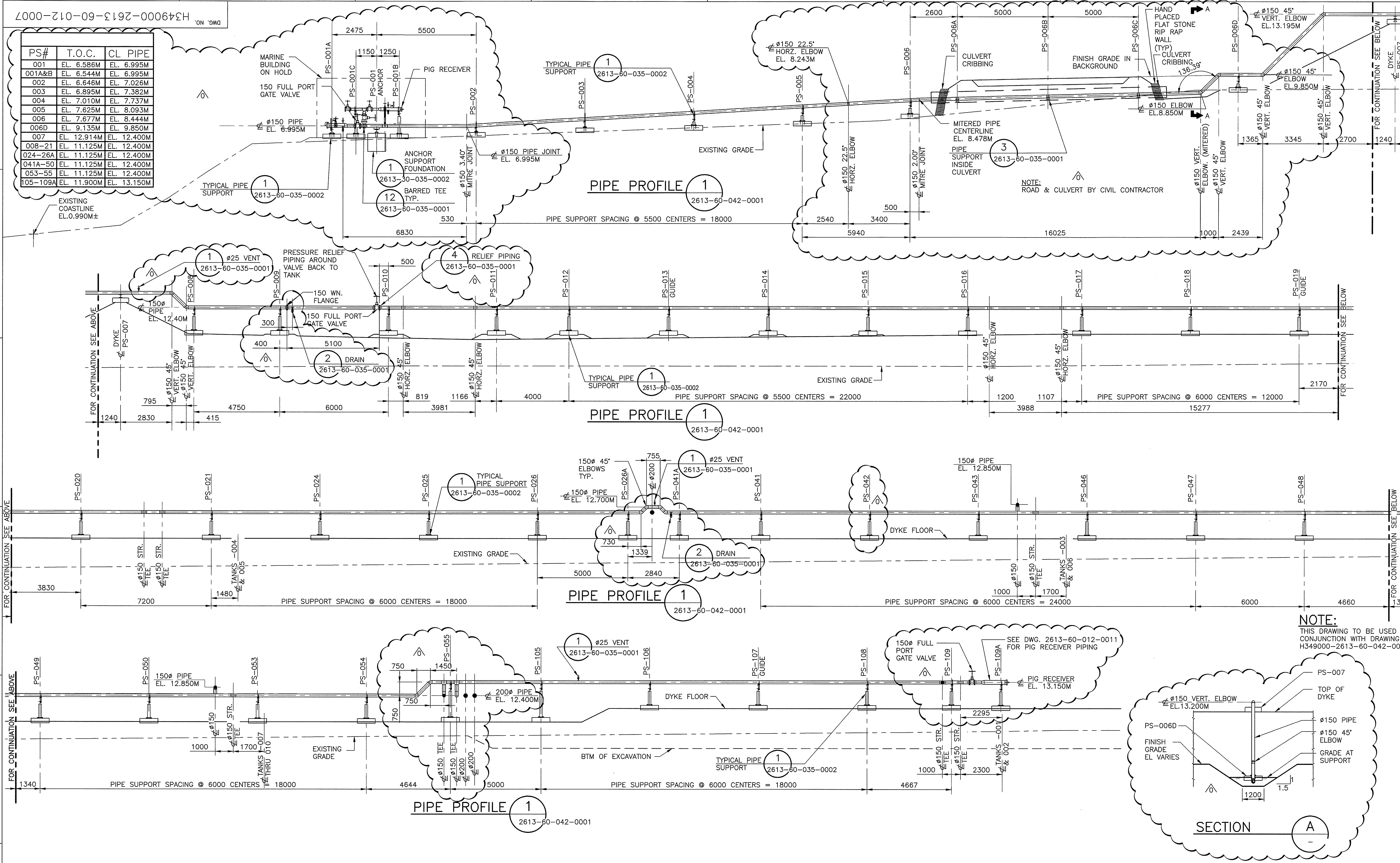

DRAWING NO.	DRAWING TITLE
REFERENCE DRAWINGS	

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F.E. BUTTS LICENSEE — REGISTERED PROFESSIONAL ENGINEER NT/NU

REV.	ISSUE FOR	AUTH. BY	DATE
0	ISSUED FOR CONSTRUCTION	DS FB	13-04-26
ISSUE AUTHORIZATION			

HATCH

DESIGNED BY D. STEPHENSON DATE 13-03-06
DRAWN BY S. LEY DATE 13-03-06
CHECKED BY M. McIntyre DATE 13-04-26
DISCIP. ENGR. DATE 13-04-26
PROJ. DES. COORD. T. THERTELL DATE 13-04-26
PROJ. ENGR. J. CLELAND DATE 13-04-26
PROJ. MGR. S. PERRY DATE 13-04-26

Baffinland Iron Mines Corporation

MARY RIVER PROJECT – ERP

MILNE PORT
EARLY REVENUE PHASE
ø150 PIPELINE PROFILE

SCALE 1:100 OR AS NOTED
DWG. NO. H349000-2613-60-012-0007
REV. 0

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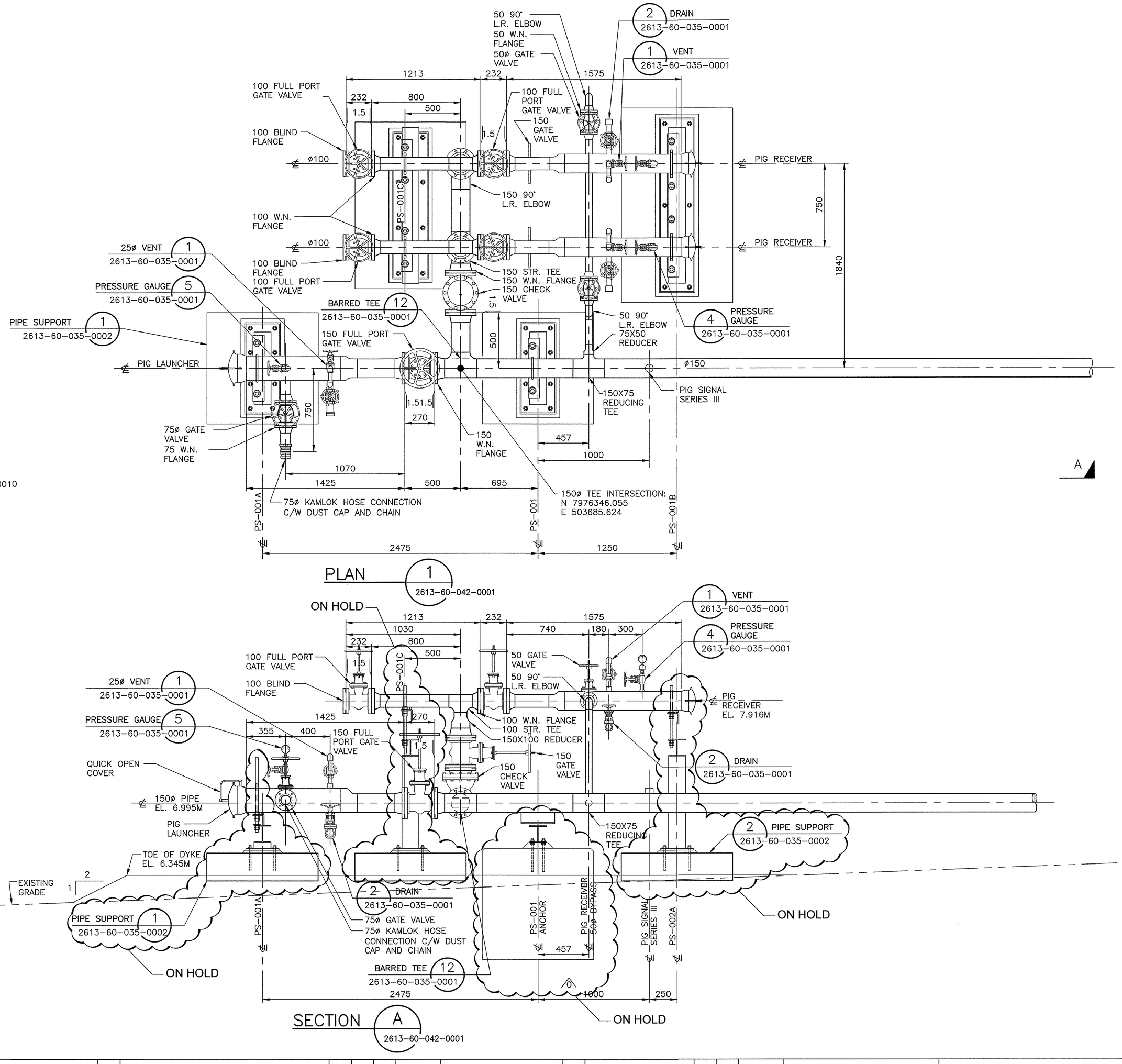
T.N.



A
2613-60-012-0010

A

PLAN 1 2613-60-042-0001

SECTION A 2613-60-042-0001

DRAWING NO.	DRAWING TITLE
REFERENCE DRAWINGS	

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE
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REGISTERED PROFESSIONAL ENGINEER — F.E. BUTTS — LICENSEE — May 1, 2004 — NUNAVUT

REV.	ISSUE FOR	AUTH. BY	DATE
0	ISSUED FOR CONSTRUCTION	DS/FB	13-04-26
ISSUE AUTHORIZATION			

HATCH

DESIGNED BY W.SWEET DATE 13-03-28	DRAWN BY M. PETERSON DATE 13-03-28
CHECKED BY M. MacIntyre DATE 13-04-26	DISCIP. ENGR. F. Butts DATE 13-04-26
PROJ. DES. COORD. T. THERTELL DATE 13-04-26	PROJ. ENGR. J. CLELAND DATE 13-04-26
PROJ. MGR. S. PERRY DATE 13-04-26	

Baffinland Iron Mines Corporation

MARY RIVER PROJECT – ERP

MILNE INLET
EARLY REVENUE PHASE
MARINE MANIFOLD PLAN & SECTIONS

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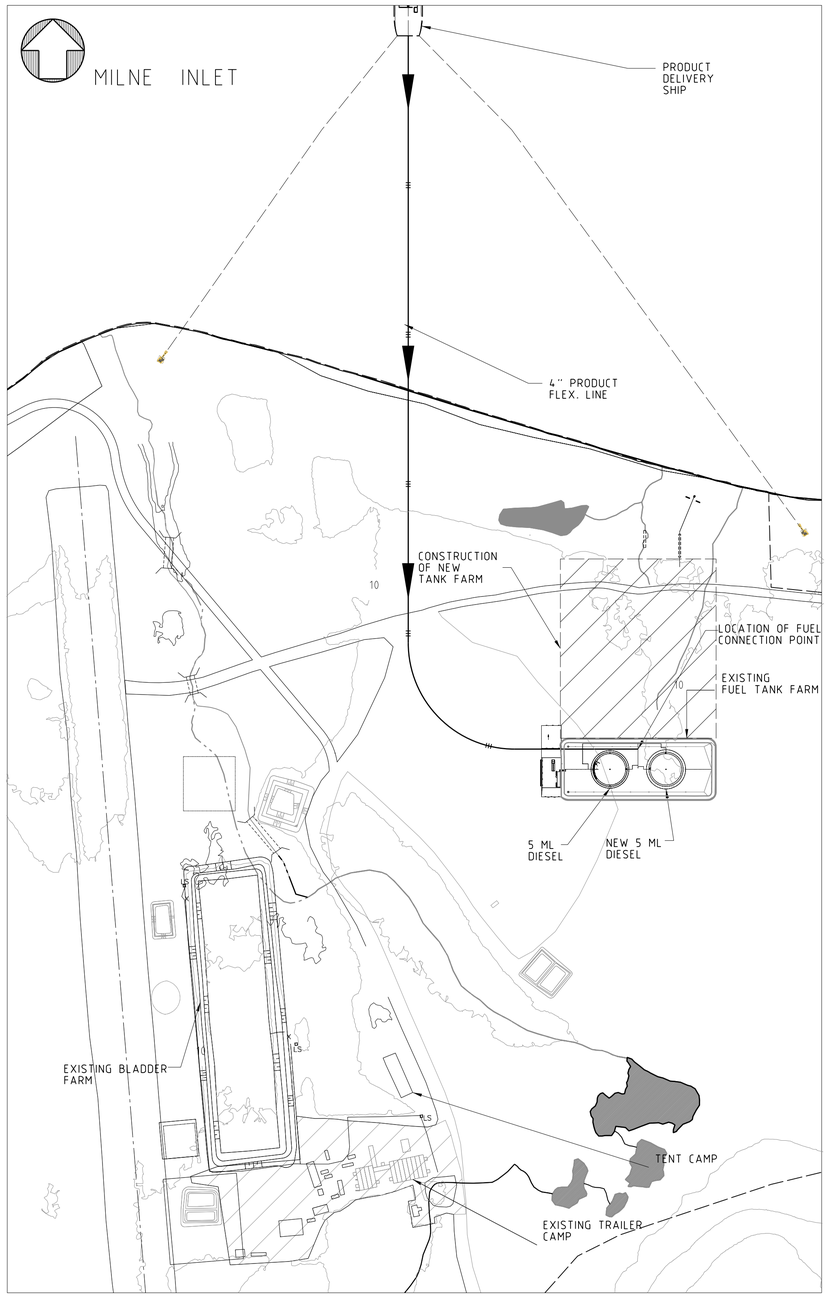

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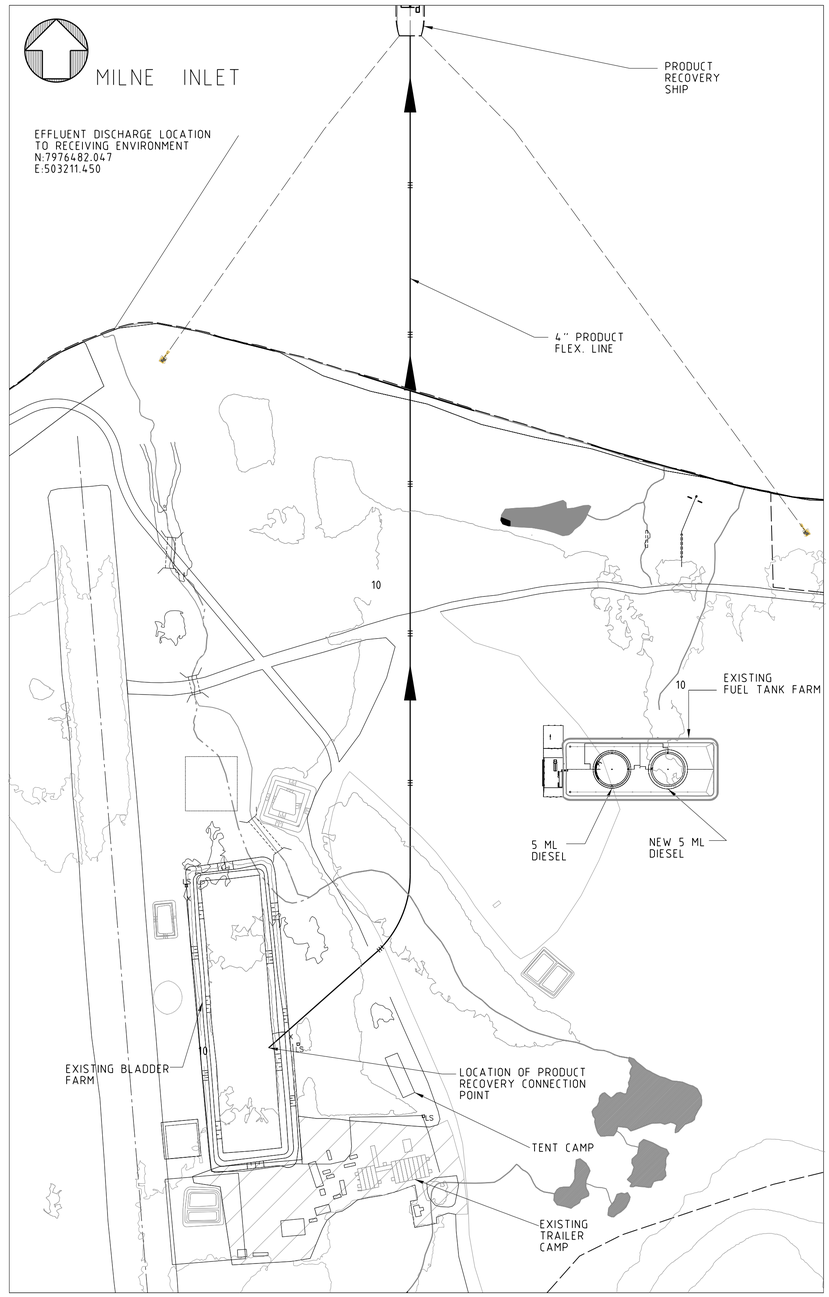

HYDROCARBON CONTAINED WATER TRANSFER TO SHIP

0 25 50 75 100 125
SCALE IN METRES

DRAWING NO.	DRAWING TITLE
REFERENCE DRAWINGS	

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE
REVISIONS					

REV.	ISSUE FOR	AUTH. BY	DATE
ISSUE AUTHORIZATION			

HATCH™

DESIGNED BY T. THERTELL DATE 2013-07-08	DRAWN BY C. LEISTNER DATE 2013-07-08
CHECKED BY DATE	DISCIP. ENGR. M. BUYKX DATE 2013-07-08
PROJ. DES. COORD. T. THERTELL DATE 2013-07-08	PROJ. ENGR. DATE
PROJ. MGR. DATE	

Baffinland

MARY RIVER PROJECT

MILNE PORT SITE LAYOUT
AUGUST 2013 FUEL DELIVERY HOSE LAYOUT

SCALE	DWG. NO.	REV.
1:2500 OR AS NOTED	H349000-2000-00-015-0007	A

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

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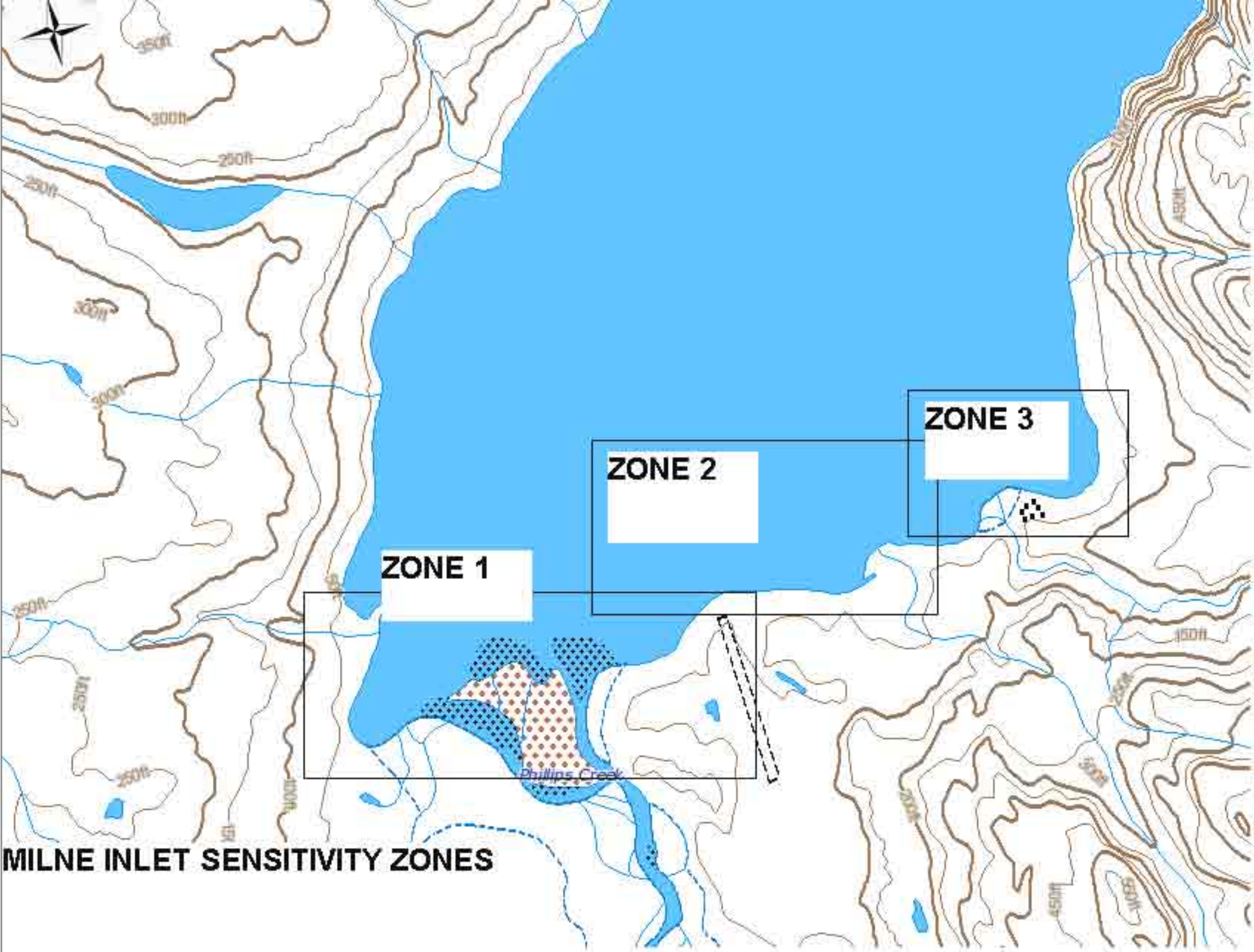
ris59970

ANNEX 3

Shoreline Characterization and Sensitive Zones



MILNE INLET SENSITIVITY ZONES

ANNEX 4

Resident Spill Response Equipment

Baffinland
Iron Mines Corporation

RESIDENT OIL SPILL RESPONSE EQUIPMENT
MILNE INLET BULK HANDLING FACILITY

Quantity	Description
1	Oil containment boom 300 meters – Aquaguard “Liteflex” 24
4	Anchor kits for anchoring boom in place
4	Towing bridal for oil boom
8	Spill response unit – X Large Land
4	Overpack spill kit
500	12 kg. Bags Multizorb granular
1	Custom pump skid for emergency fuel transfers from one tank to another
8	2 inch diameter x 8 meter transfer hose for emergency transfer pump
12	0.5m X 0.5m x 15 cm Arctic mini berm for under fittings
12	1m x 1m x 15 cm Arctic mini berm for under fittings
2	Insta berm 3m x 3m x .4m Arctic
300	Oil sheets for replenishing spill kits
1	Aluminium workboat with outboard engine, equipped with towing post and related equipment for boom deployment
1	Drum skimmer and diesel driven power pack, suitable for recovery of distillates – Capacity 7.5 tonnes per hour
1	Vacuum truck, 13,500 L capacity
20	200 litre (45 gallon) steel drums
12	Asphalt type rakes for beach cleaning
12	Perforated shovels for sorbent recovery
12	Pitch forks with screens for sorbent and debris recovery
12	Approved flotation devices
1	Minimum 10 ton sand stockpile at Milne Port for spill berming operations

ITEM 13.0 - ANCHOR SET – AS44

Reference: Quo 1184 2743-01 20070327

Anchor sets are supplied for mooring Aqua-Guard containment boom systems.

Standard Anchor sets are equipped with the following:

Anchor:	20kg (44-pound) Danforth type galvanized steel
Chain:	3m (10 feet) of 8mm (5/16") galvanized steel chain
Working load limit:	862 kgs (1,900 pounds)
Breaking strength:	3,447 kgs (7,600 pounds)
Buoy:	20cm (8 in) diameter PVC mooring buoy attached to trip line
Anchor Line:	30 meter (98 feet) length of 1.3 cm (1/2 in) polypropylene anchor rope
Trip Line:	Trip Line attached to anchor fluke (not shown in photo)
Attachments:	Anchor set will be equipped with attachments ie: shackles as seen in the attached picture.

Aqua-Guard Spill Response Inc.
#100 – 1055 West 14th Street
North Vancouver, BC Canada
V7P 3P2

Tel : 1.604.980.4899
Fax : 1.604.980.9560
Email: sales@aquaguard.com

ITEM 1.0 - LITEFLEX 24F OIL CONTAINMENT BOOM WITH DEPLOYMENT BOX

Reference: Quo 1184 2743-01 20070327

Liteflex 24F oil spill containment boom is designed for use in protected harbors, lakes and rivers/stream with slow currents.

FEATURES

- Rugged construction using top quality components
- Using flat floatation reduces the amount of space required for storage
- Ease of deployment
- Ideal for storage on a boom reel
- Very cost effective compared to other types of containment boom

SPECIFICATIONS

Model	**Liteflex 24F**
Overall Width	61.0 cm (24 in) approx.
Freeboard	20.3 cm (8.0 in) approx.
Draft	40.6 cm (16.0 in) Approx.
Combined Tensile Strength	4,545 Kilograms (10,000 Pounds) approx.
Top Tension Member	¼ in PVC Coated Cable
Bottom Tension Member	8.0 mm Galvanized Steel Chain
Section Weight	2.53 kgs/m (1.7 lbs/ft) approx.
SPECIFICATIONS	
Section Length	25 Meter (82 feet) Sections
Flotation Element (L x W x H)	137 cm x 13 cm x 6 cm (54 in x 5 in x 2.5 in) Closed cell Polyethylene foam segments
Boom Connectors	Extruded marine grade aluminium Shotgun connector. Boltless attachment system insures stress is spread evenly across the boom fabric
Connector Pins	2 pins per connection. 3/8" diameter stainless steel toggle type with spring
Standard Fabric	Standard – PVC Coated Polyester 26.5/Yd^2, Non Wicking
Color	International Orange
Handles	3 meters (10 feet) of length 1" nylon webbing
Chain Pocket	3 meter (10 feet) Drain holes provided
Tow Bridle	2 x Non-Floating tow bridles included

Aqua-Guard Spill Response Inc.
#100 – 1055 West 14th Street
North Vancouver, BC Canada
V7P 3P2
Tel : 1.604.980.4899
Fax : 1.604.980.9560
Email: sales@aquaguard.com

ITEM 1.0 - LITEFLEX 24F OIL CONTAINMENT BOOM WITH DEPLOYMENT BOX

Reference: Quo 1184 2743-01 20070327

ALUMINIUM DEPLOYMENT BOX

Aqua-Guard manufactures a variety of aluminium storage/deployment boxes to meet specific customer needs.

Product Features:

- All aluminium construction makes them maintenance free
- Rugged construction
- Customer painting and labelling available
- Containers can have a front drop door, top door or both
- Light weight
- Designed to fit 4 deck packs into 20 foot container

Deployment Box Not Exactly as Shown

Specifications:

DEPLOYMENT BOX

Construction:	Aluminium
Dimensions: (L x W x H)	3.05 m x 2.13 m x 0.76 m (9 ft 6 in x 7 ft x 30 in)
Details:	Drop down front door, hinged top panel for easy access to repack complete with lifting eyes and fork lift pockets.

Aqua-Guard Spill Response Inc.
#100 – 1055 West 14th Street
North Vancouver, BC Canada
V7P 3P2
Tel : 1.604.980.4899
Fax : 1.604.980.9560
Email: sales@aquaguard.com

SPILL RESPONSE UNIT X LARGE LAND SPECIFICATIONS:

Kit Contents:

300 Oil sorbent pads, 8 - 8' socks, 8 - 4' socks, Plug N Dike 10 lb container, 12 large pillows, 8 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 (OSK) contents...

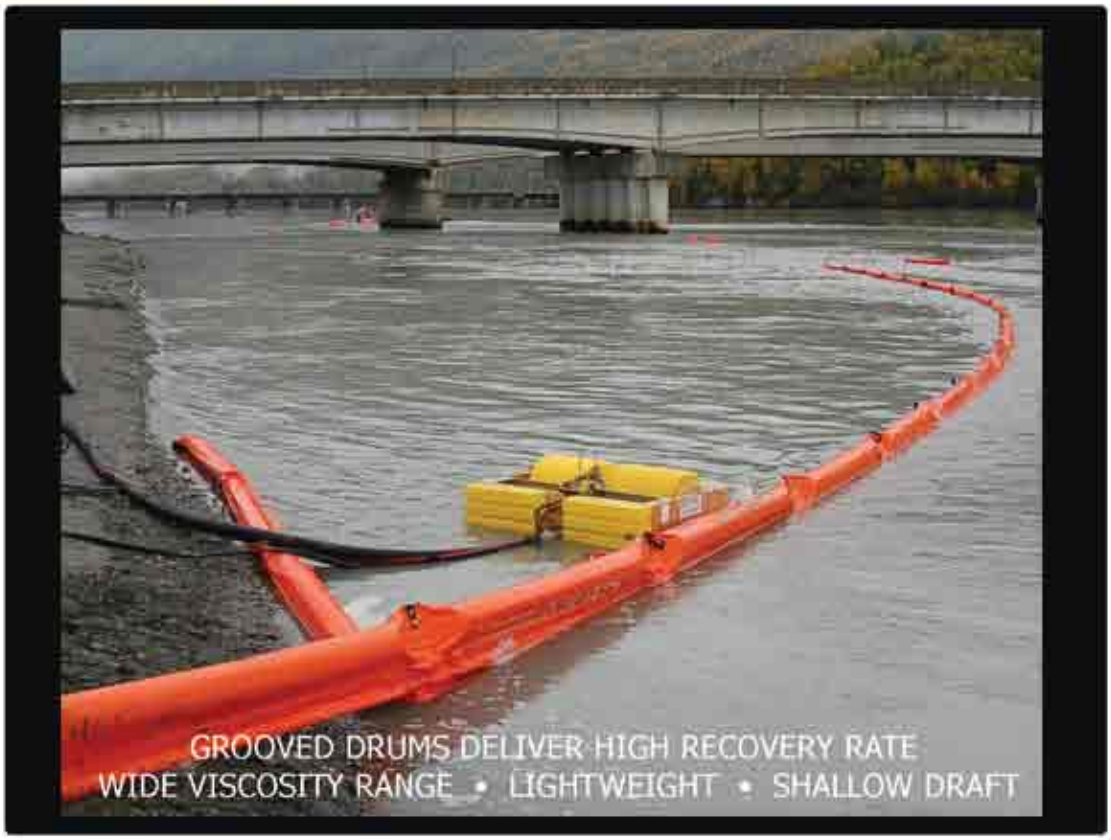
This heavy duty spill kit is ideal for around the plant or on exploration projects near fuel caches. The water tight screw down lid and UV treated polyethylene Overpack container will last outdoors in the extreme heat and cold. With grab handles that make moving it easy, this container meets UN regulations as an Overpack allowing this kit to double as a disposal container. This kit is also available in the wheeled Overpack. Capacity 231 litres / 51 gallons.

Standard Contents:

100 oil sorbent pads, 6 small pillows, 2 large pillows, 5 - 8' socks, 5 - 10' socks, 2 - 4' socks, 25 lb bag granular, plug patties (instant leak stop), goggles, gloves and poly coated tyvek coveralls.

ELASTEC INC.
AmericanMarine INC.

TDS118G DRUM SKIMMER

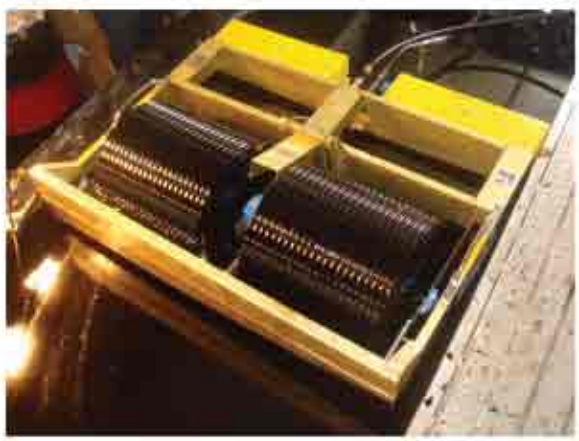


The ELASTEC TDS118 is one of the most popular oil skimmers and is now offered with patented Grooved Drum design that increases the oil recovery rate while still mantaining the shallow draft and lightweight design.

The TDS118G can be supplied fitted with either an air or hydraulic motor. A range of suction pumps are offered.

The ELASTEC TDS118G is suitable for oil spill response or industrial use. Due to its' shallow draft and light weight, this handy skimmer is ideal for clean up in creeks, rivers and lakes. The ELASTEC TDS118G has an oil recovery rate of up to 70 gpm / 15 cu.m per hour.

The pneumatic model can be connected directly to a vacuum truck for an efficient oil spill response unit or routine pit cleanup operations.



ELASTEC Inc.
AmericanMarine Inc.

TDS118G DRUM SKIMMER

ELASTEC drum skimmers are capable of recovering a wide range of oils and sheen, from diesel to crude oils - in only 3 inches of water!

The smooth drum TDS118 is also available in stainless steel for hot or aggressive environments such as industrial pits and installations.

BRUSH AND DISC INSERTS AVAILABLE

The Grooved Drum design has been extensively tested by Ohmsett and researched by the University of Santa Barbara, California. Funding for the research was provided by the U.S. Minerals Management Service.

Specifications - TDS-118G

Oil recover rate:	Up to 70pm / 15 cu.m per hour.
Number of Drums :	2
Frame:	Anodized marine grade aluminum.
Dimensions:	48 x 34 x 18" / 1.22 x 0.86. x 0.46m
Weight :	60lbs / 27kg approx.
Drive:	Pneumatic or hydraulic.
Applications:	Industrial and spill response.
Configurations:	Pnuematic system with diaphragm suction pump. 10hp Diesel hydraulic system with E150 submersible pump. 10hp Electro-hydraulic system with E150 pump.
Pump options:	1" Double Diaphragm or E150 hydraulic submersible.
Hose kits:	according to requirement.
Air requirement:	10 to 35 cfm at 50 to 100 psi.
Hydraulic requirement	Skimmer - 5 gpm, E150 Pump - 3 gpm, max 2,500 psi.
Powerpak	10 hp / 7.5kW diesel or electric.

ISO 9001:2000 Certified Company

Elastec / American Marine Inc,
1309 West Main,Carmi, IL 62821
Tel: +1 (618) 382 2525 Fax : +1 (618) 382 3610

Specification - Baffinland Near Shore Workboat:

Vendor:

Connor Industries
75 Tudhope St. N.
Parry Sound, ON
P2A 2W9

Contact: Brian Higgins (705) 746-5875

Workboat specification:

Model: Predator 18

Standard features:

3/16 inch hull
Semi V hull with lifting strakes
Self bailing floor
Navigation lights
Lockable bow compartment
12 volt power point
4 tie down cleats
2 paddle holders
26 inch side console with rotary steering
Stern storage compartment
Swivel drivers seat
12 gallon carry on fuel tank

Optional features:

Tow bollard
36 inch high side railings
Naval architect Transport Canada stability booklet

Propulsion:

90 HP Yamaha 4 stroke outboard engine with all controls installed including gauges, prop, battery, fuel water separator

Trailer:

Single axle galvanized bunk trailer

Vessel is to be delivered fully functional, commercial registration to be provided to Transport Canada approval. All items as per quotation from Brian Higgins dated May 27, 2008.

Additional safety equipment to meet Transport Canada Regulations:

Heaving Line	CanCord 5/16" x 50' 180696
Anchor Line	Samsom Gold Braid 3/1" x 100' 273864
Dock Lines (2)	Samson Gold Braid 3/8" x 20' 273864
Anchor	Danforth 16 lb S-1300
Flares (6 pack)	Comet Sky-Lite 1228
Flashlight	Rayovac Waterproof
Fire Extinguisher	Huronia Alarm

Also to be included:

10- life vests Helly Hansen model M504 – meeting Transport Canada approvals for small commercial vessels

Additional spare parts:

4 – Propellers, aluminum with nut kits
2 – Water separator cartridges
8 – Spare spark plugs

ANNEX 5

Bulk Cargo Transfer Procedures

BAFFINLAND IRON MINES
ENVIRONMENTAL HEALTH & SAFETY PROGRAMS AND PROCEDURES

Procedure:	**2013 Bulk Tanker Fuel Transfer to Milne Inlet Fuel Farm**			**Procedure No:**	
Revision: 3		**Effective:**	July 2013	**Replaces:**	Revision 2 - 2013
Issued By:	D. McCann				
Business Unit:	Mary River Project				

PURPOSE

To establish a standard procedure for the safe transfer of fuel from bulk fuel tanker ships in Milne Inlet to Baffinland's fuel farm at Milne Inlet.

SCOPE

This procedure applies to ship to shore transfer of fuel from bulk tankers in Milne Inlet to Baffinland's fuel farm contained in the Milne Inlet fuel Farm.

The transfer of fuel involves multiple work groups that follow various regulatory laws, guidelines & organizational standards. This procedure ties together the various standards to be followed and details specific roles & accountabilities to ensure a safe transfer of fuel and to prevent cargo/fuel spillage, and the resulting environmental damage.

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GENERAL SAFETY

Wear approved P.P.E. - Safety glasses; hard hat; safety boots;

Key Safety Requirements:

1. Ignition sources: Fuels are highly flammable. Smoking or open ignition sources are not permitted within 10 meters of ship to shore connections, fuel manifolds or within the fuel farm berm.

2. High pressure piping: The pressurization of fuel transfer lines, manifolds and fuel farm piping can reach pressures of 700 kPa (100 psi). No person is permitted to create a break in a pipe or open any part of the pressurized system without the written consent of the Baffinland fuel transfer Master once the Pre-Transfer Operation (Section 4.0) has been initiated.

3. Environmental spill response: Prompt and correct local response are required in the event of a spill to safeguard life and property; and lessen the environmental impact of the spill.

4. Communication: Good communication between all parties involved in the fuel transfer is essential for a smooth transfer, and are vital in the event of an incident.

Summary of Operation.

The ship to shore transfer operation at Milne Inlet is similar to other cargo discharge operations in the North, however, there are some unique aspects that require specific procedures be followed and understood by all personnel involved in the discharge operation.

Construction activities at Milne Inlet will provide for a new tank farm which will be undergoing continuing construction through the summer of 2013. For the fuel sealift to be carried out during 2013, a number of tanks will be coming on line as construction is completed on a progressive basis throughout the season. Total tankage and capacities for the 2013 sealift shall be as follows: 2 steel tanks of 5 ML ea, 2 steel tanks @ 12 ML ea. both containing diesel and 3 steel tanks of 750,000L each containing Jet-A fuel.

The tank farm located at Milne Port is constructed in an impermeable secondary containment structure (lined and bermed containment area). The construction is in compliance with building codes and best practices for tank farm facilities. The low point of the containment area is fitted with a sump and pumping system for capture/disposal of runoff in this secondary containment area. The same pumping system is used to recover large spills, should they occur. The secondary containment is designed to a capacity to contain the complete volume of the largest tank, as well as 10% of the volume of all the remaining tanks.

It is anticipated that the total volume of the bulk fuel transfers for 2013 shall be in the order of approximately 35-50 ML and will take place between the months of August through early October. The fuel transfers shall take place by means of either a single or double 4 inch floating hose with an approximate length of approximately 1000 meters deployed between the vessel and the connecting flange on the shore. The 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.

Accurate reconciliation of discharge & fill volumes through regular communication between ship & shore personnel is required to ensure the safe transfer of fuel & prevent overfilling within the tank farm that could result in a spill.

There are a number of work groups involved in the transfer of fuel. The workgroups and applicable procedures are listed below:

Work Group	Description of Applicable Regulation, Guideline or Procedure	Regulation, Guideline or Procedure
Baffinland Iron Mines/Petro-Nav	2013 Bulk Tanker Fuel Transfer To Milne Inlet Fuel Farm	This document applies
Baffinland Iron Mines	Baffinland Iron Mines Corporation Mary River Project Emergency Response and Spill Contingency Plan (ERP) Oil Pollution Emergency Plan (OPEP)	Emergency Response and Spill Contingency Plan (ERP) Oil Pollution Emergency Plan (OPEP)

Petro-Nav	Cargo Operations at Milne Inlet	Petro-Nav- MI Cargo Operations
Petro-Nav	Arctic, General Port Operation Guidelines	Petronav Arctic Port Operation Guidelines
Baffinland Iron Mines/Petro-Nav	Transport Canada – Arctic waters oil transfer guidelines.	Transport Canada - Artic waters oil transf
Petro-Nav	Arctic shipping pollution prevention regulations (ASPPR), under the Arctic Waters Pollution Prevention Act (AWPPA). This covers ship standards and activities in waters north of the 60th parallel.	
Petro-Nav	Arctic Waters Pollution Prevention Regulations (WAPPR) under the AWPPA. This covers the ship owner's liability provisions regarding spillage of waste	
Petro-Nav	Oil Pollution Prevention Regulations (OPPR), under the Canada Shipping Act.	
Petro-Nav	Shipboard oil pollution emergency plan	Petro-Nav Spil Response ToC

RESPONSIBILITY

Role	Accountability	By When	Comments
BIM Operations Manager or Designate	Complete PHA on Draft Procedure	In advance of annual Bulk Fuel Sealift	
BIM Fuel Transfer Master	Implementation of all supplier accountabilities as described in this procedure, all regulatory requirements and organization procedures	As specified	
BIM Shift Inspector	Inspection of shore fuel transfer system piping	Every 4 hours upon start of fuel transfer	

Supplier Oil Transfer Supervisor	Notify Prairie & Northern Region, Maritime in Ottawa, via NORDREG of the plans for oil transfer operations in arctic waters	In advance of Bulk Fuel Sealift	
	Implementation of all supplier accountabilities as described in this procedure, all regulatory requirements and organization procedures	As specified	
All personnel involved in Bulk Fuel Transfer	Initiate Stop Transfer or Emergency Stop Transfer upon identification of conditions listed in this procedure	As required immediately	

DEFINITIONS

Supplier: The owner and the operations personnel of the bulk fuel tanker ship engaged under contract to Baffinland Iron Mines to ship & transfer fuel to the Milne Inlet fuel farm shore manifold

Receiver: Baffinland Iron Mines (BIM)

PROCEDURE

1.0 GENERAL

1.1 A Process Hazard Analysis (PHA) will be conducted annually on this procedure by all parties involved in the Bulk Fuel Transfer Procedure in advance of the Bulk Fuel Sealift. The purpose of the PHA is to identify potential hazards not already covered in this procedure or with the methodology and to implement the appropriate controls commensurate with the level of risk associated with the hazard.

1.2 Upon arrival of the bulk tanker at Milne Inlet and prior to commencement of any operation including supplier equipment mobilization, all organizations & work groups involved in the Bulk Tanker Fuel Transfer to the Milne Inlet Fuel Farm will meet to:

- Identify the supplier fuel transfer supervisor and BIM fuel transfer master to all personnel involved in the operations
- Review this procedure.
- Inform each party involved of the dimensions of the other's key facilities, such as manifold/fuelling station location, maximum & minimum draught, shore manifold connections, and jetty/shore characteristics such as tides, bollards, mooring and positioning aids, hidden hazards
- Inform all participating personnel of their duties and responsibilities during the transfer, and ensure they are versed in emergency procedures, and know the fuel spill contingency plan to be followed in the even of an incident.
- Upon completion of the meeting, the ship Captain and/or 1st mate will come ashore to inspect the installation.

1.3 Communication: Reliable, clear and consistent communication is essential for a smooth transfer operation, and is vital in a crisis situation. The following communication standards are to be followed:

- The language of the workplace at Baffinland is English. All communication is to be in English.
- A dedicated radio frequency will be used by personnel directly involved in the transfer. The supplier will provide radio's on the ship's dedicated frequency to the receiver's shore personnel.
- The radio is only to be used for fuel transfer communication
- All cargo volumes are to communicated in cubes or cubic meters
- The following standard signals should be used in all transfer operations

    - STANDBY TO START TRANSFER
    - START TRANSFER
    - SLOW DOWN TRANSFER
    - STAND BY TO STOP TRANSFER
    - STOP TRANSFER
    - EMERGENCY STOP OF TRANSFER
    - EMERGENCY SHUTDOWN OF TRANSFER

    If any of the following conditions occur, the transfer should be stopped immediately:

        - LOST COMMUNICATIONS
        - LOSS OF ABILITY TO MONITOR HOSE TO SHORE
        - SIGN OF SPILLAGE, OR DAMAGE TO HOSES AND COUPLINGS
        - ANY DETECTION OF ACCUMULATED GASES
        - MAJOR INCREASE IN WIND AND/OR SWELLS (SUPPLIER)
        - WHEN AN ELECTRICAL STORM IS PRESENT OR PREDICTED
        - SEVERE DETERIORATION IN ICE OR VISIBILITY CONDITIONS (SUPPLIER)
        - HELICOPTER LANDINGS OR TAKE OFFS WITHIN 500 METERS
        - ANY OTHER SITUATION DEEMED DANGEROUS BY THE FUEL TRANSFER SUPERVISOR OR BAFFINLAND FUEL TRANSFER MASTER.

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2.0 LAND / SHORE - SAFETY AND ENVIRONMENTAL CONTROLS

2.1 The receiver will ensure the following safety controls are in place prior to and during fuel transfer:

- "No smoking/no naked lights or flames" warning signs will be posted at all the shore manifolds and at the entrance to and around the perimeter of the fuel farm berm.
- Fire extinguishers will be prepared for rapid deployment in the area of the shore manifold and the fuel farm before commencing transfer

- The shore hose landing, handling and manifold area is free of obstructions and hazards Road access to the beach area will be restricted to prevent vehicles from crossing the hose
- Manifolds, bollards and deadmen are adequate and clearly marked for visibility
- All personnel involved in the fuel transfer using radios will be on the same channel or frequency
- Ensure that all personnel know they have the right to suspend operations at any time, if they decide it is necessary.
- Fuel Transfer Piping Isolation: The pressurization of fuel transfer lines, manifolds and fuel farm piping can reach pressures of 700 kPa (100 psi). No person is permitted to create a break in a pipe or open any part of the pressurized system without the written consent of the Baffinland fuel transfer Master.

    - Each time the fuel transfer system requires a break in the line, flange to be opened, a component to be removed or any other service that requires the opening of a line even downstream of a valve, a non-routine JSA must be conducted by the BIM Fuel Transfer Master and the workgroups doing the work.

    - The work may only proceed upon written confirmation by the BIM Fuel Transfer Master.

- Burning & Welding is not permitted on any component associated with shore manifold, pipeline, or fuel farm equipment without the written consent of the Baffinland fuel transfer Master. A non-routine JSA must be conducted by the Baffinland fuel transfer master and the personnel involved in the hot work.

2.2 The receiver will ensure the following environmental controls will be in place prior to and during fuel transfer:

- Ensure that all personnel know they have the right to suspend operations at any time in the event of a spill or, any loss of control or potential loss of control that may result in a spill
- Fuel transfer will be stopped immediately in the event of any drip, flow, leak or seep in to soil or water during fuel transfer. Fuel transfer operations will cease until leaks to soil or water have been eliminated.
- Emergency spill response kits will be positioned at the shore manifold, along the pipeline and at the fuel berm
- The BIM emergency spill response sea cans will be positioned in close proximity to the shore manifold at the beach area with boom (and towing bridle attached) ready to deploy.
- As an additional contingency, a front end loader, excavator or other appropriate earth moving equipment will be readily available to the BIM transfer master at Milne Inlet during the fuel transfer.
- All personnel directly engaged in the fuel transfer are familiar with the Baffinland Iron emergency spill response protocol.
- Baffinland Iron will initiate & implement all land based spill response plans.
- A drip tray or lined berm will be place under the shore manifold connection.

3.0 SEA / SHIP - SAFETY & ENVIRONMENTAL CONTROLS

3.1 The supplier will implement all safety controls as are required under the applicable regulation, guideline or supplier procedure documented in the “Summary of Operation” above.

3.2 Land / shore – safety & environmental controls (Section 2.0) will be reviewed with the supplier’s oil transfer supervisor and shore crew.

3.3 The supplier is accountable under the following circumstances for the implementation of their fuel spill contingency plan (including containment and remediation) during the bulk fuel sealift:

- All spills to salt water
- The salt water component of all spills that originate from land and make their way to salt water.

3.4 The supplier shall demonstrate that they have previously carried out adequate shipboard emergency spill response simulation/training exercises

3.5 The supplier is accountable for completing the Arctic Oil Transfer Guideline Checklist and will provide a copy to Baffinland Iron upon completion of the fuel transfer to Milne Inlet.

4.0 PRE-TRANSFER PREPARATION & OPERATIONS

4.1 Pre-transfer preparation may commence at any time during the day – However, cargo transfer operation may only start during daylight hours.

4.2 Prior to the supplier connecting the hose to the shore manifold, the supplier oil transfer supervisor and BIM fuel transfer master will complete and sign off on the appropriate pre-transfer preparation & operations checklist to confirming all requirements are completed.

4.3 Once the ship hose is connected to the shore manifold the following tasks can be completed:

- The supplier will complete and certify a pressurized air test of the transfer hose.
- The receiver may request the supplier to conduct an air pressure test on the shore manifold, piping and distribution piping within the berm. **It is critical that all tank isolation valves be closed prior to pressurizing the line.** The shore lines must hold pressure for 1 minute. If pressure cannot be held, an inspection of the entire line must be made to determine the location of the leak prior to discharging cargo. The receiver will certify that an air pressure test was completed.

5.0 TRANSFER OPERATIONS

5.1 The cargo transfer operation may only start during daylight hours.

5.2 Baffinland fuel transfer master will announce impending fuel transfer on ship to shore communication and to other personnel at Milne inlet

5.3 The Baffinland fuel transfer master shall ensure that:

(a) the supervisor of the transfer operation on board the vessel has reported readiness for the transfer operation to begin;

(b) continuous communication is maintained with the supervisor on board the vessel; and

(c) the manifold valves and the tank valves within the fuel farm are not closed until the relevant pumps are stopped, if the closing of the valves would cause dangerous over-pressurization of the pumping system.

- **Cargo hose/shore line pigging procedures**

  - Great care must be taken to ensure that NO air be allowed to blow unrestricted into the shore cargo tanks. When pigging the cargo hose and clearing it of product, all stations must be coordinated to determine when the pig reaches the shore manifold and when the pig reaches the tank farm.

  - Drain the air pressure off the cargo hose back into a dry drip pan (it is the preferred method). In order to prevent air being splashed onto personnel a canvas or plywood screen can be set up. Where it is impracticable to drain into a manifold drip tray or an empty drum, we may then drain the air pressure off the cargo hose back into an empty cargo tank or slop tank onboard ship. Under no circumstances shall air be bled off in any great quantity into the shore tanks.

- Normal operations would have the Jet-A discharged ashore first. The hose will then be blown with a 4 inch pig from ship to shore manifold, and again blown with a 6 inch pig until it reaches the tank farm. (This point is determined by prior arrangement with the ship and shore personnel). The hose will then be bled off and the hose will then be cleared.

  - This procedure will ensure that the hose/shore line has been cleared of all traces of Jet-A. The diesel will then be discharged ashore as the last cargo.

  - Upon completion of discharge of a cargo the pigging of the hose/shore line should be done in two steps as follows:

Ship to Shore Manifold – 4 inch floating hose:

1. Cargo pump stop

2. Cargo manifold close

3. Squeeze the cargo hose about 3ft from the manifold

4. Drain that section of the cargo hose

5. Ensure the hose is well secure

6. Disconnect the hose, insert the pig, reconnect the hose

7. Notify the shore manifold that you are ready to launch the pig

8. When the shore manifold is ready to receive the pig, open the air

9. When the air pressure is at 70psi, release the pig by opening the hose squeezer

10. The air pressure should be maintained at approximately 70psi

11. If the pig gets stuck, notified the shore manifold then increase the air pressure by 10psi and wait 2 to 5 minutes

12. If the pig is still stuck repeat the above but do not exceed 100psi

13. Once the pig is at the shore manifold pig catcher shut the air immediately, close the valve to the 6 inch shore pipeline isolating any remaining product between shore manifold and tank farm in the 6 inch shore pipeline.

14. Bleed the air from the hose.

Shore Manifold to Tank farm – 6 inch steel pipeline

15. Open the 6 inch pig launcher at the shore manifold and insert a pig.

16. Notify the shore manifold that you are ready to launch the pig

17. When the shore manifold is ready to receive the pig, open the air

18. When the air pressure is at 70 psi, release the pig by opening the 6 inch valve at the shore manifold

19. The air pressure should be maintained at approximately 70psi

20. If the pig gets stuck, notify the tank farm then increase the air pressure by 10 psi and wait 2 to 5 minutes

21. If the pig is still stuck repeat the above but do not exceed 100psi

22. Once the pig is at the tank farm pig catcher shut the air immediately, close the valve to the tank

23. Bled the air from the hose.

5.4 Fuel transfer rates should initially start off low in the 30-40m3/hr range and then ramp up slowly as the fill methodology advances. The maximum fuel transfer rate allowed the Milne Inlet fuel farm is 149 m3/hr

5.5 Upon commencement of fuel discharge to the fuel farm tanks, the entire length of the Milne Inlet fuel transfer piping system from the shore manifold to the fuel berm will be inspected for leaks, and every hour thereafter so long as the fuel transfer system is charged. The Fuel Transfer Piping System Inspection Log will be submitted to the BIM fuel transfer master at the end of each shift.

5.6 Jet A fuel will be transferred first to prevent contamination with diesel

5.7 The fuel transfer hose and shore pipe will be cleared of Jet A by pigging following the completion of Jet A fuel transfer

5.8 Diesel fuel will be transferred to the fuel farm.

5.9 Upon completion of the fuel transfer operations, the entire hose and pipeline shall be cleared of product by the pigging procedure outlined in 5.2 above

6.0 POST-TRANSFER OPERATIONS

6.1 The shore manifold open end will be capped to prevent any accidental discharge of fuel.

6.2 Upon completion of the fuel transfer operation, the hard pipe line will be isolated from the fuel farm at a point inside the fuel farm through the installation of a spade or by physically breaking & installing a blank flange or cap on both ends

6.3 The hard piped transfer line will be opened at the shore manifold to drain any remaining fuel that may have accumulated.

6.4 The BIM fuel transfer master will sign off the Milne Inlet Fuel Transfer Checklist indicating that this procedure has been completed and the bulk fuel transfer to the Milne Inlet fuel farm is complete

6.5 The supplier will provide Baffinland Iron with a copy of the Suppliers statement of facts (record of ship activities) from the fuel transfer process.

7.0 REFERENCES AND RELATED DOCUMENTS

7.1 PHR Forms

PHR Form

7.2 Non-Routine JSA

Non-Routine JSA

7.3 Fuel Transfer Checklists

Fuel transfer checklist

7.4 Fuel Farm plans and layout

ANNEX 6

Spill Response Equipment Onboard Ship

Pollution Control Equipment – Petro-Nav Vessels 2013

Pollution	Drums	Yellow Salvage drums 95 gallons	Each	0		0	Pollution Container	
Pollution	Boom	Oil absorbent boom	Each	1		1	Pollution Container	
Pollution	Boom	Oil containment boom	Each	1		1	Port side reel or container	(1200ft)
Pollution	Pump	Diaphragm pump Sandpiper / Model FR2-M N0-515177	Each	1		1	Pollution Container	
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	

ANNEX 7

Training Register and Exercise Documentation

OIL SPILL RESPONSE TRAINING
POLLUTION EQUIPMENT DEPLOYMENT EXERCISE

Training and Exercise Report:

Date:	**September 13-14 and 18th, 2011**
Location:	Milne Inlet, Nunavut
Participants:	Per attached Training Rosters

Training Objective:

The oil spill response training at Milne Inlet provides several benefits to the corporation, the staff, monitoring bodies and ultimately to the environment. The responders are provided with the opportunity to learn and then practice skills in the handling and deployment of oil spill gear. Equipment and systems are tested and, with proper feedback, strategies for improvement to response can be developed further. Recommendations for improvements are a primary goal of the deployment exercise. All findings related to the training shall be considered by management at appropriate revisions to the OHF "OPEP" shall be brought forward at the next plan revision.

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

- Management support of the training activity, at all levels
- Setting clear and measurable objectives for the training and the 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

The detailed objective of the spill response exercise is detailed in the accompanying document entitled *Milne Exercise Plan, 2011*

Other Objectives:

As the spill equipment at Milne inlet had not recently been exercised, an audit of the gear was carried out. This included an inventory and inspection of equipment condition. The equipment audit matrix forms an integral part of this report.

Agenda:

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

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

Lesson #	Title	Time allotted (Mins.)
1	Briefing and Introduction	15
2	Milne Inlet Marine Oil Pollution emergency Plan	30
3	Marine Spill Behavior	30
4	Safety for responders to spills	30
5	Marine Safety – small craft	45
6	Booming and boom deployment	60
7	Oil recovery / skimming operations	30
	Total Classroom time allotment	4 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	Equipment deployment exercise	120

Classroom Training:

Classroom training was held on September 13, 2011 at the Milne Camp dining room. Training commenced at 08:30. Various attendees present, (roster attached) from the groups forming responders as follows:

Baffinland Iron Mines
Nuna
QL

Modules 1 through 7 were presented as per agenda.

Practical lessons and exercise:

Practical session was held on the afternoon of September 13th. Students assembled on the beach and instruction as per modules # 8 and 9, 10 and 11 was carried out.

One boom container was opened and connection method of boom was reviewed. Several scenarios for booming were discussed.

Skimmer was prepared by Nuna crew and a review of the skimmer assembly was carried out.

Due to time constraints, further deployment of boom was deferred to the following day.

Boom and equipment deployment:

Prior to deployment, a Potential Hazard Review (PHR) was held. All participants reviewed the potential hazards of working with the response gear on the beach and on water. The resulting hazards identified and the control measures adopted are outlined in the PHR report attached to this document. This material will therefore be available within the OPEP training section for review prior to subsequent training or exercises by Baffinland responders.

Practical boom deployment was carried out with Baffinland responders and site service personnel afternoon of September 14, 2011. Two responders were assigned to the on water operation in the workboat, two responders were assigned to the beach to assist in the boom deployment. Following elements were covered:

- Prepare boat and method of launching boat using improvised boat cradle and zoom boom unit
- Prepare Zodiac as back up craft
- Launch Zodiac and water test unit
- Launch workboat and water test unit
- Pre-rig one anchor kit and load to workboat
- Re-launch workboat (2 responders)
- Prepare 100 meters (4 sections) oil boom at container on beach for deployment (2 responders)
- Rig shore anchor point using 40 lb Danforth anchor and lines
- Deploy contents of one boom container (400m)
- Create deflection boom at beach and anchor in position

- Practice repositioning boom using trip line strategy as instructed in course training
- Recover all equipment and secure accordingly, store boat on improvised cradle and secure on beach
- Short debrief and discussions of lessons learned

In addition to the on water deployment, the Elastec TDS 118 Skimmer and powerpack were fully assembled and run. Instruction as to the operation of the skimmer was given to the responders.

September 18th, 2011 – Spill Exercise in Conjunction with Ship

The detailed goals and objectives of this exercise are outlined in the accompanying document entitled "MILNE INLET OIL SPILL RESPONSE EXERCISE - SEPTEMBER 18, 2011".

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 is documented and is an important element in the periodic plan review. The exercise conducted in conjunction with the ship during the bulk fuel transfer satisfies the following exercise elements:

- Internal notification
- External notification
- Equipment deployment

Exercise Scenario and synopsis:

While at anchorage in Milne Inlet, and during pumping operations (ship to shore transfer) a pressure drop occurs in the hose, tripping the shore end low-pressure alarm set point. The PetroNav shore crew notifies the ship immediately. Shore watch reports a small spill of product, approximately 100 litres close to the 2nd coupling along the hose length. Upon initial investigation, the coupling itself appears to be suspect, and pumping is immediately stopped. The exercise begins with notification through Baffinland's chain of command and leads to a deployment of spill control gear.

During the course of events, the ship proceeds to the deployment of 150 feet of containment boom to the east of the floating hose. They also initiate skimming operations at that location. Ship watch observes a small quantity of oil that has washed up on the beach west of the hose, approximately in front of the landing strip area. Baffinland responds to the spill accordingly and initializes the actions as outlined in the OPEP. This includes notifications both internal and external, and a deployment of skimming equipment and other resources to the spill site.

Summary log of events:

Weather Conditions (At initial alarm): Variable, generally overcast, wind W, NW 15 knots, Temp -5 C.
Marine conditions: Flood / Slack tide – sea state force 1, waves less than 2 feet
Ship's position: 71.53.55 N, 080.53.96 W (approx)

15:02	Ship advises Baffinland Fuel Sealift Supervisor of spill via radio. Initial report is approximately 100 litres of P-50 (northern distillate) from 2nd coupling along hose from shore manifold.
15:08	On site coordinator advised of spill, activates Oil Pollution Emergency Plan. On site coordinator begins internal notifications and assigns personnel to various tasks.
15:19	Operations manager begins external notifications/reporting. Also begins dispatching personnel to mobilize additional resources, spill kits etc.
15:20	On site coordinator determines that additional resources not required at this time. Fuel Sealift Supervisor has 3 responders at beach and skimmer has been deployed accordingly. Airstrip is clear. Workboat is on deployment rack and zoom boom has been tested and functional should additional boom deployment be required. Zodiac at beach and ready to deploy if required. Additional Zodiac at Camp Lake on standby. Survival suits, additional lifejackets and other PPE on site if required.
15:30	Operations manager advises CCG of spill. Notifies Baffinland head office.
15:30	Report back from field that 2 helicopters and one aircraft on standby if required at Mary River. Additional 2 satellite phones also available if required.
15:34	Report back from field that resources deployed, vacuum truck etc. Primary storage available in vac truck and within tank farm if required. Skimming operation continues at beach.
15:40	Ship advises that free oil can no longer be observed and advises BIM to stand down.
15:45	Exercise termination, notifications to all parties of completion of exercise.

Debrief with Ship Representative:

A short debrief was held between the Baffinland Fuel Supervisor and Mr. Chris King of PetroNav/Desgagnes at the Milne camp at 19:30. Several observations from both sides were noted:

- The key meeting should address the correct radio call procedure when addressing the BIM shore personnel. Calls would be preferred to go to the Baffinland "Fuel Transfer Supervisor" rather than the tank farm during an emergency as he is coordinating the shore activities.
- The exercise notes taken during the ship response were reviewed and it was noted that the marine operation by ship's personnel was highly successful.
- Some communications between ship and shore were in French language although the sealift procedures call for communication in English. This was limited however to routine ship to manifold conversation and did not have a negative impact in any way to the safety of the operation.

Instructor's further comments and recommendations:

The training was considered by all to have been resoundingly successful. In addition to successfully completing all the objectives of the classroom training modules 1 through 7, the equipment audit and practical training in modules 8 through 9 were also carried out. The deployment of workboat, boom and related equipment as outlined in module 10 was accomplished in a timely, safe and highly professional manner. The exercise on the 18th met Baffinland's objectives of internal, external notification as well as an equipment deployment exercise.

Several observations and relevant notes were made throughout the training and exercise and can be summarized briefly as follows:

1) Equipment pre-staging:

In order to ensure the most effective and rapid response, locations for pre-staging of the 3 X 100 meter boom boxes were identified. Equipment was placed at the appropriate location for bulk fuel transfer. Location is as follows:

3 X 100 meter systems slightly to the west of the shore manifold approximately in line with the Milne landing strip at the high water level of the beach access.

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

2) Workboat staging

It was determined that the workboat will be left at the beach zone, on an improvised cradle which can be deployed within minutes of alarm. A second zodiac is staged at the beach as a rescue and secondary vessel.

3) Anchors and rigging:

Three anchor kits were identified in the equipment stockpile. As each section of 100 meters of boom should have two - (2) anchor kits each, additional anchors should be procured. There are also no spare lines or buoys in the inventory. Also one tow bridle assembly is completely missing. Recommendations for additional ropes, anchors and rigging are as follows:

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

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

2 – spare inflatable floats

6 – 100 foot anchor lines (2 per box) as spares or for lengthening accordingly

4) Equipment Readiness

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

i) Containers opened and equipment clear

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

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

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

5) Beach zone deployment

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

i) Due to the very shallow water encountered at the beach, sufficient length of tow line is necessary to allow the workboat to remain in deeper water while deploying the boom
ii) Hip waders or similar may be required of all beach deployment personnel
iii) All workboat operators should be aware of the shallow water encountered at the beach and ensure that the engine is adequately tilted while operating in the shallow water
iv) When significant waves are present at the beach, the workboat should avoid “ beaching” as re-launching can be difficult, especially on a falling tide
v) Attention must be given to operations on a falling tide to avoid “stranding” the workboat in the shallow beach zone
vi) The cold and wet conditions require the use of floater suits by the workboat crew. Beach responders should also have floater suits available, although they may opt for other PPE should warmer weather warrant. At all times, life jackets must be worn if working on water.

6) Process Hazard review

A thorough PHA was carried out and the minutes of the review form an integral part of this report.

In this instructor’s opinion the deployment 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 deployment. The operation was accomplished safely, and in a timely fashion.

Follow up Items:

One outstanding item requiring attention is noted:

1) Procurement of the missing items such as anchors and hip waders as above outlined

Summary:

The oil spill training and exercise for 2011 met all the specific goals of the organization. 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.

Todd Mitchell
Navenco Marine Inc.

RESIDENT OIL SPILL RESPONSE EQUIPMENT MILNE INLET BULK HANDLING FACILITY –EQUIPMENT AUDIT – SEPTEMBER 13-14, 2011

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 new, unused and fully operational
4	Anchor kits for anchoring boom in place	Yes	3 kits complete	Anchor kits found to be new, unused and fully operational.
4	Towing bridle for oil boom	Yes	4	
8	Spill response unit – X Large Land	Yes	6	1 assigned to the shore manifold, 4 by fuel dispenser, 1 by balance available from Mary River
4	Overpack spill kit	Yes	2	2 assigned to the farm, Balance available from Mary River
500	25 lb. Bags Multizorb granular	X	0	Stock remains at Mary River site, not deemed appropriate for marine response
1	Custom pump skid for emergency fuel transfers from one tank to another	Yes	1	
8	2" x 25' transfer hose for emergency transfer pump	Yes	4	4 at Milne, Balance at Mary River
12	18" x 18" x 6" Arctic mini berm for under fittings	Yes	3	Assigned in various site locations, available when required within time standards
12	36" 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	
300	Oil sheets for replenishing spill kits	Yes	300	

1	Aluminium workboat with outboard engine, equipped with towing post and related equipment for boom deployment	Yes	1	Verified workboat, all safety equipment onboard as delivered.
1	Drum skimmer and diesel driven power pack, suitable for recovery of distillates – Capacity 7.5 tonnes per hour	No	1	Fully functional and response ready
1	Vacuum truck, 3000 gallon capacity	Yes	1	Functional and response ready
20	45 gallon steel drums	Yes	20	

DATE INSPECTED: September 14, 2011

Per:
Todd Mitchell – Spill Response Specialist

2011 Milne Inlet Bulk Fuel Transfer
Standard Operating Procedure
Process Hazard Review
Sept 15th, 2011

In Attendance:

Bernie Arseneau (BIM), Eli Iannelli (BIM), Craig Humphries(QL), Kim Clyke (Nuna), Robin Cnudde (SEI), George Bartz(SEI), Chris King (Petro-Nav), Todd Mitchell (Navenco Marine)

- Under the "General Safety" heading, add the following:
  - Wear Floater suits, hip waders, insulated rubber boots and insulated rubber gloves as required when working around Marine Spill Response activities.

- Clarify the role and identity of the Baffinland "Fuel Transfer Master" in the SOP.

- Under the "Summary of Operation" section, make the following changes:
  - Change the number of fuel bladders from 72 to 39 to reflect the actual number being filled in 2011
  - Change the "Mary River Bulk Sample Emergency Spill Contingency Plan" to the updated copy "As Sent 11 03 01 2011 Spill Contingency Plan" and add to the SOP for Bulk Fuel Offloading.
  - "Oil Pollution Emergency Plan" is current and needs to be added to the SOP for Bulk Fuel Offloading.
  - Add the "Arctic Waters Oil Transfer" document from the Ship to the SOP for the Milne Inlet Bulk Fuel Transfer.
  - Under "General 1.2 The Fuel Transfer hose will likely be in the process of being deployed before we even start the "Key Meeting". If this is the case, we should change the document to reflect this.
  - Include instructions in the SOP that requires any aircraft or Helicopter to call at least 20 minutes prior to arriving at Milne Inlet while Fuel Transfer Operations are in progress.
  - All road access that crosses over any section of Fuel Transfer Pipe will be closed for all but Emergency traffic. Barricades will be erected and left up for the duration of the Fuel Transfer.
  - Under "Environmental Controls" Section 2.2, change the word "eliminated" to "inspected, assessed and appropriate action taken.
  - Add the following to the SOP for Bulk Fuel Transfer;
    - When the Fuel Transfer Pipe has been completely assembled, and a pressure test has been done on the installation, a written copy of the test and results will be forwarded to the Baffinland Representative for future reference as required under the OPEP requirements.
    - Where a pressure test of the assembled Fuel Transfer Pipe has not been done prior to the Fuel Transfer, a pressure test of the entire system will be requested at the same time the ship pressure tests their fuel transfer lines. Again, a copy of the test and results will be forwarded to the Baffinland Representative for future reference as required under the OPEP requirements.
  - Fuel Transfer Meter has not been calibrated, maybe this should become one of the critical steps included in the SOP. A wrong measurement of fuel going into the Bladders could create a situation as well as create a discrepancy between the Ship and Fuel Transfer Meter.

- Concerns around Pigging the Fuel Transfer Line:
  - Do we bother pushing a Pig through a dry line before we start the Fuel Transfer? If we do, how do we deal with all the air (12.5 M^3) accumulated in the Transfer Pipe?

  - How do we deal with the mix of JetA and P50 when we do Pig the Fuel Line? Approximately 12.5 M^3 of JetA will end up in the P50 Bladder.
  - There is a discrepancy in the "Responsibilities" section of the SOP where it says to check the Shore Fuel Transfer Piping System every two hours, but the Log Sheet says to inspect every hour. Which one is right?

Milne Inlet Bulk Fuel Transfer Hazards:

Any time Fuel products are handled, there is a risk of fire or explosion which could lead to serious personal injury or damage to equipment and process. Extra care should be taken to follow safety guidelines and wear the appropriate Safety Gear to ensure workers are protected from hazards associated with handling fuel products:

- Always wear approved Personal Protective Equipment when working with Fuel products. Whenever there is a risk of coming in contact with fuel products, fuel resistant rubber gloves and oiler suits should be worn to protect worker's skin from coming in contact with fuel products.
- Fuel Transfer Pipes and associated equipment are under very high pressures while fuel is being transferred. Extra care must be taken to avoid any contact with the distribution pipes with vehicles and or equipment. For this reason all access roads crossing over fuel transfer pipes have been closed to all traffic except for emergency vehicles until the transfer operation is complete.
- Workers should familiarize themselves with the location of eye-wash stations in the unlikely event they come in contact with fuel products.
- Once started, the Fuel Transfer operation will continue non-stop 24 hours per day until all the Fuel Bladders are filled. As a result, employees will be required to work in the dark, which poses a new set of hazards. Flashlights with fresh batteries should be carried by workers on night shift.
- In the event of a spill into the water after dark, an assessment will be made to best address the situation but it is understood that Marine Spill Response efforts from Baffinland workers will not be carried out on the water between dusk and dawn as there are too many risks involved and the safety of workers could be put at risk.
- Whenever
- Extra Fire Extinguishers have been placed around the perimeter of the Tank Farm as well as along the length of the Fuel Transfer Pipeline, for use in the event of a small fire that can be easily controlled.
- It is important to note that because Milne Inlet does not have an Emergency Response Team on Site to deal with large fires, the best plan in the event of a large, out of control fire while transferring fuel is to evacuate the area to a safe location, upwind of the smoke and fumes.
- Proper radio communication between shore personnel and fuel delivery personnel on board the fuel tanker is essential to ensure the safety of workers and the prevention of damage to equipment and the environment due to unwanted fuel spills. Workers should familiarize themselves with the use of supplied VHF Radios before the Fuel Transfer operation begins. The following guidelines should be followed when using two-way radios:

- At the beginning of each shift, a voice call test should be carried out to ensure radios are in working order (radio check).
- Before transmitting by radio, employees must listen long enough to ensure the circuit is not in use. If an emergency arises, interruption is permitted.
- When speaking on the radio, employees should use clear, distinct tone and speak directly into the microphone. “DO NOT SHOUT”.
- Employees should always acknowledge radio communications to ensure instructions are clearly understood
- The word ”over” should be used at the end of each transmission to which a reply is expected

- Radio transmissions must be brief and clear in their meaning.
- Radio communication is meant for Company business only.
- Workers should begin each shift with a freshly charged battery to avoid loss of radio communication at an undesired time.

Bernie Arseneau _____ Eli Iannelli _____

Craig Humphries _____ Kim Clyke _____

Robin Cnudde _____ George Bartz _____

Chris King _____ Todd Mitchell_____

Baffinland

HAZARD / TASK ANALYSIS CHECK LIST					
Check all hazards that may be present during the task					
PERMITS				**PERSONAL LIMITATIONS/HAZARDS**	
Safe Work Permit	N/A		N/A	Procedure Not Available for Task	No
Hot Work/Cold Work	N/A		N/A	Confusing Instructions	No
Confined Space	N/A		N/A	No Training in Procedure/Task	No
Breaking Process	N/A		N/A	No Training in Tools to be Used	No
Excavation/Trenching/Bore Hole	N/A		N/A	First Time performing This Task	Yes
Critical Lift	N/A		N/A	Mental Limitations/Distractions	No
Lockout	N/A		N/A		
Demolition	N/A		N/A	**PHYSICAL ENERGY HAZARDS**	
Asbestos	N/A		N/A	Manual Lifting	No
High Voltage Power Line	N/A			Load to heavy/Awkward to Lift	No
		EQUIPMENT HAZARDS			
PERMIT IDENTIFIED HAZARDS		Operating Mobile Equipment(Safety Check)	Yes	Prolonged/Extreme Bending	No
Hazards Detailed on Safe Work Permit	N/A	Operating Motor Vehicle(Safety Check)	Yes	Repetitive Motions	No
Hazards Identified on Critical Lift Permit	N/A	Working with Grinders(Safety Guards)	N/A	Unstable Position	No
Hazard Identified on Electrical Permit	N/A			Part(s) of Body in Line of Fire	No
Hazard Identified Confined Space Entry	N/A	**PERSONAL PROTECTIVE EQUIOMENT**		Working in Tight Clearances	No
Hazard Identified on Hot/Col Work Permit	N/A	Work Gloves (Chemical, Kevlar, Etc.)	Yes	Physical Limitations-Need Assistance	No
Hazards on Excavation/Trenching Permit	N/A	Rain Gear, Thermal /FR !00% Cotton Suits	Yes	Uncontrolled Release of Energy	No
Hazards Identified on Line Opening Permit	N/A	Rubber /Leather Boots/Steel Toe	Yes	Force Fall Potential	No
Hazards Identified on Lockout	N/A	Safety Glasses	Yes	Caught Between/Caught On/	No
Hazards Identified on Demolition Permit	N/A	Floater Suits	Yes	Collision With/Contact With/	No
Hazards Identified on Asbestos Permit	N/A	Hearing Protection Plugs/Ear Muffs	Yes	Exposed To/Slip On/Step Into	No
		Head Protection	Yes	Stabbed With/Struck Against/	No
EMERGENCY EQUIPMENT IDENTIFIED		High Visibility Vests	Yes	Struck By Falling or Flying Objects	No
Fire Extinguisher on Hand	Yes			Trip Over/Step Into/Step On	No
Eye Wash Station Nearby	Yes			Heat Stress/Frostbite/Hypothermia	No
		WELDING			
Safety Shower Nearby	N/A	Shields/Fire Blankets/Sparks Contained	N/A		
All Permits Displayed at Work Site	Yes	Fire Extinguisher on hand Within 10 Feet	N/A		
Exists Clearly Marked and Free from	Yes	Cylinders Secured/ Caps On	N/A		
Obstruction		Combustible/Flammable Materials Removed	N/A		
Emergency Number Known	Yes	Fire Watch/Spark Watch	N/A		
Additional Hazards *	Yes	Ground Cables Within Eighteen (18) Inches	N/A		
* See additional list of hazards identified on Milne Inlet Bulk Fuel Transfer Process Hazard Review of Sept. 15th, 2011.					

Baffinland
Iron Mines Corporation


MILNE INLET SITE OVERVIEW - 2008

MILNE INLET OPEP SPILL RESPONSE EXERCISE

OCTOBER 2012

BAFFINLAND OIL SPILL RESPONSE EXERCISE PLAN

MARY RIVER, OCTOBER 5th, 2012

Purpose and Scope:

The oil spill response drill undertaken at for Milne Inlet/Mary River provides several benefits to the corporation, the staff, monitoring bodies and ultimately to the environment. The responders were provided with the opportunity to exercise skills in the management of complex decisions under real-time conditions. Plans and systems were tested and, with proper feedback, strategies for effective response can be improved and developed further. The exercise was limited in scope to a desktop management response due to the operation being on care and maintenance at this time. Recommendations for improvements were the primary goal of the exercise.

The proper planning and successful performance of an exercise are important accomplishments which help the Company to meet the objectives of protection of health, safety and environment for its operations.
The important principles that are emphasized in the development of the current and other Baffinland site exercises are:

- Ensuring management support of the exercise activity, at all levels.
- Setting clear and measurable objectives which include continuous improvement.

- Establishing simple and more frequent exercises leading to faster and more effective responses to real incidents.
- Limiting the complexity and number of activities, participants and locations so as to keep exercises manageable.
- Effectively evaluating the lesson learned from the exercise at the conclusion of the field component and subsequently updating various management plans and procedures so as to improve the response activity.

Overall Objective of Exercise:

The 2012 exercise in Mary River was designed specifically as an exercise to provide the responders with an opportunity to exercise skills learned in previous training at the realistic location of where a fuel spill could potentially occur.

The exercise provided an opportunity to enhance individual skills and team work of the Baffinland Iron Mines Corporation participants who may be called upon should a real incident occur. Comments from all participants and observers are most welcome and are key to the objective of improving the operation and enhancing successful spill response.
The decision as to timing of the exercise, the extent of the exercise, etc. was made by the Baffinland spill response coordinator, taking into consideration many factors, especially safety of the workforce.

The exercise encompassed internal and external notifications.

Exercise Scenario:

During fuel transfer from the Five Million liter tank to a 60 000 liter fuel road tanker, an overflow of fuel, from the access doors on top of the tanker, occurred at the tanker loading location. Spillage continued until the loading station lined bermed area overflowed to the environment, allowing P-50 diesel fuel to flow towards the ocean at Milne Inlet. Under this scenario, no product would reach the ocean, due to containment practices, but the potential is there.

Key Drill Objectives:

- Practice and test Baffinland's actions in response to a crisis incident involving a loss of product to the environment.
- Test the ability to communicate effectively and to co-ordinate an effective response.
- Practice effective communication with outside organizations.
- Test the ability of Baffinland to notify the appropriate parties (internal and external) of the incident.

Exercise Initiation and Termination:

The exercise was initiated and terminated at the discretion of the Baffinland coordinator. No set time for start or ending was anticipated; rather the exercise was for a duration so as to ensure that the exercise objectives had been achieved to the most reasonable extent possible.

Exercise Evaluation:

The Baffinland coordinator or his appointed representative provided the final evaluation of the exercise. The lessons learned during the exercise will be extremely valuable in the continuing development and updating of Baffinland's Oil Handling Facility Oil Pollution Emergency Plan and Spill Response Contingency Plan.

Input from participants and observers was considered of great value, and was solicited wherever possible. This information was constructively used in the preparation of future efforts with regard to pollution protection efforts.

Exercise evaluation, recommendations and Corrective Action:

A copy of the Milne Inlet OPEP Oct 5th 2012 Spill Response Log is attached in Appendix A.

A Mary River site and corporate evaluation of the exercise was conducted. A summary of observations, recommendations and approved corrective action is provided below:

Mary River Project October 5th, 2012 OPEP Spill Response Observations, Recommendations and Corrective Action

Ref	Observation	Recommendation	Corrective Action	Scheduled Completion Date	Accountable	Consultant's Comments and OPEP Considerations
1	OPEP Plan a. Sustainable Development Policy outdated b. BIM personnel contact information outdated c. Description of Fuel Storage Facilities (3.2) outdated d. BIM emergency response management contact information in Table 2 outdated.	1.1 Update the OPEP manual	1.1 Retain Todd Mitchell at Navenco Marine to update OPEP and submit updated plan and spill response exercise to Transport Canada	Jan 15, 2013	D. McCann	A: Addressed in new plan b. Update prior to submission c: Updated in new plan d: Update prior to submission
2	OPEP and BIM Spill Contingency Plans (SCP) have conflicting reporting/notification protocol. i.e. under the OPEP, the Coast Guard will notify the DFO, the local EC office & the spill response centre in Ontario.Under the BIM Spill Contingency Plan, Land Spills, BIM will notify the DFO and EC. Even though the spill was OPEP related it was on land - The Nunavut Spill line was not notified as there is no requirement under OPEP	2.1 Update OPEP and SCP to clarify links , relationship and notification protocol and eliminate conflicts.	2.1 Complete minor updates to OPEP and SCP and create a flowchart to facilitate overall spill response.	Feb 1, 2013	J. Millard	The reporting requirements are indeed different for marine spills relating to the OHF rather than spills on land or elsewhere in the BIM operating zone. The notification of the Canadian Coast Guard through the procedures and format as indicated in the OPEP is mandatory in spills that originate during the bulk transfer or from the bulk storage facility. Government of Nunavut (GN) should have also been notified under the procedures indicated in the OPEP. The GN notification was added to ensure consistency between the plans and to ensure that all required notifications are being made. Section 8 of the ERP and section 7 of the OPEP are consistent in this regard.
3	The incident commander (IC) had to read through significant portions of the OPEP to ensure all steps and notifications were being followed.	3.1 Create simplified flowcharts and checklists for IC to follow. 3.2 There was no OPEP specific corporate notification checklist.	3.1 Create an integrated Emergency Response Plan for the Mary River Project. • The Plan should be designed with flow charts and	Feb 1, 2013	D. McCann/ D. Methe	For 2013, the OPEP has been modified to reflect the new Incident Command structure now in place that is outlined in the ERP. This important first step will enhance the command and control

Ref	Observation	Recommendation	Corrective Action	Scheduled Completion Date	Accountable	Consultant's Comments and OPEP Considerations
		Recommend including roles in OPEP and only maintain current phone numbers in one location – Mary River Project Incident and Accident Notification Protocol. It should be noted, however, that the notification lists in the Spill Contingency Response Plan were up to date.	references to facilitate IC response.			functions relating to spills at the OHF. Future work to enhance visual aids and flow charts should be considered for 2014 and forward as the mine operations ramp up and come on line.
4	No exercise pre-notifications were provided to stakeholders. The following responses were not as expected: a. AANDC reported that their response and notification system/protocols did not function as expected b. No persons could be reached at QIA. Although very clear messages were left on QIA answering machines they misunderstood the message and called E. Madsen to determine the extent of the spill.	4.1 Notify regulators of all Mock exercises in advance of the execution date	4.1. Contact Sustainable Development Superintendent in advance of exercises. The superintendent will notify regulators as required in advance of appropriate spill contingency exercise. 4.2. Create a spill contingency exercise planning section in the OPEP and SCP in the 2013 updates.	Complete Apr 1, 2013	J. Millard J.Millard	Although advance notification of regulators in regards to exercises would enhance the specific activity, this experience does highlight the regulator's own deficiencies within their organizations. Some follow up with regulators is recommended. In a real spill situation, these regulators may provide additional input or resources and could be important to the spill response effort.
5	Some of the communications to regulators was delegated. There is no indication that this was a basic cause to any of the identified deficiencies, however, given the lack of capacity in some organizations and critical nature of those communications, misinterpretation of factual information by a delegate may create future issues The Community BLO's should be added to the list of being notified – rumours can fly fast in communities – they need to be informed that this was just a mock	5.1 All communication by to regulators shall be by the Incident Commander. or senior environmental site representative (need to discuss and determine this) This would require that the Mary River Project Spill Contingency Plan be modified to reflect the recommendation. Need to add BLO's contact list to people that need to be notified – add to simplified flowsheet.	5.1 Develop a communication plan for contacting regulators and agencies as part of the new spill contingency exercise planning section of Spill Contingency Plan.	Apr 1, 2013	J. Millard	Future work to enhance communications should be considered for 2014 and forward as the mine operations ramp up and come on line.

Ref	Observation	Recommendation	Corrective Action	Scheduled Completion Date	Accountable	Consultant's Comments and OPEP Considerations
	exercise					
6.	In the event of an actual spill when the ambient temperature is below freezing, there was no stockpile of sand available for the operators to readily access and insufficient snow to use to contain a spill	6.1 Create and maintain sand stockpiles for spill response at high risk project locations	6.1 Until the stockpiles can be created in the spring snow shall be used as described in the SCP 6.2 Update the spill contingency plan spill response equipment list to reflect a requirement to maintain a stockpile of sand at Mary River and Milne Inlet camps and other remote locations as required by a risk assessment.	Complete. Nov 1, 2012 June 1, 2013	D. McCann J. Millard	A stockpile of sand is now included in the resident spill equipment materials section of Annex 4.
7.	Although a vacuum truck was available at Milne Inlet in the event a potential spill required fuel recovery, there were no mobile pumps available as back up. All pumps were moved to Mary River for maintenance over the winter	7.1 Maintain a minimum of one back up mobile pump at all facilities for fuel recovery.	7.1. A mobile pump was relocated to Milne Inlet. 7.2 Update the spill contingency plan spill response equipment list to reflect requirement for pumps at major areas such as Mary River and Milne Inlet	Complete Nov 1, 2012 Apr. 1, 2013	D. McCann J. Millard/ D.McCann	Reflected in ERP update for 2012.
8	A limited number of exercises are conducted annually and both shifts may not have adequate opportunity to exercise the general emergency response scenario, including the Incident Commander role specifically.	8.1 Conduct a minimum of one exercise annually on both shifts	8.1. Include training frequency requirements in the spill contingency ercercise planning section detailed in corrective action 4.2			Requirement for adequate training of personnel on BOTH shifts added to section 9.1 of the OPEP.
9	There was some confusion in Toronto and possibly at Mary River when incident occurred – there needs to be common areas (command centres) at both sites – with appropriate communication and procedures etc so that applicable designated staff at site	9.1.1 - There needs to be fully equipment – Emergency Disaster Command Centres established at Mary River and at Toronto office. Where key representatives will come together to manage the incident, when exercises occur and or real time scenarios occur.	9.1 Create a corporate emergency response plan that incorporates the recommendations.	Apr 1. 2013	D. Methe	The ERP for 2013 establishes an Emergency Response Command Center (ERCC). The enhanced IC structure and ERCC are detailed in both the ERP and the OPEP.

Ref	Observation	Recommendation	Corrective Action	Scheduled Completion Date	Accountable	Consultant's Comments and OPEP Considerations
	and at Toronto office will get together and there will be direct communication between the two command centres. Key positions need to be identified to meet at these centres when situations occur.	Maps of area, cabinet of all disaster plans, notification procedures, participant duties, communication roles etc.				

Appendix A

Milne Inlet OPEP Oct 5th 2012 Spill Response Log

Emergency log record: Oct 5, 2012

Log Recorder: Ben Widdowson

Personal on Site:

Jeff Bush- Site Manager

Brian Larson- HR-H&S Superintendent

Allan Knight- Environmental Manager

Andrew Selkirk- Electrician

Allan-Medic

Tom Mclister- Kitchen Manager

Wes Danielson- Nuna Project Manager

Graham- Nuna Mechanic

Ben Widdowson- Environment Field Technician.

Emergency Log:

10:26 Fuel spill is reported by Bruce in Milne Inlet, UTM Zone 17 7976500 N 503500 E. Bruce reports Pumps and pipes shut down, booms are out. Unknown amount of P-50 is spilled.

10:30 Code one is signaled and all personal on site must report to main office

10:33 Jeff tells personal that there has been a fuel spill in Milne inlet. The 60,000 Liter P-50 road tanker has overflowed and fuel is heading towards the ocean. Bruce and Nuyalea are on the scene. They had layed out booms ahead of the flow of the fuel in the field and the excavator will construct a ditch. They will contact in 30 minutes with updates. Volume is unknown.

10:35: Wes is asked pull together a list of all required equipment and personal needed to get the Tote road open and get down to Milne inlet. Graham will help. Also to do an inventory and location of spill supplies.

10:35: Andrew is asked to consider how to shut off all electricity in Milne Inlet. He is to report to Bruce and Nuyalea to provide any information that will be helpful to them. Also, Andrew is asked to look at the AWWS and report weather/tides for Milne Inlet region.

10:36: Allan is asked to provide briefing points for Milne, what required for record keeping for spills? Provide written points on safety/environment concerns of the area.

10:36: Medic is to bring potential medical issues that deal with fuel to Jeff. Also to gather the MSDS sheet.

10:37: Tom is asked to be on stand-by and help Brian as required.

10:40 Brian reports that Bruce has completed his Spill Response training in April 2012 and Nuyalea received his July 12.

10:40 Brian calls Judy from Air Nunavut and confirms that a plane can be landed in Mary River in 3 hours and 15 minutes if required.

10:44 Jeff calls Dave McCann reporting Fuel spill in Milne.

10:47 Wes reports that the road can be open in 5 hrs. All equipment is running and ready to go. 4 people will be needed to complete the following. These will include Wes, Graham, Tom and Brian. See attached sheet for details on Equipment and opening the road.

10:49 Jeff calls VP & Project Manager Ron Hampton. Got the answering system which takes you in a circle.

10:50 Jeff calls VP & Project Manager Ron Hampton (2nd phone number) and leaves a message detailing the spill in Milne Inlet

10:52 Jeff calls President Tom Paddon. Reports spill and will follow up with more information as received.

10:53 Medic brings Material Safety Data Sheet on Diesel Fuel and treatment sheets to Jeff. See attached sheets for more details

10:56 Allan Knight brings information on Environmental response. See attached sheet.

Jeff tells Allan to get a hold of QIA and AANDC.

10:59 Jeff contacts Jim Millard

11:02 Jeff reports spill to Erik Madsen

11:05 Andrew reports weather updates to Jeff provides details on how to shut off the Sommer's Generator. See Attached sheets.

11:07 Brian receives call from Bruce

> They have dug a trench 30 meters southerly from the edge of the embankment, 2 meters in width and 30 meters in length in the line of the flow direction of the spill
>
> Booms have been placed
>
> 3 marine kits are prepared
>
> Loaders are running; for tramming for the building of a berm ahead of the trench for catching any of the free product that might reach the trench.

Milne Vac truck is running and on standby for when the excavator operator is done to vacuum up any of the free product".

Estimated Volume reports by Bruce: 5000 to 10,000 liters

Bruce will check up in an hour

11:12 Allan Contacts QIA personal. See Attached sheet

Allan wants confirmation of marine Kits availability. Confirmation is giving from Brian.

11:12 Jeff contacts coast guard.

11:30 Exercise is completed and stand down is issued. Email send to BIM personnel to confirm the excerise is completed.

ANNEX 8

Material Safety Data Sheets

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	**Type A Diesel, No.1 Fuel Oil**
Version # Issue	01
date Revision	04-16-2013
date Supersedes	-
date CAS #	-
MSDS Number	8008-20-6
Synonym(s)	5210
Manufacturer information	Type A or No.1 Diesel Fuel (D40) * No.1 Fuel Oil (Stove Oil) (F40)
Manufacturer/Supplier	
	VALERO ENERGY INC. 2200 McGill College Montreal, Quebec H3A 0G7 Or: Valero Marketing and Supply company 19 Homer Ave. Queensbury, NY 12804
24-Hour Emergency	Canutec (613) 996-6666
General Information	(888) 871-4404
New Brunswick Poison Information Center	(506) 857-5555
Newfoundland Poison Control Center	(709) 722-1110
Nova Scotia / PEI Poison Control Center	1-800-565-8161
Ontario Regional Poison Information Center	1-800-267-1373 (Ottawa) 1-800-268-9017 (Toronto)
Quebec Poison Control Center	1-800-463-5060

2. Hazards Identification

Physical state	Liquid.
Appearance	Liquid (may be dyed red).
Emergency overview	WARNING! Combustible liquid and vapor. May be ignited by heat, sparks or flames. Heat may cause the containers to explode. Harmful if inhaled or swallowed. Causes skin irritation. In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea. Possible cancer hazard - may cause cancer based on animal data. Suspected of causing genetic defects. Prolonged exposure may cause chronic effects. Diesel exhaust has been reported to be an occupational hazard due to NIOSH-reported potential carcinogenic properties. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Static accumulating flammable materials can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite material and vapor may cause flash fire (or explosion).
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Routes of exposure	Inhalation. Ingestion. Skin contact. Eye contact.
Eyes	Direct contact with eyes may cause temporary irritation.
Skin	Irritating to skin. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

Inhalation Harmful if inhaled. In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea. May cause breathing disorders and lung damage. Prolonged inhalation may be harmful.

Ingestion Harmful if swallowed. Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis. Irritating to mouth, throat, and stomach.

Target organs Respiratory system Eyes. Skin. Central nervous system.

Chronic effects Possible cancer hazard - may cause cancer based on animal data. Suspected of causing genetic defects. Liver injury may occur. Kidney injury may occur. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion and blurred vision) and/or damage. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

Signs and symptoms Irritation of nose and throat. Irritation of eyes and mucous membranes. Skin irritation. Unconsciousness. Corneal damage. Narcosis. Decrease in motor functions. Behavioral changes. Edema. Liver enlargement. Jaundice. Conjunctivitis. Proteinuria. Defatting of the skin. Rash.

Potential environmental effects Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Kerosine (Petroleum)	8008-20-6	0-100

Composition comments Product may contain traces of sulphur and benzene.

4. First Aid Measures

First aid procedures

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.

Skin contact Remove contaminated clothing and shoes. Wash off immediately with soap and plenty of water. Get medical attention if irritation develops or persists. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes. If high pressure injection under the skin occurs, always seek medical attention.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Ingestion Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Do not give mouth-to-mouth resuscitation. If vomiting occurs, keep head low so that stomach content does not get into the lungs. Get medical attention immediately.

Notes to physician In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed. The toxicological properties of this material have not been fully investigated.

General advice If exposed or concerned: get medical attention/advice. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use.

5. Fire Fighting Measures

Flammable properties Combustible liquid and vapor. Containers may explode when heated.

Extinguishing media

Suitable extinguishing media Water spray. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use a solid water stream as it may scatter and spread fire.

Protection of firefighters

Protective equipment and precautions for firefighters Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire fighting equipment/instructions Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray. Cool containers exposed to flames with water until well after the fire is out. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Water runoff can cause environmental damage. Use compatible foam to minimize vapor generation as needed.

Specific methods	In the event of fire and/or explosion do not breathe fumes.
Hazardous combustion products	Carbon monoxide. Carbon Dioxide. Sulfur oxides. Nitrogen oxides (NOx). Hydrocarbons. Hydrogen sulfide.

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. Local authorities should be advised if significant spills cannot be contained. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. See Section 8 of the MSDS for Personal Protective Equipment.
Environmental precautions	If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Flammable. Review Firefighting Measures, Section 5, before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) and hot surfaces away from release. Contain spill in smallest possible area. Recover as much product as possible (e.g. by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Use compatible foam to minimize vapor generation as needed. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 1-800-424-8802. For highway or railways spills, contact Chemtrec at 1-800-424-9300.
Methods for containment	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Local authorities should be advised if significant spillages cannot be contained. Stop leak if you can do so without risk. This material is a water pollutant and should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.
Methods for cleaning up	Use non-sparking tools and explosion-proof equipment. Small Spills: Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. This material and its container must be disposed of as hazardous waste. Large Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent product from entering drains. Do not allow material to contaminate ground water system. Should not be released into the environment.
Other information	Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling	Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Wear personal protective equipment. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Avoid prolonged exposure. Use only with adequate ventilation. Wash thoroughly after handling. The product is combustible, and heating may generate vapors which may form explosive vapor/air mixtures. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. When using, do not eat, drink or smoke. Avoid release to the environment.
Storage	Flammable liquid storage. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. The pressure in sealed containers can increase under the influence of heat. Keep container tightly closed in a cool, well-ventilated place. Keep away from food, drink and animal feedingstuffs. Keep out of the reach of children.

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Kerosine (Petroleum) (CAS 8008-20-6)	TWA	200 mg/m3	Non-aerosol.

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value	Form
Kerosine (Petroleum) (CAS 8008-20-6)	TWA	200 mg/m3	Vapor.

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Kerosine (Petroleum) (CAS 8008-20-6)	TWA	200 mg/m3	Non-aerosol.

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Kerosine (Petroleum) (CAS 8008-20-6)	TWA	200 mg/m3	Non-aerosol.

Exposure guidelines

Canada - Alberta OELs: Skin designation

Kerosine (Petroleum) (CAS 8008-20-6) Can be absorbed through the skin.

Canada - British Columbia OELs: Skin designation

Kerosine (Petroleum) (CAS 8008-20-6) Can be absorbed through the skin.

Canada - Manitoba OELs: Skin designation

Kerosine (Petroleum) (CAS 8008-20-6) Can be absorbed through the skin.

Canada - Ontario OELs: Skin designation

Kerosine (Petroleum) (CAS 8008-20-6) Can be absorbed through the skin.

Canada - Saskatchewan OELs: Skin designation

Kerosine (Petroleum) (CAS 8008-20-6) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

Kerosine (Petroleum) (CAS 8008-20-6) Can be absorbed through the skin.

Engineering controls Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment.

Personal protective equipment

Eye / face protection Wear safety glasses. If splash potential exists, wear full face shield or chemical goggles.

Skin protection Wear chemical-resistant, impervious gloves. Full body suit and boots are recommended when handling large volumes or in emergency situations. Flame retardant protective clothing is recommended.

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. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn. Proper respirator selection should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. This equipment should be available for nonroutine and emergency use.

General hygiene considerations Consult supervisor for special handling instructions. Avoid contact with eyes. Avoid contact with skin. Keep away from food and drink. Wash hands before breaks and immediately after handling the product. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practice.

9. Physical & Chemical Properties

Appearance Liquid (may be dyed red).

Physical state Liquid.

Form Liquid.

Color Clear. Straw.

Odor Kerosene (strong).

Odor threshold Not available.

pH Not available.

Vapor pressure < 8 mm Hg (38°C)

Vapor density	4.5
Boiling point	320 - 572 °F (160 - 300 °C)
Melting point/Freezing point	-40 °F (-40 °C)
Solubility (water)	Insoluble.
Specific gravity	0.82 - 0.85
Flash point	> 100.4 °F (> 38.0 °C) Closed Cup
Flammability limits in air, upper, % by volume	7 %
Flammability limits in air, lower, % by volume	0.8 %
Auto-ignition temperature	464 °F (240 °C)
Viscosity	8 cSt (-4°C) 1 - 1.9 cSt (40°C)
Bulk density	6.67 lb/gal

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under normal temperature conditions and recommended use.
Conditions to avoid	Heat, flames and sparks. Ignition sources. Contact with incompatible materials. Do not pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks, static electricity, or other sources of ignition; they may explode and cause injury or death.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Sensitization	No sensitizing effects known.
Acute effects	Harmful if inhaled. Harmful: may cause lung damage if swallowed. Causes skin irritation. In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea.
Chronic effects	Possible cancer hazard - may cause cancer based on animal data. Suspected of causing genetic defects. Danger of serious damage to health by prolonged exposure. Prolonged or repeated overexposure may cause central nervous system, kidney, liver, and lung damage.
Carcinogenicity	A life time skin painting study by the American Petroleum Institute has shown that similar naphtha products with a boiling range of 350-700° F usually produce skin tumors and/or skin cancers in laboratory mice. Only a weak to moderate response occurred. The effect to humans has not been determined. International Agency for Research on Cancer (IARC): Whole diesel engine exhaust – IARC Group 1. Exposure may cause lung cancer and also noted a positive association with an increased risk of bladder cancer. Diesel exhaust has been reported to be an occupational hazard due to NIOSH-reported potential carcinogenic properties.

ACGIH Carcinogens

Kerosine (Petroleum) (CAS 8008-20-6)	A3 Confirmed animal carcinogen with unknown relevance to humans.

Mutagenicity	Positive results at 2.0 ml/kg and 6.0 ml/kg noted in mutagenesis studies via in-vivo bone marrow cytogenetics assay in rats.

12. Ecological Information

Ecotoxicity	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Persistence and degradability	Not available.
Bioaccumulation / Accumulation	Not available.
Mobility in environmental media	No data available.

13. Disposal Considerations

Waste codes	D001: Waste Flammable material with a flash point <140 °F
Disposal instructions	Dispose in accordance with all applicable regulations. Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container.

14. Transport Information

DOT

Basic shipping requirements:	
UN number	UN1202
Proper shipping name	Diesel fuel
Hazard class Packing	Combustible Liquid
group Environmental	III
hazards	
Marine pollutant	Yes
Additional information:	
Special provisions	144, B1, IB3, T2, TP1
Packaging exceptions	150
Packaging non bulk	203
Packaging bulk	242

IATA

UN number	UN1202
UN proper shipping name	Gas oil
Transport hazard class(es)	3
Packing group	III
Environmental hazards	Yes
ERG code	3L

IMDG

UN number	UN1202
UN proper shipping name	DIESEL FUEL
Transport hazard class(es)	3
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS	F-E, S-E

TDG

UN number	UN1202
Proper shipping name	DIESEL FUEL
Hazard class	Combustible Liquid
Packing group	III
Marine pollutant	Yes
Special provisions	82, 88

15. Regulatory Information

US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No

Section 302 extremely hazardous substance (40 CFR 355, Appendix A)	No
SARA 311/312 Hazardous chemical	Yes
Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)	Not controlled
WHMIS status	Controlled
WHMIS classification	B3 - Combustible Liquids D2A - Other Toxic Effects-VERY TOXIC D2B - Other Toxic Effects-TOXIC

WHMIS labeling

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

State regulations

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Benzene (CAS 71-43-2) Listed.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Benzene (CAS 71-43-2) Listed: February 27, 1987 Carcinogenic.

US - California Proposition 65 - CRT: Listed date/Developmental toxin

Benzene (CAS 71-43-2) Listed: December 26, 1997 Developmental toxin.

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

Benzene (CAS 71-43-2) Listed: December 26, 1997 Male reproductive toxin.

US - New Jersey RTK - Substances: Listed substance

Kerosine (Petroleum) (CAS 8008-20-6) Listed.

US. Massachusetts RTK - Substance List

Kerosine (Petroleum) (CAS 8008-20-6) Listed.

US. New Jersey Worker and Community Right-to-Know Act

Kerosine (Petroleum) (CAS 8008-20-6) 10000 lbs

US. Pennsylvania RTK - Hazardous Substances

Kerosine (Petroleum) (CAS 8008-20-6) Listed.

16. Other Information

Further information

HMIS® is a registered trade and service mark of the NPCA.
A HMIS® Health rating including an * indicates a chronic hazard.

Other information	Note: This material Safety Data Sheet applies to the listed products and synonym descriptions for Hazard Communication purposes only. Technical Specifications vary greatly depending on the products and are not reflected in this document. Consult specification sheets for technical information.
HMIS® ratings	Health: 2* Flammability: 2 Physical hazard: 0
NFPA ratings	Health: 2 Flammability: 2 Instability: 0
Disclaimer	The information given is based on data available for the material, the components of the material, and similar materials.

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	**KEROSENE – TYPE AVIATION TURBINE FUEL**
Version # Issue	01
date Revision	04-16-2013
date Supersedes	-
date CAS #	-
MSDS Number	8008-20-6
Synonym(s)	5213
Manufacturer information	Jet A1 Fuel * Kerosene
Manufacturer/Supplier	
	VALERO ENERGY INC. 2200 McGill College Montreal, Quebec H3A 0G7 Or: Valero Marketing and Supply company 19 Homer Ave. Queensbury, NY 12804
24-Hour Emergency	Canutec (613) 996-6666
General Information	(888) 871-4404
New Brunswick Poison Information Center	(506) 857-5555
Newfoundland Poison Control Center	(709) 722-1110
Nova Scotia / PEI Poison Control Center	1-800-565-8161
Ontario Regional Poison Information Center	1-800-267-1373 (Ottawa) 1-800-268-9017 (Toronto)
Quebec Poison Control Center	1-800-463-5060

2. Hazards Identification

Physical state	Liquid.
Appearance	Liquid (may be dyed red).
Emergency overview	WARNING! Combustible liquid and vapor. May be ignited by heat, sparks or flames. Heat may cause the containers to explode. Harmful if inhaled or swallowed. Causes skin irritation. In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea. Possible cancer hazard - may cause cancer based on animal data. Suspected of causing genetic defects. Prolonged exposure may cause chronic effects. Diesel exhaust has been reported to be an occupational hazard due to NIOSH-reported potential carcinogenic properties. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Static accumulating flammable materials can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite material and vapor may cause flash fire (or explosion).
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Routes of exposure	Inhalation. Ingestion. Skin contact. Eye contact.
Eyes	Direct contact with eyes may cause temporary irritation.
Skin	Irritating to skin. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

Inhalation Harmful if inhaled. In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea. May cause breathing disorders and lung damage. Prolonged inhalation may be harmful.

Ingestion Harmful if swallowed. Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis. Irritating to mouth, throat, and stomach.

Target organs Respiratory system Eyes. Skin. Central nervous system.

Chronic effects Possible cancer hazard - may cause cancer based on animal data. Suspected of causing genetic defects. Liver injury may occur. Kidney injury may occur. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion and blurred vision) and/or damage. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

Signs and symptoms Irritation of nose and throat. Irritation of eyes and mucous membranes. Skin irritation. Unconsciousness. Corneal damage. Narcosis. Decrease in motor functions. Behavioral changes. Edema. Liver enlargement. Jaundice. Conjunctivitis. Proteinuria. Defatting of the skin. Rash.

Potential environmental effects Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Kerosine (Petroleum)	8008-20-6	0-100

Composition comments Jet Fuel is a complex mixture of hydrocarbons from a variety of chemical processes blended to meet standardized product specifications. Composition varies greatly and includes C9 to C16 hydrocarbons with a boiling range of about 160- 300°C.
Product may contain traces of sulphur and benzene.

4. First Aid Measures

First aid procedures

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.

Skin contact Remove contaminated clothing and shoes. Wash off immediately with soap and plenty of water. Get medical attention if irritation develops or persists. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes. If high pressure injection under the skin occurs, always seek medical attention.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Ingestion Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Do not give mouth-to-mouth resuscitation. If vomiting occurs, keep head low so that stomach content does not get into the lungs. Get medical attention immediately.

Notes to physician In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed. The toxicological properties of this material have not been fully investigated.

General advice If exposed or concerned: get medical attention/advice. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use.

5. Fire Fighting Measures

Flammable properties Combustible liquid and vapor. Containers may explode when heated.

Extinguishing media

Suitable extinguishing media Water spray. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use a solid water stream as it may scatter and spread fire.

Protection of firefighters

Protective equipment and precautions for firefighters Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire fighting equipment/instructions	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray. Cool containers exposed to flames with water until well after the fire is out. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Water runoff can cause environmental damage. Use compatible foam to minimize vapor generation as needed.
Specific methods	In the event of fire and/or explosion do not breathe fumes.
Hazardous combustion products	Carbon monoxide. Carbon Dioxide. Sulfur oxides. Nitrogen oxides (NOx). Hydrocarbons. Hydrogen sulfide.

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. Local authorities should be advised if significant spills cannot be contained. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. See Section 8 of the MSDS for Personal Protective Equipment.
Environmental precautions	If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Flammable. Review Firefighting Measures, Section 5, before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) and hot surfaces away from release. Contain spill in smallest possible area. Recover as much product as possible (e.g. by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Use compatible foam to minimize vapor generation as needed. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 1-800-424-8802. For highway or railways spills, contact Chemtrec at 1-800-424-9300.
Methods for containment	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Local authorities should be advised if significant spillages cannot be contained. Stop leak if you can do so without risk. This material is a water pollutant and should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.
Methods for cleaning up	Use non-sparking tools and explosion-proof equipment. Small Spills: Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. This material and its container must be disposed of as hazardous waste. Large Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent product from entering drains. Do not allow material to contaminate ground water system. Should not be released into the environment.
Other information	Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling	Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Wear personal protective equipment. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Avoid prolonged exposure. Use only with adequate ventilation. Wash thoroughly after handling. The product is combustible, and heating may generate vapors which may form explosive vapor/air mixtures. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. When using, do not eat, drink or smoke. Avoid release to the environment.
Storage	Flammable liquid storage. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. The pressure in sealed containers can increase under the influence of heat. Keep container tightly closed in a cool, well-ventilated place. Keep away from food, drink and animal feedingstuffs. Keep out of the reach of children.

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Kerosine (Petroleum) (CAS 8008-20-6)	TWA	200 mg/m3	Non-aerosol.

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value	Form
Kerosine (Petroleum) (CAS 8008-20-6)	TWA	200 mg/m3	Vapor.

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Kerosine (Petroleum) (CAS 8008-20-6)	TWA	200 mg/m3	Non-aerosol.

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Kerosine (Petroleum) (CAS 8008-20-6)	TWA	200 mg/m3	Non-aerosol.

Exposure guidelines

Canada - Alberta OELs: Skin designation

Kerosine (Petroleum) (CAS 8008-20-6) Can be absorbed through the skin.

Canada - British Columbia OELs: Skin designation

Kerosine (Petroleum) (CAS 8008-20-6) Can be absorbed through the skin.

Canada - Manitoba OELs: Skin designation

Kerosine (Petroleum) (CAS 8008-20-6) Can be absorbed through the skin.

Canada - Ontario OELs: Skin designation

Kerosine (Petroleum) (CAS 8008-20-6) Can be absorbed through the skin.

Canada - Saskatchewan OELs: Skin designation

Kerosine (Petroleum) (CAS 8008-20-6) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

Kerosine (Petroleum) (CAS 8008-20-6) Can be absorbed through the skin.

Engineering controls Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment.

Personal protective equipment

Eye / face protection Wear safety glasses. If splash potential exists, wear full face shield or chemical goggles.

Skin protection Wear chemical-resistant, impervious gloves. Full body suit and boots are recommended when handling large volumes or in emergency situations. Flame retardant protective clothing is recommended.

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. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn. Proper respirator selection should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. This equipment should be available for nonroutine and emergency use.

General hygiene considerations Consult supervisor for special handling instructions. Avoid contact with eyes. Avoid contact with skin. Keep away from food and drink. Wash hands before breaks and immediately after handling the product. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practice.

9. Physical & Chemical Properties

Appearance Liquid (may be dyed red).

Physical state	Liquid.
Form	Liquid.
Color	Clear. Straw.
Odor	Characteristic odor.
Odor threshold	Not available.
pH	Not available.
Vapor pressure	< 8 mm Hg (38°C)
Vapor density	4.5
Boiling point	320 - 572 °F (160 - 300 °C)
Melting point/Freezing point	-40 °F (-40 °C)
Solubility (water)	Insoluble.
Specific gravity	0.82 - 0.85
Flash point	> 100.4 °F (> 38.0 °C) Closed Cup
Flammability limits in air, upper, % by volume	7 %
Flammability limits in air, lower, % by volume	0.8 %
Auto-ignition temperature	464 °F (240 °C)
Viscosity	8 cSt (-4°C) 1 - 1.9 cSt (40°C)
Bulk density	6.67 lb/gal

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under normal temperature conditions and recommended use.
Conditions to avoid	Heat, flames and sparks. Ignition sources. Contact with incompatible materials. Do not pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks, static electricity, or other sources of ignition; they may explode and cause injury or death.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Sensitization	No sensitizing effects known.
Acute effects	Harmful if inhaled. Harmful: may cause lung damage if swallowed. Causes skin irritation. In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea.
Chronic effects	Possible cancer hazard - may cause cancer based on animal data. Suspected of causing genetic defects. Danger of serious damage to health by prolonged exposure. Prolonged or repeated overexposure may cause central nervous system, kidney, liver, and lung damage.
Carcinogenicity	A life time skin painting study by the American Petroleum Institute has shown that similar naphtha products with a boiling range of 350-700° F usually produce skin tumors and/or skin cancers in laboratory mice. Only a weak to moderate response occurred. The effect to humans has not been determined. International Agency for Research on Cancer (IARC): Whole diesel engine exhaust – IARC Group 1. Exposure may cause lung cancer and also noted a positive association with an increased risk of bladder cancer. Diesel exhaust has been reported to be an occupational hazard due to NIOSH-reported potential carcinogenic properties.

ACGIH Carcinogens

Kerosine (Petroleum) (CAS 8008-20-6)	A3 Confirmed animal carcinogen with unknown relevance to humans.

Mutagenicity	Positive results at 2.0 ml/kg and 6.0 ml/kg noted in mutagenesis studies via in-vivo bone marrow cytogenetics assay in rats.

12. Ecological Information

Ecotoxicity	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Persistence and degradability	Not available.
Bioaccumulation / Accumulation	Not available.
Mobility in environmental media	No data available.

13. Disposal Considerations

Waste codes	D001: Waste Flammable material with a flash point <140 °F
Disposal instructions	Dispose in accordance with all applicable regulations. Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container.

14. Transport Information

DOT

Basic shipping requirements:

UN number	UN1863
Proper shipping name	Fuel, aviation, turbine engine
Hazard class Packing group Environmental hazards	Combustible Liquid III
Marine pollutant	Yes
Additional information:	
Special provisions	144, B1, IB3, T2, TP1
Packaging exceptions	150
Packaging non bulk	203
Packaging bulk	242

IATA

UN number	UN1863
UN proper shipping name	Fuel, aviation, turbine engine
Transport hazard class(es)	3
Packing group	III
Environmental hazards	Yes
ERG code	3L

IMDG

UN number	UN1863
UN proper shipping name	FUEL, AVIATION, TURBINE ENGINE
Transport hazard class(es)	3
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS	F-E, S-E

TDG

UN number	UN1863
Proper shipping name	FUEL, AVIATION, TURBINE ENGINE
Hazard class	Combustible Liquid
Packing group	III
Marine pollutant	Yes
Special provisions	17, 82

15. Regulatory Information

US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No
Section 302 extremely hazardous substance (40 CFR 355, Appendix A)	No
SARA 311/312 Hazardous chemical	Yes
Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)	Not controlled
WHMIS status	Controlled
WHMIS classification	B3 - Combustible Liquids D2A - Other Toxic Effects-VERY TOXIC D2B - Other Toxic Effects-TOXIC

WHMIS labeling

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

State regulations

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Benzene (CAS 71-43-2) Listed.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Benzene (CAS 71-43-2) Listed: February 27, 1987 Carcinogenic.

US - California Proposition 65 - CRT: Listed date/Developmental toxin

Benzene (CAS 71-43-2) Listed: December 26, 1997 Developmental toxin.

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

Benzene (CAS 71-43-2) Listed: December 26, 1997 Male reproductive toxin.

US - New Jersey RTK - Substances: Listed substance

Kerosine (Petroleum) (CAS 8008-20-6) Listed.

US. Massachusetts RTK - Substance List

Kerosine (Petroleum) (CAS 8008-20-6) Listed.

US. New Jersey Worker and Community Right-to-Know Act

Kerosine (Petroleum) (CAS 8008-20-6)	10000 lbs

US. Pennsylvania RTK - Hazardous Substances

Kerosine (Petroleum) (CAS 8008-20-6)	Listed.

16. Other Information

Further information

HMIS® is a registered trade and service mark of the NPCA.
A HMIS® Health rating including an * indicates a chronic hazard.

Other information

Note: This material Safety Data Sheet applies to the listed products and synonym descriptions for Hazard Communication purposes only. Technical Specifications vary greatly depending on the products and are not reflected in this document. Consult specification sheets for technical information.

HMIS® ratings

Health: 2*
Flammability: 2
Physical hazard: 0

NFPA ratings

Health: 2
Flammability: 2
Instability: 0

Disclaimer

The information given is based on data available for the material, the components of the material, and similar materials.

ANNEX 9

Transport Canada – TP9834E

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

Transport Canada Transports Canada

TP 9834E
(07/2009)

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

2ND EDITION
JULY 2009

TC-1003421

Canada

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

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1	**July 2009**	**All**	**T. Morris**	Updated to reflect the *Canada Shipping Act, 2001* and the amendments to IMO Resolution A.851(20) in Resolution MEPC.138(53).

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INTRODUCTION

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

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

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

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

1. ABBREVIATIONS

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

2. DEFINITIONS

2.1 In these Guidelines,

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

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

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

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

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

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

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

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

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

3. HOW TO MAKE A REPORT

3.1 The report should be transmitted in the following manner:

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

4. CONTENT OF REPORT

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

5. SUPPLEMENTARY REPORT

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

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

6. PROBABILITY OF DISCHARGE

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

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

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

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

7. REPORT ON ASSISTANCE OR SALVAGE

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

APPENDIX

A1. PROCEDURES

A1.1 Reports should be sent as follows:

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

A2. STANDARD REPORTING FORMAT AND PROCEDURES

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

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

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

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

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

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

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

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

A3. DETAILED REPORTING REQUIREMENTS

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

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

R

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

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

P

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

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

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

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

P

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

Q

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

R

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

T

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

X

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

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

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

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

P

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

Q

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

R

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

T

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

X

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

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

A4. PRIMARY REPORT FORMS

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

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

* Report either Item C or D.

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

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

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

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

* Report either Item C or D.

** Include in the case of a probable discharge.

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

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

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

* Report either Item C or D.

** Include in the case of a probable discharge.

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